SUPPLEMENT TO

AJOG American Journal of Obstetrics & Gynecology

ajog.org

The Gray Journal | MARCH 2020 ■ Volume 222, Number 3 | Founded 1869

American Journal of Obstetrics & Gynecology SUPPLEMENT TO MARCH 2020 ■ Volume 222, Number 3 ■ Pages S761–S860

ATTENTION, SUBSCRIBERS

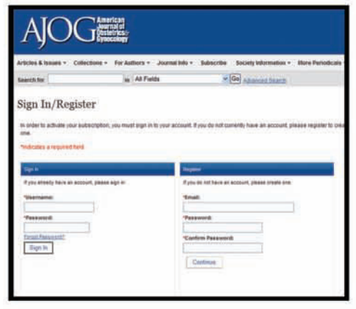
How to access full text and special features at www.AJOG.org

Online features include:

- **Full text (html) and PDF content**. Summary PDFs plus e-only content, including full-length research articles and additional images, tables, and figures. Dual format for every article ensures that articles are fully searchable, simple to navigate, and easy to read on the screen.
- **eTOC notification.** Sign up to be notified when a Journal issue has been posted online. Receive the table of contents (TOC), with a hot link to each article, in your e-mail inbox. You can also sign up for "Articles Online First" for a look at soon-to-be-published content.
- **Enriched linking features.** Find Medline links in every article and hyperlinks to all cited articles.
- **Full search capability.** Search for key words or phrases in the article title, author's last name, abstract, text, or reference section.

To activate online access to AJOG:

1. Go to www.AJOG.org.
2. Under "Journal Info," click on Activate Online Access.
3. Under "Register," enter your e-mail address and create a password, then click on "Continue." If you have already registered, sign in and verify your activation.
4. Complete the information requested. Click on "Continue."
5. Verify activation of your AJOG subscription and click "Continue."
6. Follow the instructions until you reach the "verify activation" page.



Still can't get in?

If you are still unable to access the Journal content or the features available only to subscribers, your next step depends on your subscription number.

If your subscription number begins with MMS, call 1-888-633-5478. If your address has changed, please notify the American Medical Association at 1-800-262-3211, ext. 5192, or update your address at www.ama-assn.org/go/address.

If your subscription number does not begin with MMS, please contact Elsevier Customer Service at 1-800-654-2452 (US and Canada) or 1-314-447-8871 (all other countries). Alternatively, send a fax to 1-314-447-8029 or e-mail JournalsOnlineSupport-USA@elsevier.com.

ELSEVIER

SUPPLEMENT TO

AJOG American Journal of Obstetrics & Gynecology

The Gray Journal ajog.org Founded 1869

MARCH 2020 ■ Volume 222, Number 3

Published by Elsevier Inc., 230 Park Avenue, Suite 800, New York, NY 10169.

SOCIETY OF
GYNECOLOGIC SURGEONS

Founed in 1974 sgsonline.org

As the President of the Society of Gynecologic Surgeons, I am excited to welcome you to the 46th Annual Scientific Meeting in Jacksonville, Florida from March 29 – April 1. The Hyatt Regency Jacksonville-Riverfront is located in the heart of the city, and in addition to a superb program, the area offers unlimited activities and world-class restaurants. Dr. Patrick Culligan and the Scientific Program Committee have put together an outstanding program, with exceptional keynote speakers, unique panel discussions, and a combination of podium presentation and videos that cover a variety of timely and interesting topics in gynecologic surgery. In addition, the many collegial social events for which SGS is well known round out an exciting program. The theme of this year's meeting is "20/20 Vision: Embracing Innovation that Builds on Past Success."

We are offering five superb postgraduate courses, three of which will take place in the morning of March 29th. Dr. Cara King will be leading "Total Laparoscopic Hysterectomy: Pushing the Envelope," Dr. Mikio Nihira is the chair of "Enhanced Recovery after Surgery: Overcoming Barriers to Implementation," and Dr. Charles Hanes will be heading up "It's All About the Apex: The Key to Successful POP Surgery." We have an additional two postgraduate courses that afternoon. Dr. Vince Lucente will chair "Transvaginal Reconstructive Pelvic Surgery using Graft Augmentation post FDA," and Dr. Christine Vaccaro will be leading "Coaching for Surgical Greatness through Feedback, Debriefing and Deliberate Practice." The afternoon also offers our annual workshop presented by the SGS Social Media Committee.

I am thrilled to tell you about our superb keynote speakers. This year marks the inaugural Mark D. Walters Lectureship, and its namesake, Dr. Walters, Professor of Surgery in the Obstetrics, Gynecology, and Women's Health Institute at the Cleveland Clinic will be giving a lecture entitled, "Insights on Surgical Education: How Can I Help You Get Better." We will also hear from Marc Beer, serial entrepreneur and the co-founder, chairman, and CEO of Renovia, Inc., whose talk is entitled "A Primer on Medical Device Innovation – How to Avoid Common Pitfalls while Realizing your Vision." This year's TeLinde Lecture, entitled "Artificial Intelligence in Surgery" will be delivered by Dr. Vicente Gracias, a professor of surgery at Robert Wood Johnson University Hospital.

Our program chair, Dr. Culligan, will moderate two unique panel discussions that everyone is sure to enjoy – "Work-Life Balance & Gynecologic Surgery," which will feature various perspectives from Drs. Kristie Green, Sally Huber, Catherine Matthews and Charley Rardin. The second panel discussion is entitled "Understanding, Managing and Benefiting from your E-presence," and will include Heather Schueppert, Chief Marketing Officer at Unified Physician Management, Burt Kann, Chief Marketing Officer at Healthgrades, and Dr. Peter Lotze.

Let's not forget all the social events that make our meeting so enjoyable, including two evening receptions and the Tuesday afternoon social activities, where participants can choose between the annual golf tournament, a Jacksonville bike tour, or a city bridge and boat tour.

I know you will agree with me that this program offers all attendees not only an exceptional educational experience, but also an opportunity to reconnect with colleagues and make new friends. That mixture has always been the "special sauce" of our society, and what makes SGS such a unique and special organization. I look forward to hosting all of you in Jacksonville!

Sincerely,

Peter L Rosenblatt, MD
SGS President

01 (PACT) Permanent versus delayed-absorbable monofilament suture for vaginal graft attachment during minimally-invasive total hysterectomy and sacrocolpopexy: A multicenter randomized clinical trial

C. A. Matthews[2], E. J. Geller[1], B. Henley[4], E. M. Myers[3], A. Dieter[1], K. Kenton[5], B. Parnell[4], M. G. Mueller[5], C. Lewicky-Gaupp[5], J. M. Wu[1]

[1]University of North Carolina, Chapel Hill, NC, [2]Urology, Wake Forest University, Winston Salem, NC, [3]Atrium Health, Charlotte, NC, [4]Ob/Gyn, Augusta University Health, Augusta, GA, [5]Ob/Gyn, Northwestern Feinberg School of Medicine, Chicago, IL

OBJECTIVES: We aimed to compare mesh and suture exposure rates in the first year after minimally-invasive (MIS) total hysterectomy and sacrocolpopexy (TLH + SCP) with a light-weight polypropylene mesh using permanent or delayed absorbable sutures. Our secondary aim was to compare composite success rates.

MATERIALS AND METHODS: Across 5 centers in the US, women were randomized in the OR to permanent (2-0 GoreTex) or delayed-absorbable (2-0 PDS) suture for vaginal attachment of a light-weight polypropylene y-mesh (Upsylon™) during MIS TLH + SCP for ≥ stage II prolapse (POP). The primary outcome was mesh or suture exposure in the 1st year after surgery. A composite measure for success was defined as 1) leading edge of POP not beyond the hymen and apex not descended > 1/3 total vaginal length; 2) no subjective bulge on PFDI; and 3) no POP retreatment. Subjects completed a pelvic exam including POP-Q and questionnaires at baseline, 6-weeks and 1-year post-surgery. We estimated that 80 subjects were needed in each arm to detect a difference between a 10% and 1% rate of any mesh/suture exposure in the GoreTex versus PDS groups, respectively, at alpha=0.05 and power=80%.

RESULTS: Two hundred subjects (n = 99 GoreTex, n = 101 PDS) were randomized and underwent surgery. Pre-operative characteristics are presented in Table 1. Time for graft attachment (34 ± 28 vs 38 ± 23 min, p = 0.07), robotic approach (78% vs 74%, p = 0.46) and intraoperative complications (10% vs 5%, p = 0.17) were not different for GoreTex vs PDS groups, respectively.182 women (93%) completed 1-year follow up: 95/99 (96%) in GoreTex, 87/101 (86%) in PDS. The total rate of mesh/suture exposure was 13 (7.1%): 5.3% for GoreTex vs 9.2% for PDS, p = 0.30. There were 10 mesh exposures, 2 mesh + suture exposures, and 1 suture only exposure. The majority (70%) were asymptomatic; the remaining 4/13 had vaginal bleeding and/or discharge. Mesh/suture exposures were managed as follows: 5 (39%) no treatment, 6 (46%) vaginal estrogen, 1 (8%) office trimming and 1 (8%) vaginal mesh excision surgery. Composite success was 94% (93% for Gortex vs 95% for PDS, p=.43). Overall, 2% failed by anatomic definition, 6% by bulge symptoms, and 0.5% by retreatment. Overall, 6 (3%) women had a serious adverse event.

CONCLUSION: The type of suture used for vaginal graft attachment did not influence mesh/suture exposure rates or success rates. The composite outcome of success was high and did not differ between groups.

Characteristics	Permanent Suture n=99 (49.5%)	Delayed Absorbable Suture N=101 (50.5%)	0.60
Age (yr) (mean±SD)	59.7 ± 10.7	59.7 ± 10.7	0.59
Race White African American Other	x 91 (91.9) 7 (7.1) 1 (1.0)	x 90 (89.1) 8 (7.9) 3 (3.0)	.59
Menopausal Status	75 (75%)	77 (76%)	.64
Smoking status Never Prior smoker Current smoker	x 64 (64.6) 33 (33.3) 2 (2.0)	x 73 (72.3) 25 (24.8) 3 (3.0)	0.39
BMI (kg/m2) (mean±SD)	27.5 ± 5.0	27.5 ± 4.7	0.91
POPQ stage Stage II Stage III Stage IV	x 27 (27.3) 57 (57.6) 15 (15.2)	x 28 (27.7) 65 (64.4) 8 (7.9)	0.27

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Catherine A. Matthews: Boston Scientific, Principal Investigator, Grant support; Johnson & Johnson , Expert Witness, Honorarium; Elizabeth J. Geller: Boston Scientific, Investigator, Grant support; Barbara Henley: Boston Scientific, Investigator, Grant support; Erinn M. Myers: Boston Scientific, Investigator, Grant support; Alexis Dieter: Boston Scientific, Investigator, Grant support; Kimberly Kenton: Boston Scientific, Investigator, Grant support; Johnson & Johnson , Expert Witness, Legal fees; Brent Parnell: Boston Scientific, Investigator, Grant support; Margaret G. Mueller: Boston Scientific, Investigator, Grant support; Christina Lewicky-Gaupp: Boston Scientific, Investigator, Grant support; Jennifer M. Wu: Boston Scientific, Investigator, Grant support.

02 The influence of postoperative environment on patient pain and satisfaction following pelvic reconstructive surgery: A randomized controlled trial

A. M. Hill[1], C. C. Crisp[1], A. Shatkin-Margolis[1], T. Tam[1], E. Yook[2], S. D. Kleeman[1], J. Yeung[1], R. N. Pauls[1]

[1]Female Pelvic Medicine and Reconstructive Surgery, Trihealth Good Samaritan, Cincinnati, OH, [2]Hatton Institute, TriHealth Good Samaritan, Cincinnati, OH

OBJECTIVES: We sought to determine if the addition of music and a natural landscape image to postoperative hospital rooms would result in improved pain and satisfaction scores among patients undergoing pelvic reconstructive surgery.

MATERIALS AND METHODS: This was an Institutional Review Board approved, randomized controlled trial. Eligible candidates were 18-85 years old, English speaking, and scheduled to undergo native tissue vault suspension for symptomatic pelvic organ prolapse. Exclusions included history of a chronic pain or substance abuse. Subjects were advised the purpose of the study was to assess the impact of changes to the hospital environment on patient experience, but were blinded to their group and intervention details. Changes included a landscape image mounted to the wall, as well as access to a speaker with preprogrammed music selections. The intervention group was instructed to listen to their preferred music for a minimum of two 30-minute sessions postoperatively. The control group had a standard hospital room, without music or landscape. All patient rooms were private. The primary outcome was the Visual Analogue Scale (VAS) for pain on the morning of postoperative day one (POD #1). Secondary outcomes included narcotic use, likelihood to refer family to the same facility, satisfaction with

care and the hospital, and perception of a healing environment. We calculated a sample size of 43 subjects per arm in order to detect a difference of 1cm in VAS pain score.

RESULTS: One hundred thirty-three subjects were enrolled; primary outcome data was available for 92 (46 per arm). The mean age was 63.8 (SD 9.5) years, median Charlson Comorbidity score was 2 (IQR 0,7), and 94.6% were Caucasian. On POD #1, VAS score for pain was low (24.5 cm, 28 cm), and did not differ between control and intervention respectively ($p = 0.566$). Total morphine equivalents ($p = 0.817$) and nursing pain scores ($p = 0.774$) were also similar. However, the intervention group displayed a higher likelihood to refer family members to the hospital ($p = 0.037$). At 2 weeks postoperative, the intervention group demonstrated higher satisfaction with their care ($p = 0.032$), the hospital ($p = 0.004$), and the healing environment provided during their stay ($p = 0.020$), than those in standard hospital rooms.

CONCLUSION: In this randomized trial, we demonstrate that music and landscape imagery has a positive impact on postoperative care. This effect was noted to increase by two weeks following surgery. Given the importance of value-based care, interventions such as these should be emphasized in an effort to enhance patient experience, satisfaction and quality scores.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Austin M. Hill: Nothing to disclose; Catrina C. Crisp: Nothing to disclose; Abigail Shatkin-Margolis: Nothing to disclose; Tiffanie Tam: Nothing to disclose; Eunsun Yook: Nothing to disclose; Steven D. Kleeman: Nothing to disclose; Jennifer Yeung: Nothing to disclose; Rachel N. Pauls: Nothing to disclose.

03 Beyond the presacral space: Clinical relevance to sacrocolpopexy procedures

A. M. Hare, P. Sawyer, M. Corton
Ob/Gyn, UT Southwestern, Dallas, TX

OBJECTIVES: To further characterize anatomy of the presacral space relative to the greater sciatic foramen region and to provide clinical correlations to sacrocolpopexy procedures.

MATERIALS AND METHODS: Unembalmed female cadavers were examined. Structures within the presacral space (PSS) and greater sciatic foramen (GSF) region were examined. Relationships of neurovascular structures to the midpoint of the sacral promontory (MSP) and other landmarks were established. Descriptive statistics were used for data analysis.

RESULTS: Seventeen cadavers (ages 22 to 95) were examined. In all specimens, a dense connective tissue layer, $\leq$1 mm in thickness, was found on the medial surface of the piriformis muscle. This piriformis fascia attached to the anterior and lateral surface of the sacrum and separated contents of the PSS from the lateral sacral veins and first 3 sacral (S1-S3) nerves, as they emerged from the anterior sacral foramina. Attachment of piriformis fascia to the sacrum was consistently noted just medial to sacral foramina but lateral to the sacral sympathetic chain, which coursed within PSS adherent to piriformis fascia. Median transverse distance from the MSP to the right sympathetic chain was 19.5 (range, 15-31) mm. At this point, the width of the chain or ganglia was 3 (1-4) mm. Distances from the MSP to the superior-medial aspect of the right S1, S2 and S3 foramina were 29 (22-47.5), 48 (38.5-72.5) and 65.5 (54.5-89.5) mm, respectively. Transverse distances from midline sacrum to S1, S2 and S3 foramina were 16.5 (14-22), 15 (13-20.5) and 13.5 (10.5-19.5) mm, respectively. In all specimens, transverse veins measuring 3 (2-4) mm in width, crossed the midline and joined median and lateral sacral veins to form the sacral venous plexus. Vertical distance from the MSP to the first anastomotic vein was 38 (7.5-60.5) mm. Lateral sacral veins drained into the internal iliac vein on the superior aspect of the GSF region. Closest distance from the superior-medial aspect of S1 foramen to the right internal iliac vein was 16 (2.5-25.5) mm.

CONCLUSION: A dense but thin piriformis fascia separates contents of the PSS from the S1-S3 sacral nerves and lateral sacral veins in the GSF region. During sacrocolpopexy procedures, careful exposure of the anterior longitudinal ligament close to the MSP and avoidance of suture purchases and mesh fixation beyond 1.5 cm from the midline of the sacrum should prevent inadvertent injury to sacral nerves and lateral sacral veins. Transverse anastomotic vessels of the sacral venous plexus are mainly encountered below the S1 foramen level but can be found as close as 7.5 mm from the MSP. Centrally located PSS vessels can be avoided, coagulated, or tied if needed for safe mesh fixation. However, vessel or nerve injury in the posterior-lateral wall of the pelvic cavity can lead to hematoma formation or "sciatic type" pain and may require exploration in the GSF, a complex surgical region beyond the PSS.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Adam M. Hare: Nothing to disclose; Polina Sawyer: Nothing to disclose; Marlene Corton: Nothing to disclose.

04 A model for pain management in patients undergoing pelvic reconstructive surgery: A prospective clinical practice study

A. S. Ramaseshan[1], D. M. O'Sullivan[2], A. Steinberg[1], E. Tunitsky[1]
[1]Division of Female Pelvic Medicine and Reconstructive Surgery, Hartford Hospital, Hartford, CT, [2]Department of Research Administration, Hartford HealthCare, Hartford, CT

OBJECTIVES: To evaluate the efficacy and patient satisfaction of our current pain management practices after pelvic reconstructive surgery and to present a model for pain management in surgical patients.

MATERIALS AND METHODS: This prospective clinical practice study enrolled adult women undergoing inpatient female pelvic reconstructive surgery from December 2018 to June 2019. Brief Pain Inventory (BPI) surveys were collected preoperatively, at postoperative day 1 (POD1), postoperative week 1 (POW1) and again 4-6 weeks (POW4-6) after surgery. All patients received preoperative multimodal pain management and followed an enhanced recovery after surgery (ERAS) protocol. Patients were discharged with 15 tablets of an oral narcotic using an electronic prescription of controlled substances (EPCS) software platform. Patients were called at POW1 and POW4-6 to answer questions regarding their pain, the number of narcotic tablets remaining and patient satisfaction regarding pain management. Patient electronic medical records and the Connecticut (CT) Prescription Monitoring and Reporting System were reviewed to determine if patients received narcotic refills (in CT, all narcotics have to be prescribed electronically). Primary outcome was post-discharge narcotic use (PDNU) measured in morphine equivalents (milligrams of morphine, MME). Secondary outcomes evaluated refill rate, BPI scores and patient satisfaction with pain management. Statistics were descriptive and Spearman's ρ using α=0.05.

RESULTS: One hundred thirteen patients were enrolled; the median (IQR) MME prescribed (including refills) was 112.5 (112.5-112.5). The median PDNU was 24.0 (0-82.5) MME with median unused MME of 90.0 (45-112.5). In-hospital narcotic use was not predictive of PDNU ($r = 0.065$, $p = 0.495$). Patients reported median BPI scores for "average pain" of 0 (no pain) at POW1 and POW4-6; however, scores at all time points were not correlated with PDNU. 81.4% (92/113) and 83.2% (94/113) of patients at POW1 and POW4-6, respectively, reported being satisfied or extremely satisfied with their post-discharge pain control. 88.5% (100/113) of patients felt that the amount of opioids they were discharged with was sufficient for their pain needs at the POW1 and POW4-6 time points. At POW4-6, 19.5% of patients said that they filled the narcotic prescription, but did not use any of the pills. The overall refill rate was 10.6% (12/113). All patients who needed a refill described the refill process as easy.

CONCLUSION: Patients on average used fewer than 4 tablets of oxycodone after inpatient pelvic reconstructive surgery. Pain scores did not correlate with narcotic use. With the advent of EPCS, patients can obtain refills with ease if needed. Our practical and comprehensive pre- and post-operative protocol for pain management minimizes the amount of narcotics used while maximizing patient satisfaction.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Aparna S. Ramaseshan: Nothing to disclose; David M. O'Sullivan: Nothing to disclose; Adam Steinberg: Nothing to disclose; Elena Tunitsky: Nothing to disclose.

05 Risk of venous thromboembolism events after different routes of surgery for pelvic organ prolapse, using the American College Of Surgeons National Surgical Quality Improvement Program

W. Chong[1,2], A. Bui[2], K. Menhaji[3]
[1]Inspira Health, Vineland/Mullica Hill, NJ, [2]Icahn School of Medicine at Mount Sinai, New York, NY, [3]Mount Sinai Medical Center, New York, NY

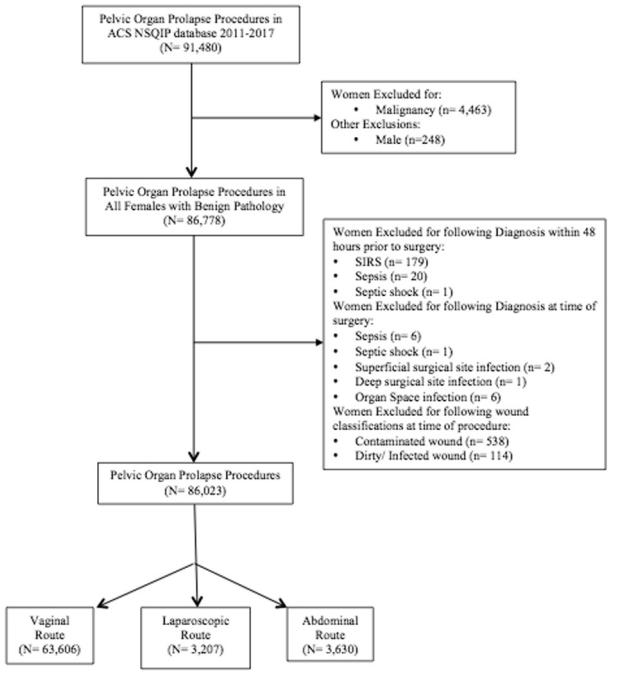
OBJECTIVES: To investigate incidence and risk factors for Venous Thromboembolic Events (VTE) within 30 days after different routes of Pelvic Organ Prolapse (POP) surgery.

MATERIALS AND METHODS: This retrospective cohort study utilized CPT codes to identify POP repairs +/-concurrent hysterectomy performed during 2011-2017 from the ACS-NSQIP database. Demographic/clinical characteristics were compared among different surgical routes. Descriptive statistics were utilized and logistic regression was performed to identify associations.

RESULTS: Among 91,480 POP surgeries identified, 86,023 were included for final analysis: 63,606 (73.9%) were performed vaginally; 18,787 (21.8%) laparoscopically; 3,630 (4.2%) abdominally (see Figure 1). 38,538 (44.8%) underwent a concurrent hysterectomy. Less than 0.2% of subjects (151/86,023) developed VTE within 30 days after surgery. More than 50% of VTE occurred within 10 days after surgery. For all surgical routes, older age ($p < 0.0001$), obesity ($p = 0.045$), race/ethnicity ($p = 0.0047$), concurrent hysterectomy ($p < 0.0001$), longer operating time ($p < 0.0001$), inpatient status ($p < 0.0001$), and ASA scores ≥ 3 ($p < 0.0001$) were significantly associated with VTE. Additionally, preoperative length of stay ≥ 1 day ($p = 0.04$) in vaginal repairs; steroid use ($p = 0.0001$) in laparoscopic repairs; and hypertension requiring medication ($p = 0.04$) in abdominal repairs were associated with VTE development. The incidence of VTE was highest in abdominal repairs (0.66%) [laparoscopic repairs (0.25%), vaginal repairs (0.13%)]. After adjusting for confounders, abdominal compared to vaginal approach (OR: 2.935, 95% CI: [1.773-4.86], $p < 0.0001$), longer operative time (OR :1.005, 95% CI: [1.003-1.006], $p < 0.0001$), older age (OR: 1.025, 95% CI: [1.01-1.041], $p = 0.001$), obesity (OR: 1.424, 95% CI: [1.011-2.007], $p = 0.04$), ASA ≥ 3 (OR: 1.645, 95% CI: [1.131-2.391], $p = 0.009$) remained significantly associated with developing VTE (see Table 1). The abdominal POP repairs were associated with an increased hazard of VTE (HR: 2.945, 95% CI: [1.785-4.86], $p < 0.0001$). VTE development was associated with 30-day mortality, readmission, and reoperation (*all* $p < 0.0001$).

CONCLUSION: The overall incidence of VTE after POP repairs was very low with the highest risk in abdominal route. Abdominal approaches should be reserved for certain cases. Considering >50% of VTE occurred within 10 days after surgery, strategies to reduce these risks need to be investigated further.

Figure 1: Flowchart of study subjects



Flow Diagram: Malignancy = Patient with any *Current Procedural Terminology* code related to malignancy or postoperative International Classification of Diseases code indicating malignancy. 91 Excluded cases met more than one exclusion criteria: 9 excluded cases were coded for both male and malignancy, 3 excluded cases had male-related codes and pre-operative infection, and 79 excluded cases had codes for both malignancy and pre-operative infections. None of the excluded cases met more than 2 exclusion criteria.

Table 1: Multivariate logistic regression

Covariate	OR (95% CI)	P-value
Repair Route (ref = Vaginal)		
Abdominal	2.94 (1.77-4.86)	<.0001
Laparoscopic	1.22 (0.81-1.85)	0.34
Concurrent Hysterectomy	1.20 (0.83-1.73)	0.32
Operative Time, min	1.01 (1.00-1.01)	<.0001
Age, y	1.03 (1.01-1.04)	0.001
BMI ≥30	1.42 (1.01-2.01)	0.04
Race/Ethnicity (ref = White Non-Hispanic)		
Asian	0.61 (0.19-1.94)	0.40
Black	1.27 (0.67-2.40)	0.47
Hispanic	0.54 (0.26-1.11)	0.09
Unknown/Other	0.63 (0.37-1.07)	0.09
Smoker	1.09 (0.64-1.86)	0.75
Diabetes Mellitus (ref = No)		
Insulin Dependent	1.41 (0.60-3.31)	0.43
Non-Insulin Dependent	0.78 (0.42-1.44)	0.42
Pre-op LOS ≥ 1 day	2.99 (0.93-9.58)	0.07
ASA 3 or 4 [a]	1.65 (1.31-2.39)	0.009
Inpatient Status	1.44 (0.99-2.07)	0.05
Dyspnea [b]	1.42 (0.71-2.84)	0.32
HTN [c]	0.75 (0.51-1.09)	0.13
Bleeding Disorder	0.54 (0.08-3.94)	0.55
Renal Failure [d]	8.60 (1.13-65.26)	0.04
Steroid Use	1.86 (0.81-4.26)	0.14

[a] ASA, American Society of Anesthesiologist classification groupings, [b] Dyspnea At Rest/Upon Moderate Exertion, [c] HTN Hypertension Requiring Medication, [d] Renal Failure (ARF or Dialysis).

BMI Body Mass Index, min minutes, Pre-op LOS Preoperative hospital length of stay, ref Reference, y Years.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Woojin Chong: Nothing to disclose; Anthony Bui: Nothing to disclose; Kimia Menhaji: Nothing to disclose.

06 Development of a preoperative prediction tool for postoperative complications after hysterectomy

P. Schmidt, N. Kamdar, C. W. Swenson, S. Uppal, D. Morgan
Ob/Gyn - Urogynecology, University of Michigan, Ann Arbor, MI

OBJECTIVES: To develop a prediction tool that quantifies the risk of postoperative complications 30 days after hysterectomy.

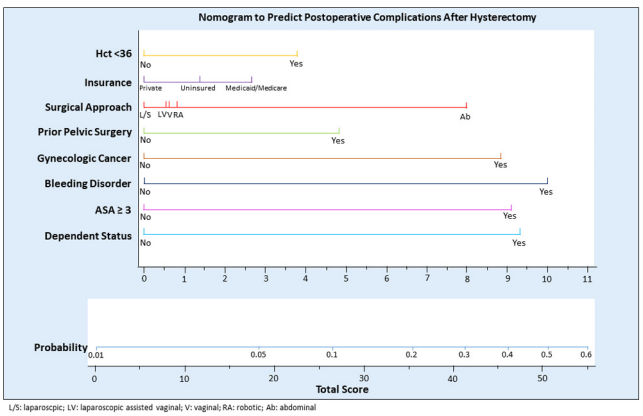
MATERIALS AND METHODS: A retrospective analysis of women who underwent hysterectomy for gynecologic indications at 70 hospitals in a statewide surgical collaborative between June 4, 2012 and October 18, 2017. Medical and postoperative surgical complications within 30 days were the primary outcome in a multivariable logistic regression model. The patient registry was randomly divided into two cohorts—one for derivation and the second for validation. Patient and hospital level factors, including average annual surgeon case volume, were considered for inclusion. A nomogram was developed to predict median hysterectomy complication rates.

RESULTS: The overall postoperative complication rate was 4.0% (n=1,654/41,148). Characteristics independently associated with postoperative complications are shown (Table). Hospital characteristics and surgeon case volume were not independently associated with postoperative complications. In the two cohorts, the factors significantly associated with postoperative complications were consistent as was model discrimination (C-statistics 0.68 and 0.69). Using the nomogram (Figure), the predicted risk of postoperative complications is 0.9%-1.2% with a minimally invasive hysterectomy versus 2.5% predicted with an abdominal approach. Considering the same scenario with a history of prior pelvic surgery, the predicted risk for a minimally invasive hysterectomy is 1.5%-1.6% compared to 3.6% for abdominal hysterectomy. For a woman with gynecologic cancer and no history of pelvic surgery, the predicted risk for postoperative complications with laparoscopy is 4.2-5.0% versus 9.3% for abdominal hysterectomy.

CONCLUSION: We developed and validated a model to predict postoperative complications within 30 days of hysterectomy. Surgical approach is the major modifiable preoperative risk factor. This analysis illustrates the importance of minimally invasive hysterectomy, even when there is a history of prior pelvic surgery.

Table. Preoperative Factors Independently Associated with Postoperative Complications After Hysterectomy

	OR	95% Confidence Interval
Dependent Status	2.34	1.33 – 4.13
ASA class ≥ 3	2.27	1.86 – 2.76
Bleeding Disorder	2.50	1.56 – 4.00
Gynecologic Cancer Present	2.23	1.74 - 2.85
History of Prior Pelvic Surgery	1.56	1.22 – 1.99
Surgical Approach - Vaginal	Referent	--
Surgical Approach - Abdominal	1.93	1.33 – 2.80
Surgical Approach - Laparoscopic	0.95	0.60 – 1.50
Surgical Approach - Robotic	1.0	0.68 – 1.45
Surgical Approach - Laparoscopic-Assisted Vaginal	1.02	0.63 – 1.66
Insurance Type - Private	Referent	--
Insurance Type - Medicaid and Medicare	1.29	1.06 – 1.58
Insurance Type - Self-Pay	1.15	0.74 – 1.79
Hct < 36	1.43	1.16 – 1.76



L/S: laparoscopic; LV: laparoscopic assisted vaginal; V: vaginal; RA: robotic; Ab: abdominal

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Payton Schmidt: Nothing to disclose; Neil Kamdar: Blue Cross Blue Shield of Michigan, Independent Contractor, Salary Support; Carolyn W. Swenson: Nothing to disclose; Shitanshu Uppal: Nothing to disclose; Daniel Morgan: Blue Cross Blue Shield of Michigan, Independent Contractor, Salary support; UpToDate, Independent Contractor, Royalties.

07 Comparison of 30-day readmission after same-day versus next-day discharge in pelvic organ prolapse surgery

A. Berger, J. Tan-Kim, S. Menefee
Urogynecology, Kaiser-San Diego, San Diego, CA

OBJECTIVES: Same-day discharge is being utilized throughout the surgical specialties to improve patient satisfaction, outcomes, and cost while maintaining safety. However, evidence, including 30-day readmission rates, is limited in urogynecologic surgery. Our objective was to compare same-day to next-day discharge on 30-day readmission risk following minimally invasive urogynecologic prolapse surgery.

MATERIALS AND METHODS: This retrospective cohort study included all minimally invasive prolapse procedures with and without

concomitant hysterectomy performed within a large managed organization of 4.5 million members from 2008 through 2018. We queried the system-wide medical record for CPT and ICD-9/10 codes for all included procedures and patient demographic and perioperative data. Our primary outcome was 30-day hospital readmission. Demographics, characteristics, and 30-day readmission were compared using chi-square for categorical variables and Wilcoxon rank sum for continuous variables. We performed a multivariate logistic regression adjusting for patient demographic and perioperative variables and their potential impact on the relationship between day of discharge and 30-day readmission.

RESULTS: Of the 13,445 patients undergoing prolapse surgery, 5,506 were discharged the same day, while 7,939 were discharged the next day. During their prolapse surgery, 6,171 patients underwent concomitant hysterectomy while 7,274 did not. For those who had a concomitant hysterectomy, there was no difference (0.7% vs. 0.4%, $p = 0.22$) in 30-day readmission rates comparing those discharged same-day compared to next-day. Of those undergoing concomitant hysterectomy, the most common prolapse procedures were uterosacral ligament suspension 39% (n = 2,400), and laparoscopic/robotic sacrocolpopexy 21% (n = 1,325). There was no difference in 30-day readmission comparing individual procedure types including those undergoing concomitant vaginal hysterectomy (0.7% vs. 0.3%, $p = 0.09$). For those whose prolapse procedure lacked a concomitant hysterectomy, there was no difference (0.5% vs. 0.4%, $p = 0.71$) in 30-day readmission comparing those discharged same-day compared to next-day. Those patients without a concomitant hysterectomy most commonly had a sacrospinous ligament suspension 13% (n = 980), or laparoscopic/robotic sacrocolpopexy 11% (n = 785) as their repair. After adjustment for patient and perioperative characteristics, there was no statistically significant difference in the readmission risk for patients with same-day discharge compared to next-day discharge (aOR = 1.52; 95% CI 0.75-3.06; $p = 0.24$).

CONCLUSION: In women undergoing minimally invasive prolapse surgery, there is no difference in 30-day readmission rates comparing those discharged the same-day to next-day. When considering patient factors, same-day discharge after minimally invasive prolapse surgery may be safe and play an important role in value-based care.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Alexander Berger: Nothing to disclose; Jasmine Tan-Kim: Nothing to disclose; Shawn Menefee: Nothing to disclose.

08 Anchor versus suture for attachment of vaginal mesh in minimally invasive sacrocolpopexy: A randomized clinical trial

A. Berger, J. Tan-Kim, S. Menefee
Urogynecology, Kaiser-San Diego, San Diego, CA

OBJECTIVES: Vaginal mesh attachment can be one of the most time intensive components of minimally invasive sacrocolpopexy. Our objective was to assess the time effect of placing absorbable anchors compared to interrupted sutures for vaginal mesh attachment in minimally invasive sacrocolpopexy.

MATERIALS AND METHODS: This is a multicentered, single-masked, randomized clinical trial in women with pelvic organ prolapse undergoing minimally invasive sacrocolpopexy. Participants were randomized to either interrupted delayed-absorbable anchors or delayed-absorbable interrupted sutures for the vaginal mesh attachment portion of the case. Participants completed validated questionnaires at baseline, 6 weeks, 6 months, and 12 months after surgery. At each visit the patients completed validated questionnaires and a urogynecologist who was masked to the treatment arm performed a clinical examination with assessment of POPQ, mesh exposure, and overall appearance of vaginal walls using a 10-cm visual analog scale. The primary outcome was the vaginal mesh attachment time. Categorical variables were compared using chi-square or Fischer's Exact test, whereas continuous variables were compared using Student's t test or Mann-Whitney U test as appropriate. An intention-to-treat analysis was performed.

RESULTS: Fifty-three participants were randomized, 26 to mesh attachment with anchor, 27 to mesh attachment with suture, and 73% (19/26) and 78% (21/27) had 12 month follow up respectively. There were no significant differences between groups in age ($p = 0.12$), BMI ($p = 0.23$), stage of prolapse ($p = 0.97$), or other preoperative factors. Mesh attachment interval time was faster in the anchor compared to suturing arm (12.2 vs. 21.2 min, $p < 0.001$). VAS for surgeon ease of placement ($p = 0.16$), appearance of mesh attachment ($p = 0.07$), and global satisfaction with use of attachment type ($p = 0.65$) were similar between the arms. There was no difference in perioperative adverse events rates between arms and by 12 months follow-up there were no sacrocolpopexy mesh, anchor, or suture exposures. There was no difference in surgical failure ($p = 0.66$), patient global impression of improvement ($p = 0.35$), or patient pelvic pain ($p = 0.67$) at 12 months of follow-up.

CONCLUSION: In patients undergoing minimally invasive sacrocolpopexy the anchor vaginal mesh attachment technique was faster than suturing. There was no difference between techniques in complications, surgical failure, surgeon or patient-reported outcomes through 12 months of follow-up. Mesh attachment during sacrocolpopexy can be performed in less time using the anchor technique, providing surgeons another surgical technique for this procedure.

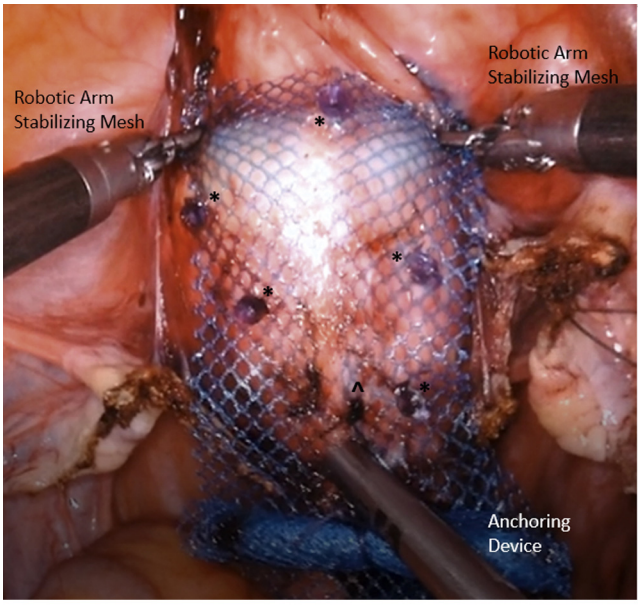


Figure 1: Vaginal mesh attachment. Two robotic arms are stabilizing the mesh as anterior attachment is performed. ^Represents the stabilizing suture, while * represents the anchors.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Alexander Berger: Nothing to disclose; Jasmine Tan-Kim: Nothing to disclose; Shawn Menefee: Nothing to disclose.

09 A randomized controlled trial of clobetasol propionate versus fractionated CO2 laser for the treatment of lichen sclerosus (CURLS)

L. Burkett[1,2], M. Siddique[3,2], A. Zeymo[4], R. E. Gutman[2], A. J. Park[2], C. Iglesia[2]

[1]OB/GYN/REI, UPMC Magee-Womens, Pittsburgh, PA, [2]OB/GYN and Urology, MedStar Washington Hospital Center and Georgetown University School of Medicine, Washington, DC, [3]OB/GYN, Women & Infants' Hospital of Rhode Island, Providence, RI, [4]Biostatistics, Medstar Health Research Institute (MHRI), Washington, DC

OBJECTIVES: To compare six month safety and efficacy outcomes of fractionated CO2 laser (laser) to topical clobetasol propionate (steroid) for treatment of symptomatic vulvar lichen sclerosus.

MATERIALS AND METHODS: Single-center randomized controlled non-inferiority trial comparing laser to steroid treatment for patients with biopsy proven lichen sclerosus. Randomization was stratified based on prior steroid use. Study included postmenopausal women with significant symptoms based on Skindex-29 scores >21 and excluded women with >Stage 2 prolapse, prior vaginal mesh or pelvic radiation, or active genital infection. The primary outcome was change in Skindex-29 score at six months. Secondary subjective outcomes included patient visual analog scale (subjective VAS) for bothersome vulvar symptoms, Vulvovaginal Symptom Questionnaire (VSQ), and a global impression of improvement (PGI-I) and satisfaction (PGI-S). Secondary objective outcomes were provider assessment of vulvar appearance (objective VAS) and Vaginal Health Index (VHI). An intention-to-treat and regression analysis based on prior steroid exposure were performed.

RESULTS: From 2015 to 2018, 205 women were screened, 55 were randomized, and 51 completed six-month follow-up. No significant difference was found in baseline demographic data, symptoms, and provider assessment scores. There was greater improvement in the Skindex-29 score in the laser arm at 6 months, 11-point effect size, p=0.007. The change in mean VSQ [-3.92 (SD 4.12) vs -0.58 (5.11), p = 0.014] and VHI [1.92 (SD 4.34) vs 0.43 (3.62), p = 0.046] scales were significantly better in the laser group at six months. Mean subjective and objective VAS were similar between groups. Overall, 89% of laser patients rated their symptoms as being "better or much better" on PGI-I compared to 62% of steroid patients, p = 0.07. Significantly more patients (81%) were "satisfied or very satisfied" on PGI-S with laser compared to steroid (41%), p = 0.01. After stratification for previous steroid use, the significant change of Skindex-29 score was only seen in the previously exposed group. There was one adverse event in each group: minor burning and blistering at laser site and activation of genital herpes one week after starting steroid.

CONCLUSION: Fractionated CO2 laser treatment is non-inferior and showed statistically significant improvement in symptoms and objective outcomes compared to clobetasol propionate steroid cream with no serious safety or adverse events.

Table 1. Six Month Outcome Measures CuRLS Trial

Outcome	Fractionated CO2 laser n=27	Clobetasol steroid cream n=24	p value
Mean difference Skindex-29 overall (standard deviation) Emotion subscore Symptoms subscore Function subscore	-16.83 (18.09) -19.63 (21.92) -21.03 (22.18) -10.65 (18.97)	-5.92 (5.81) -6.77 (9.9) -4.91 (11.19) -5.30 (8.64)	0.007* 0.011* 0.002* 0.210
Mean difference VSQ (sd)	-3.92 (4.12)	-0.58 (5.11)	0.014*
Mean difference VHI (sd)	1.92 (4.34)	-0.43 (3.62)	0.046*

Negative numbers for Skindex-29, VSQ, VHI, and VAS indicate improved scores. *statistically significant at $p \leq 0.05$

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Linda Burkett: Nothing to disclose; Moiuri Siddique: Nothing to disclose; Alexander Zeymo: Nothing to disclose; Robert E. Gutman: Nothing to disclose; Amy J. Park: Nothing to disclose; Cheryl Iglesia: Nothing to disclose.

10 Preoperative levator ani muscle and pudendal nerve injections for pain control after vaginal reconstructive surgery: A three-arm randomized controlled trial

L. Giugale[1,3], L. Baranski[1], N. Schott[2,4], T. Emerick[2,4], P. Moalli[1,3]

[1]Magee-Womens Hospital of UPMC, Magee-Womens Research Institute, Pittsburgh, PA, [2]Department of Anesthesiology, University of Pittsburgh School of Medicine, Pittsburgh, PA, [3]Obstetrics, Gynecology and Reproductive Sciences, University of Pittsburgh School of Medicine, Pittsburgh, PA, [4]Department of Anesthesiology, UPMC, Pittsburgh, PA

OBJECTIVES: To test the hypothesis that preoperative levator ani muscle (LAM) and transvaginal pudendal nerve (PN) injections with bupivacaine and dexamethasone would improve postoperative pain after vaginal apical prolapse repair.

MATERIALS AND METHODS: We performed a 3-arm, double-blind, randomized trial of bilateral LAM and PN injections administered prior to vaginal apical support procedures [uterosacral ligament suspension (USLS), sacrospinous ligament fixation (SSLF), levator myorrhaphy or colpocleisis] under standardized general anesthesia. Women were randomized to 0.9% saline, 0.25% bupivacaine, or 0.25% bupivacaine with 4mg dexamethasone injected into 4 sites (bilateral LAM via transobturator approach and transvaginal PN blocks). Primary outcome was a numeric rating scale (NRS) pain score on postoperative day (POD) 1 (higher scores = worse pain). Secondary outcomes included same day discharge, voiding status, analgesic use, nausea/vomiting, activity level, and adverse events. Women were followed for 12 weeks. Twenty-one per arm were required to detect a 2-point change on the NRS (a=0.05, 90% power).

RESULTS: Of 281 women screened, 139 (49.5%) were eligible and 75 (26.7%) were randomized with no differences in demographics or procedural characteristics among study arms. There were no significant differences in POD 1 NRS pain scores or other secondary outcomes among study arms (Table). One week after surgery, 73.0% were at or better than their preoperative activity level, increasing to 83.3% by 12 weeks. There was no difference in timing of return to baseline activity among study arms (p>0.25). At POD 3, SSLF had significantly higher NRS scores than USLS or obliterative procedures [4.5 (4.0-7.0) vs. 2.0 (0.5-4.75) vs. 2.5 (2.0-5.0), p = 0.049]. A trend towards higher NRS scores for SSLF occurred at 6 hours and POD 1 (p = 0.09 and p = 0.06).

CONCLUSION: In women undergoing vaginal native tissue apical prolapse repair, preoperative LAM and PN injections with bupivacaine and dexamethasone did not improve postoperative pain

control. Most women were at or better than their preoperative activity level 1 week after surgery. SSLF may induce more postoperative pain than USLS or obliterative procedures.

Table. Demographic, Procedural and Outcome Variables (n=75) *

Variable Name	Placebo (n=25)	Bupivacaine (n=25)	Bupivacaine + Dexamethasone (n=25)	p-value
Baseline Characteristics				
Age (years)	70.2 ± 9.2	68.0 ± 10.1	68.8 ± 13.6	0.78
BMI (kg/m^2)	26.6 ± 4.3	28.4 ± 4.2	27.4 ± 4.1	0.31
Race				0.14
White	24 (96.0%)	21 (84.0%)	22 (88.0%)	-
Black	0 (0%)	4 (16.0%)	2 (8.0%)	-
Other or not reported	1 (4.0%)	0 (0%)	1 (4.0%)	-
Medicare insurance	18 (72.0%)	17 (73.9%)	16 (66.7%)	0.90
ASA class				0.53
1	0 (0%)	2 (8.3%)	1 (4.2%)	-
2	14 (60.9%)	16 (66.7%)	13 (54.2%)	-
3	9 (39.1%)	6 (25.0%)	10 (41.7%)	-
Preoperative POPQ				
Genital hiatus	4.5 (4.0-5.0)	5.0 (3.9-5.5)	4.0 (3.5-6.0)	0.65
Point Ba	2.0 (0.5-4.5)	2.0 (0.0-5.0)	2.0 (1.0-5.0)	0.99
Point C	-0.5 (-4.0-4.0)	-1.0 (-4.0-4.0)	-4.0 (-5.5-4.5)	0.40
Point Bp	-2.0 (-2.5-0.8)	0.0 (-2.0-2.0)	-2.0 (-3.0-2.5)	0.15
Baseline NRS pain score	0 (0-0)	0 (0-0.3)	0 (0-0)	0.89
Baseline NV score	0 (0-0)	0 (0-0)	0 (0-0)	0.38
Procedure Characteristics				
Apical Procedure				0.44
Uterosacral suspension	11 (44.0%)	8 (32.0%)	4 (16.0%)	-
Sacrospinous fixation	3 (12.0%)	3 (12.0%)	2 (8.0%)	-
Colpocleisis	7 (28.0%)	9 (36.0%)	14 (56.0%)	-
Levator myorrhaphy	4 (16.0%)	5 (20.0%)	5 (20.0%)	-
Concomitant hysterectomy	12 (48.0%)	13 (52.0%)	13 (52.0%)	0.99
Concomitant MUS	0 (0%)	3 (12.0%)	1 (4.0%)	0.18
Estimated blood loss (mL)	100 (50-150)	100 (50-150)	50 (50-100)	0.14
Other local anesthetic (mL)	25.0 (19.0-35.0)	35.0 (22.0-42.5)	30.0 (19.5-37.5)	0.17
Intraoperative OME	0 (0-0)	0 (0-4.0)	0 (0-0)	0.26
Procedure time (hours)	2.0 (1.6-2.8)	2.3 (1.8-2.8)	2.1 (1.5-2.6)	0.70
Primary Outcome				
POD 1 NRS pain score	3.75 (2.0-6.5)	4.0 (2.0-5.0)	3.0 (1.0-5.0)	0.39
Secondary Outcomes				
Additional NRS pain scores				
6 hours postoperative	1.75 (0.6-4.0)			
POD 2	4.0 (2.8-6.0)	3.0 (2.0-4.0)	1.0 (0.5-4.0)	0.25
POD 3	3.5 (0.5-5.8)	3.0 (2.0-4.0)	3.0 (1.0-5.0)	0.17
1 week postoperative	1.0 (0.0-4.0)	2.5 (2.0-3.3)	3.0 (2.0-5.0)	0.45
Same day discharge	20 (80.0%)	2.0 (1.0-4.0)	1.5 (1.0-2.0)	0.68
Required catheter or CISC	14 (56.0%)	22 (88.0%)	20 (80.0%)	0.80
Postoperative analgesic use	8.0 (2.0-20.0)	11 (44.0%)	13 (52.0%)	0.72
PACU OMEs	15.0 (7.5-30.0)	4.0 (0-15.75)	8.0 (0.0-16.0)	0.27
POD 1 OMEs	15.0 (7.5-30.0)	10.0 (6.3-18.8)	15.0 (7.5-22.5)	0.38
POD 2 OMEs	18.8 (9.4-30.0)	15.0 (8.8-17.5)	7.5 (7.5-15.0)	0.24
POD 3 OMEs	1700 (1050-2100)	15.0 (5.0-30.0)	15.0 (7.5-26.3)	0.60
POD 1 Ibuprofen (mg)	1900 (1800-2400)	1200 (1200-1800)	1800 (1200-2400)	0.47
POD 2 Ibuprofen (mg)	2400 (1200-2400)	1200 (1200-1800)	1800 (1200-2400)	0.05
POD 3 Ibuprofen (mg)	0 (0-0)	1800 (1200-2400)	1700 (1200-2400)	0.44
Postoperative NV score	0 (0-0)	0 (0-0)	0 (0-0)	0.88
Urinary tract infection	1 (4.0%)	2 (8.0%)	2 (8.0%)	0.99
Adverse events^	4 (16.0%)	2 (8.0%)	5 (20.0%)	0.43

*N (%), mean±SD, or median (IQR). Body mass index(BMI), American Society of Anesthesiologists(ASA), pelvic organ prolapse quantification system(POPQ), numeric rating scale(NRS), nausea/vomiting(NV), midurethral sling(MUS), oral morphine equivalent(OME), postoperative day(POD), self-catheterization(CISC), postanesthesia care unit(PACU). ^Four were related to study intervention.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lauren Giugale: Nothing to disclose; Lindsay Baranski: Nothing to disclose; Nicholas Schott: Nothing to disclose; Trent Emerick: Nothing to disclose; Pamela Moalli: Nothing to disclose.

11 Seeding and growing rat mesenchymal stem cells on a polypropylene mesh scaffold

K. McDonald[1], L. Frejo[2], D. Shalom[1,4], H. Winkler[1,4], D. Grande[2,3], D. O'Shaughnessy[1]

[1]Urogynecology Division, Northwell Health, Great Neck, NY, [2]Grande Lab, Feinstein Institute for Medical Research, Manhasset, NY, [3]Orthopedics Department, Zucker School of Medicine at Hofstra/Northwell, Garden City, NY, [4]Urogynecology, Zucker School of Medicine at Hofstra/Northwell, Garden City, NY

OBJECTIVES: To evaluate the feasibility of seeding and growing rat mesenchymal stem cells on polypropylene mesh, to allow for future study of stem cell impact on tissue integration of implanted mesh.

MATERIALS AND METHODS: Sterile lightweight polypropylene mesh (Upsylon Y-Mesh, Boston Scientific Corporation) was divided into 32 1 x 1 cm samples. Sixteen mesh samples were pre-coated with Poly-L-Lysine at 2 ug per cm2 of mesh as per the manufacturer's protocol, then incubated for one hour and rinsed with DPBS. Pre-coated mesh and uncoated mesh were plated on hydrophobic culture plates (Low Form PTFE Evaporating Dishes) to encourage cell adhesion to mesh. Rat adipose mesenchymal stem cells (MSCs) were seeded on mesh at 10,000 cells per mesh, condensed in 50 uL of medium (DMEM12 with 10% FBS and 1% PennStrep). Cells were incubated on mesh for 2 hours then additional medium was added. Cells were cultured at 37 degrees and 5% CO2, with medium changes every 4 days. At days 12 and 21 mesh specimens were removed for imaging by light microscopy at a magnification of 10x. A cell count was estimated with alamarBlue assay at days 12 and 21 by incubation of two sets of mesh specimens from each condition. Absorbance was read on a microplate spectrophotometer and compared to a standard curve of rat MSCs plated at serial dilutions. Unpaired t-test was performed to compare cell count by both time point and pre-coating condition.

RESULTS: Cell count demonstrated no significant difference between 12 and 21 days culture ($p = 0.89$), or with Poly-L-Lysine coating (Table 1; day 12 $p = 0.47$, day 21 $p = 0.94$). Review of light microscopy images demonstrated that stem cells preferred tightly woven parts of the mesh, and were unable to traverse larger pores, illustrated in images at 12 and 21 days (Image 1, Image 2, stem cells indicated with arrows).

CONCLUSION: Our protocol for growing rat mesenchymal stem cells on polypropylene mesh demonstrates this is technically feasible. Additionally, we have found that increasing culture time from 12 to 21 days, and precoating of mesh with Poly-L-Lysine did not result in a significantly greater cell count with this sample size. Our protocol allows further research on a novel use of stem cells within our field, facilitating exploration of the impact of stem cells on immune reaction to mesh and integration of mesh. Future studies could use shorter culture times, test pre-coating with a larger sample size, and increase the concentration of cells seeded initially to optimize cell count adherent on mesh.

Table 1. Rat Mesenchymal Stem Cells Count Estimated by alamarBlue Assay at Days 12 and 21

Culture Condition	Cell Count at Day 12	Cell Count at Day 21
Mesh Only Control	0	0
Uncoated Mesh Plate #1	632	1125
Uncoated Mesh Plate #2	1445	1245
Pre-coated Mesh Plate #1	1446	1097
Pre-coated Mesh Plate #2	1348	1292

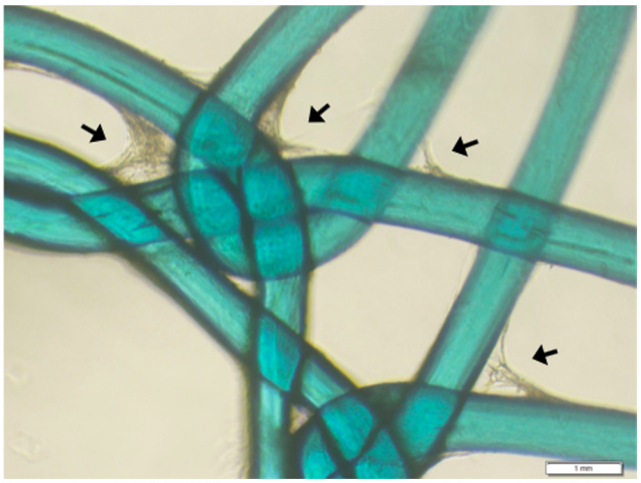


Image 1: 10x Light Microscopy Image of Rat Mesenchymal Stem Cells on Pre-Coated Mesh, Day 12.

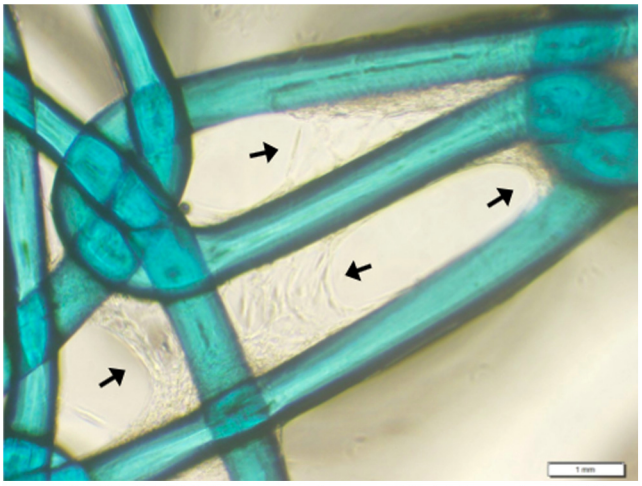


Image 1: 10x Light Microscopy Image of Rat Mesenchymal Stem Cells on Pre-Coated Mesh, Day 21

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Katherine McDonald: Nothing to disclose; Lidia Frejo: Nothing to disclose; Dara Shalom: Nothing to disclose; Harvey Winkler: Tepha, Principal Investigator, Research Grant; Boston Scientific, Consultant, Consulting Fee; Caldera, Consultant, Consulting Fee; Contipi, Consultant, Consulting Fee; Johnson and Johnson, Expert Witness, Consulting Fee; Daniel Grande: Tepha, Principle Investigator, Research Grant; Danielle O'Shaughnessy: Tepha, Principle Investigator, Research Grant.

12 Pelvic organ prolapse surgery improves biomechanical conditions and integrity of the weak pelvic floor

H. van Raalte[1], P. Takacs[2], V. Lucente[3], S. Shobeiri[4], L. Hoyte[5], V. Egorov[6]

[1]Princeton Urogynecology, Princeton, NJ, [2]Eastern Virginia Medical School, Norfolk, VA, [3]The Institute for Female Pelvic Medicine & Reconstructive Surgery, Allentown, PA, [4]INOVA Women's Hospital, Falls Church, VA, [5]The Pelvic Floor Institute, Ta, FL, [6]Advanced Tactile Imaging, Inc., Trenton, NJ

OBJECTIVES: The objective of this study is to identify pre-surgical biomechanical conditions of the pelvic floor which allow improvements of biomechanical parameters in the results of pelvic organ prolapse surgery.

MATERIALS AND METHODS: This multisite clinical study was designed to explore changes in tissue elasticity, pelvic support, and certain functions (contractive strength, muscle relaxation speed, muscle motility) after pelvic organ prolapse (POP) surgery. A biomechanical mapping of the pelvic floor was performed before and 4 to 6 months after the surgery. The biomechanical data for 52 parameters were acquired by vaginal tactile imaging (VTI) for manually applied deflection pressures to vaginal walls and pelvic muscle contractions. The two-sample t-test ($p < 0.05$) was employed to test the null hypothesis that pre-surgery data in Group 1 (positive parameter change after surgery) and pre-surgery data in Group 2 (negative parameter change after surgery) belonged to the same distribution.

RESULTS: Seventy-eight subjects with 255 surgical procedures were analyzed across five participating clinical sites. All 52 t-tests for Group 1 versus Group 2 had p-value in the range form $4.0*10^{-10}$ to $4.3*10^{-2}$ associating all of the 52 parameter changes after surgery with the pre-surgical conditions. The p-value of before and after surgery correlation ranged from $3.7*10^{-18}$ to $1.6*10^{-2}$ for 50 of 52 tests with Pearson correlation coefficient ranging from -0.79 to -0.27. Results for two parameters are shown in Figures 1 and 2. This means that post-surgical changes of VTI parameters have negative correlation with the pre-surgical values of these parameters. These observed negative correlations indicate that POP surgery improves pelvic floor conditions for low values of the biomechanical parameters, associated with weak pelvic floor conditions. Positive change or improvement in VTI parameters after a surgical procedure signifies: (a) an increase in pressure response value (kPa) at the same tissue deformation, (b) an increase in pressure gradient value (stress-to-strain ratio, kPa/mm), which relates to tissue elasticity, (c) an increase of contractive pressure or force value (kPa or N) from a pelvic muscles, (d) a decrease of muscle relaxation speed (kPa/s), or an increase in mobility of a pelvic muscle along the vagina (mm). The integrity of the pelvic floor with low pre-surgical biomechanical parameters is also improved.

CONCLUSION: Pelvic organ prolapse surgery, in general, improves the biomechanical conditions and integrity of the weak pelvic floor.

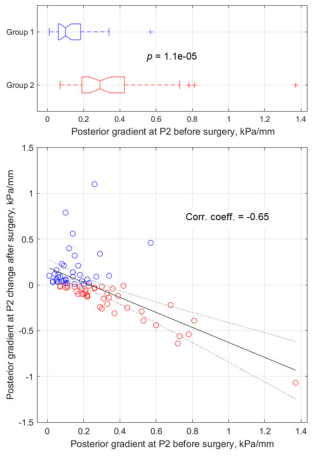


Figure 1. Posterior Level II pelvic support change after surgery versus its pre-surgery value.

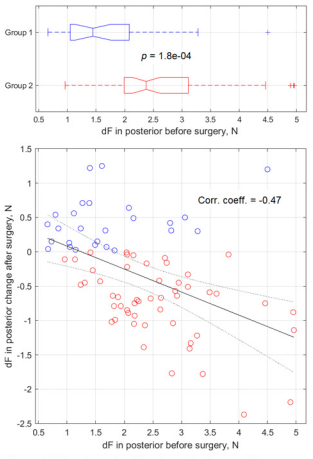


Figure 2. Muscle contractive strength change after surgery versus its pre-surgery value (reflex contraction, cough).

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Heather van Raalte: Advanced Tactile Imaging, Inc., Minor shareholder, Nothing; Peter Takacs: Nothing to disclose; Vincent Lucente: Nothing to disclose; S Abbas Shobeiri: Nothing to disclose; Lennox Hoyte: Nothing to disclose; Vladimir Egorov: Advanced Tactile Imaging, Inc., CEO, minor shareholder, Full time job.

13 Sexual function after pelvic organ prolapse surgery: A systematic review comparing different approaches to pelvic floor repair

D. Antosh[1], E. Balk[4], S. Kim-Fine[6], K. V. Meriwether[5], G. Kanter[7], A. Dieter[8], M. Mamik[9], M. Good[10], R. Singh[10], A. Alas[11], M. Foda[2], D. D. Rahn[12], R. G. Rogers[3]

[1]Obstetrics and Gynecology, Houston Methodist Hospital, Houston, TX, [2]University of Central Florida College of Medicine, Starke, FL, [3]University of Texas at Austin Dell Medical School, Austin, TX, [4]Brown University School of Public Health, Providence, RI, [5]University of New Mexico, Albuquerque, NM, [6]University of Calgary, Calgary, Alberta, Canada, [7]Salinas Valley Medical Clinic, Salinas, CA, [8]University of North Carolina, Hillsborough, NC, [9]Albert Einstein School of Medicine, New York, NY, [10]University of Florida Health, Jacksonville, FL, [11]University of Texas San Antonio, San Antonio, TX, [12]UT Southwestern Medical Center, Dallas, TX

OBJECTIVES: Women consider preservation and improvement of sexual function (SF) an important goal following pelvic organ prolapse (POP) surgery. We aimed to systematically review and compare sexual activity and function before and after prolapse surgery in native tissue (NT) repairs, transvaginal synthetic mesh (TVM), biologic grafts (BG), and sacrocolpopexy (SCP).

MATERIALS AND METHODS: We included prospective, comparative and randomized studies of pelvic organ prolapse (POP) surgeries that reported SF outcomes. Data sources included MEDLINE, Embase, and clinicaltrials.gov databases from inception to April 2018. Studies were extracted for population characteristics, SF outcomes, and methodological quality. Data collected included baseline and postoperative sexual activity, dyspareunia, and validated sexual function questionnaire scores. Four comparisons were made: TVM vs. NT, SCP vs. NT, BG vs. NT, and TVM vs. SCP.

RESULTS: We screened 3124 abstracts and identified 63 original studies. The overall quality of evidence was moderate to high. After excluding other POP surgery comparisons, there were 24 studies comparing TVM vs. NT, 5 studies of SCP vs. NT, 7 studies of BG vs. NT, and 3 studies of TVM vs. SCP. Some studies had multiple comparisons. For TVM vs NT, baseline or postoperative sexual activity, baseline or postoperative total dyspareunia, and de novo dyspareunia, no statistical differences were found, but there were higher rates of persistent dyspareunia postoperatively in TVM (OR 9.0; 95% CI 2.6, 31.5; 4 comparisons). Changes in PISQ-12 scores were also not different between TVM vs. NT (net difference −0.4; 95% CI −1.4, 0.6; 9 comparisons). For SCP vs. NT, baseline or postoperative sexual activity, baseline or postoperative total dyspareunia, de novo dyspareunia, or PISQ-12 score differences were not found. For BG vs. NT, baseline or postoperative sexual activity, baseline or postoperative total dyspareunia, or PISQ-12 differences were not found. For TVM vs. SCP, there was no difference in baseline or postoperative sexual activity. Based on 1 study, postoperative total dyspareunia was higher in TVM (OR 2.5; 95% CI 1.1, 6.1); de novo dyspareunia was not reported for this comparison.

CONCLUSION: Sexual function comparisons are most robust between vaginal mesh and native tissue repairs and show similar prevalence of sexual activity, de novo dyspareunia, and sexual function scores. Persistent dyspareunia after surgery was higher in TVM compared to NT. Although sexual function data are sparse in the other comparison groups, no differences in sexual activity, dyspareunia, and SF score change were found. Sexual function scores in general improved and were similar among groups.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Danielle Antosh: Nothing to disclose; Ethan Balk: Nothing to disclose; Shunaha Kim-Fine: Nothing to disclose; Kate V. Meriwether: Elsevier, writer for textbook, royalties; Gregg Kanter: Nothing to disclose; Alexis Dieter: Nothing to disclose; Mamta Mamik: Nothing to disclose; Meadow Good: Nothing to disclose; Ruchira Singh: Nothing to disclose; Alexandriah Alas: Nothing to disclose; Mohamed Foda: Nothing to disclose; David D. Rahn: Pfizer, Researcher, research support grant; Rebecca G. Rogers: UpToDate, writer, royalties.

14 Coincidental appendectomy in the surgical management of women with endometriosis and pelvic pain

W. T. Ross[1], A. Chu[1], L. Li[1], P. Keller[1], A. Kunselman[1,2], G. J. Harkins[1], T. Deimling[1], A. S. Benton[1]

[1]Department of Obstetrics and Gynecology, Penn State Health, Hershey, PA, [2]Public Health Sciences, Penn State Health, Hershey, PA

OBJECTIVES: The purpose of this study is to describe the rate of appendiceal endometriosis (AppE) in women having coincidental appendectomy at time of gynecologic surgery for pelvic pain, stage I-II endometriosis, or stage III-IV endometriosis. Coincidental appendectomy as standard of care in surgery for endometriosis and chronic pelvic pain has not been widely adopted largely due to uncertainty as to the prevalence of appendiceal pathology and procedure safety.

MATERIALS AND METHODS: This is a retrospective case series in which data were obtained by review of an internal database, with validation of data through chart review, tracking women having coincidental appendectomy during surgery for endometriosis or pelvic pain. All patients were from an academic tertiary referral hospital in the Northeastern United States between March 2013 and June 2019. Our primary outcome is the association between surgically documented endometriosis and AppE. Secondary outcomes include AppE association with other pathology and complications associated with coincidental appendectomy.

RESULTS: Six hundred nine consecutive women were included in the analysis. Intraoperative findings were evaluated categorically in the following groups: no endometriosis (n = 56, 9%), stage I-II endometriosis (n = 409, 67%), or stage III-IV endometriosis (n = 144, 24%). AppE was present in 14.6% of women and was significantly associated with the indication for appendectomy. AppE was present in 3.6% of women with no endometriosis, 8.3% with stage I-II endometriosis, and 37.5% with stage III-IV endometriosis. When compared to negative appendiceal pathology, AppE was significantly associated with endometriosis (OR 4.7, CI 2.4, 9.1, p < 0.001), and was not associated with the presence of adenomyosis or fibroids alone. There was no association between AppE and age or BMI. There were no intraoperative or postoperative complications related to coincidental appendectomy up to 12 weeks postoperative.

CONCLUSION: Women with endometriosis have an increased risk of AppE, greatest with stage III-IV endometriosis. Given the high prevalence of AppE in this population and the minimal complication risk with coincidental appendectomy, it should form part of complete endometriosis excision for these patients.

Table 1

Characteristic	Odds Ratio (95% Confidence Interval)	P-value
Indication for Coincidental Appendectomy		
Pelvic pain	Reference	---
Endometriosis- stage I-II	2.4 (0.6 – 10.5)	0.23
Endometriosis- stage III-IV	16.2 (3.8 – 69.1)	<0.001
Surgical Pathology Correlated to Positive AppE		
None	Reference	---
Endometriosis only	4.7 (2.4 – 9.1)	<0.001
Endometriosis + Adenomyosis	4.2 (1.4 – 12.3)	0.01
Endometriosis + Fibroids	2.6 (1.1 – 6.0)	0.02
Endometriosis + Adenomyosis + Fibroids	7.3 (3.1 – 17.1)	<0.001

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Whitney T. Ross: Nothing to disclose; Amanda Chu: Titan Medical Inc., Consulting, Honorarium; Linda Li: Nothing to disclose; Pamela Keller: Nothing to disclose; Allen Kunselman: Merck, Owns stocks, Ownership interest; Gerald J. Harkins: AbbVie, Speaker, Honorarium; Titan Medical Inc., Consulting, Honorarium; Timothy Deimling: AbbVie, Speaker, Honorarium; Andrea S. Benton: Nothing to disclose.

15 Outcomes of the defining mechanisms of anterior vaginal wall descent trial

S. T. Bowen[1], P. Moalli[2], S. Abramowitch[1], M. Lockhart[3], L. Meyn[4,2], C. Nager[5], A. G. Visco[6], H. E. Richter[7], C. Rardin[8], Y. Komesu[9], H. S. Harvie[10], M. R. Paraiso[11], D. Mazloomdoost[12], A. Sridhar[13], M. G. Gantz[13], F. PFDN[12]

[1]Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, [2]Department of Obstetrics, Gynecology & Reproductive Sciences, University of Pittsburgh Medical Center, Pittsburgh, PA, [3]Department of Radiology, University of Alabama at Birmingham, Birmingham, AL, [4]Magee-Womens Research Institute, Pittsburgh, PA, [5]Department of Reproductive Medicine, University of California, San Diego, La Jolla, CA, [6]Department of Obstetrics and Gynecology, Duke University Medical Center, Durham, NC, [7]Department of Obstetrics and Gynecology, University of Alabama at Birmingham, Birmingham, AL, [8]Brown University/Women & Infants Hospital, Providence, RI, [9]Department of Obstetrics and Gynecology, University of New Mexico, Albuquerque, NM, [10]Department of Obstetrics and Gynecology, University of Pennsylvania, Philadelphia, PA, [11]Cleveland Clinic, Cleveland, OH, [12]NICHD/NIH, Rockville, MD, [13]RTI International, PFDN, Research Triangle Park, NC

OBJECTIVES: To define the mechanism of anterior vaginal compartment failure following apical suspension procedures.

MATERIALS AND METHODS: Eighty-four women with uterovaginal prolapse treated via a vaginal hysterectomy with uterosacral ligament suspension (native tissue repair [NTR], N = 41) or a transvaginal mesh hysteropexy (VM, N = 40) underwent a pelvic MRI, at rest and maximal strain, 30-42 months post-surgery. Outcomes were obtained from "true mid-sagittal" images from aligned rest and dynamic sequences using a 3D pelvic coordinate system. MRI-based surgical failures were defined as vaginal apex descent >-1/2 TVL or descent of any portion of the vagina beyond the hymen. The primary outcome was the mechanism of failure (descent of apex vs anterior vaginal wall elongation). Secondary outcomes were displacement of the vaginal apex and perineal body, change in length of the vaginal perimeter, anterior and posterior vaginal walls, and vaginal introitus at rest vs maximal strain. Fisher's Exact was used to assess group differences in failure mechanisms, Mann Whitney U to compare secondary outcomes, and logistic regression modeling for predictors of failure.

RESULTS: Eighty-one subjects (41 NTR, 40 VM) were analyzed; 37 were MRI failures with 26 NTR and 11 VM (P = 0.002). The primary mechanism of failure in both groups was apical descent (N = 28; 18 NTR, 10 VM) with anterior vaginal wall elongation being less common (N = 9; 8 NTR, 1 VM), and no difference in failure type between NTR and VM (P = 0.23). Secondary outcomes associated with failure were greater inferior displacement of the vaginal apex and perineal body, greater change in anterior and posterior vaginal wall length, and greater increase in vaginal introitus size from rest to strain (Table 1). There was no difference in these between NTR and VM. Logistic regression showed that greater increase in anterior vaginal wall length (aOR 4.0, 1.1-14.7, P = 0.033) and greater inferior displacement of the perineal body (aOR 0.92, 0.86-0.98, P = 0.016) with strain were associated with higher risk of failure.

CONCLUSION: The primary mechanism of failure following an apical suspension procedure using native tissues or a mesh augmented hysteropexy was descent of the vaginal apex. Further studies will provide insight into factors predisposing to apical descent.

Table 1. Secondary outcomes in MRI successes vs failures.

Change in measurement from rest to maximal strain (mm)	MRI Success N=44	MRI Failure N=37	P-value*
Vaginal Apex Anterior-Posterior Displacement+	1.41 (-1.89, 4.62)	1.22 (-2.60, 11.82)	0.32
Vaginal Apex Superior-Inferior Displacement$^{\pi}$	-21.35 (-31.98, -10.78)	-29.49 (46.74, -18.23)	0.014
Perineal Body Anterior-Posterior Displacement+	5.65 (2.09, 10.46)	5.74 (-1.20, 9.15)	0.62
Perineal Body Superior-Inferior Displacement$^{\pi}$	-11.08 (-15.97, -4.90)	-15.20 (-20.33, -10.10)	0.014
Anterior Vaginal Wall Length$^{\circ,\ddagger}$	1.35 (-3.30, 4.56)	14.36 (0.77, 19.25)	<0.001
Posterior Vaginal Wall Length$^{\circ,\ddagger}$	-1.24 (-7.08, 3.64)	-8.30 (-16.18, -0.14)	0.004
Vaginal Introitus Length$^{\circ}$	4.20 (0.09, 9.33)	14.33 (7.90, 21.10)	<0.001

Data median (IQR); + anterior positive and posterior negative value; π superior positive and inferior negative value; $^{\circ}$ increase positive and decrease negative value; ‡ length relative to observed apex after strain

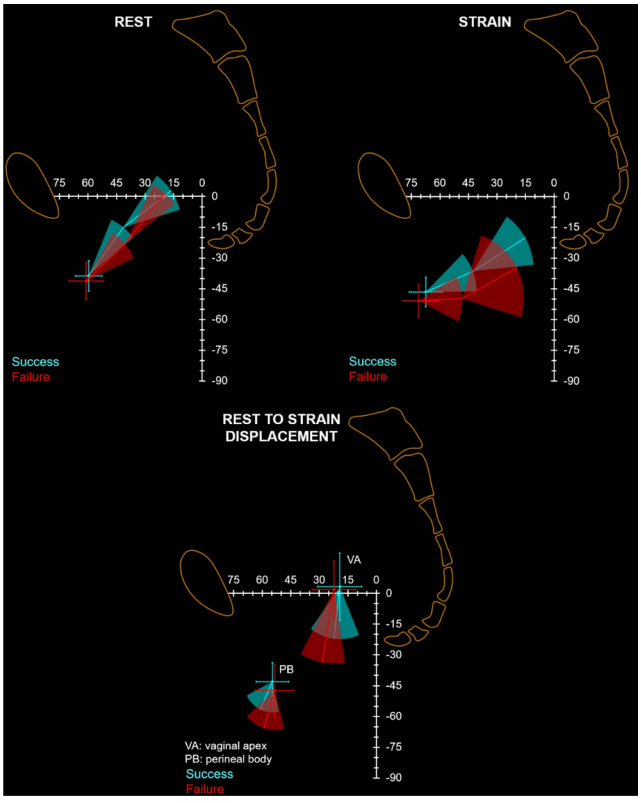


Figure 1. Top: Vaginal configuration with respect to the pelvic space at rest (left) and maximal strain (right). The position of the pubic symphysis and sacrum are shown for orientation. The vaginal shape is represented by axes of the upper and lower half of the vagina. The mean and standard deviation of the vaginal introitus midpoint are given by the points and error bars respectively. The mean and standard deviation of the vaginal axes' angles are shown by the lines and shaded areas respectively. Bottom: Displacement vectors and positions (mean and standard deviation) of the vaginal apex (VA) and perineal body (PB). Differences between MRI success (blue) and failure (red) groups are depicted.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shaniel T. Bowen: Nothing to disclose; Pamela Moalli: Amphora Medical, Inc., Consultant, consulting fee; Boston Scientific, independent contractor, Grant/Research Support; NIH/NICHD, independent contractor, Grant/Research Support; Steven Abramowitch: Nothing to disclose; Mark Lockhart: Nothing to disclose; Leslie Meyn: Nothing to disclose; Charles Nager: Nothing to disclose; Anthony G. Visco: NinoMed, Major Stock Shareholder, stock; Holly E. Richter: Renovia, independent contractor, Grant/Research Support; UpToDate , licensor, Royalties; International Urogynecology Journal, Editor, Reimbursement for travel and editorial work related to journal; Obstetrics and Gynecology Journal, Editor, Reimbursement for travel and editorial work related to journal; Worldwide Fistula Fund, board membership, Reimbursement for travel only; Charles Rardin: Solace Therapeutics , independent contractor, Grant/Research Support; Pelvalon, Inc., independent contractor, Grant/Research Support; Foundation for Female Health Awareness, independent contractor, Grant/Research Support; NICHD - Pelvic Floor Disorders Network, independent contractor, Grant/Research Support; Yuko Komesu: Nothing to disclose; Heidi S. Harvie: Nothing to disclose; Marie Fidela R. Paraiso: Nothing to disclose; Donna Mazloomdoost: Nothing to disclose; Amaanti Sridhar: Nothing to disclose; Marie G. Gantz: Nothing to disclose; For the PFDN: Nothing to disclose.

16 Bundled interventions and an institutional focus on infection prevention significantly reduces post-hysterectomy infectious morbidity

S. Uppal, A. Tilea, D. Morgan, M. D. Pearlman
Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI

OBJECTIVES: To determine the impact of bundled interventions to prevent infectious morbidity after hysterectomy.

MATERIALS AND METHODS: An Infection prevention bundle was developed utilizing elements of previously published checklists as well as several data-driven measures developed from the Michigan Surgical Quality Collaborative (MSQC) to reduce post-hysterectomy infectious morbidity. These Michigan specific interventions included: addition of Metronidazole to first-generation cephalosporins for antibiotic prophylaxis, administration of beta-lactam antibiotics (unless the patient had documented anaphylactic reaction to penicillin), subcuticular closure of open incisions, early removal of Foley catheter. Moreover, an institutional focus on reducing infections consisted of a dedicated multi-disciplinary surgical site infection prevention committee consisting of infection prevention specialists, operating room nursing, surgeons and departmental leadership. Simultaneously, institution-wide efforts to increase handwashing and implement enhanced recovery were launched. All patients undergoing hysterectomy between 10/08/2015 - 10/07/2018 were divided into 3 equal yearly time frames for the analysis. Clinicopathologic data, operative details, and 30-day outcomes were obtained from three sources: electronic medical record, MSQC outcome dataset, and departmental infection prevention committee database. The primary outcome of interest was overall infection rate. This included superficial surgical site infection, deep and organ space infections, *Clostridium difficile* infection, culture proven urinary tract infections and others.

RESULTS: A total of 1,867 hysterectomies were included in the analysis. Baseline demographic and operative details were similar between the patients in the three timeframes. Overall, 30-day infection rate fell from 4.5% (29/644) during year-1 to 2.6% (16/607) during year-2 to 2.1% (13/616) in year-3 ($p = 0.036$). Details of each category of infection included are presented in Table 1. On multivariate analysis, after adjusting for age, race, body mass index, malignancy and surgical approach, year of surgery remained an independent predictor with lower odds of infection (year-2 vs. year-1: OR 0.364 [95% CI 0.14 − 0.95]; year-3 vs. year-1: OR 0.281[95% CI 0.095 − 0.84]).

CONCLUSION: A systemwide approach of implementing bundled interventions with an emphasis on infection prevention can significantly reduce infectious morbidity after hysterectomy.

Table 1: Details of Infectious Morbidity by Year

Morbidity (30-days postoperative)	Year-1 (N=644)	Year-3 (N=607)	Year-3 (N=616)	p-value
All Infections	29 (4.5%)	16 (2.6%)	13 (2.1%)	0.036
Superficial Surgical Site	11 (1.7%)	7 (1.2%)	7 (1.1%)	0.25
Deep Surgical Site	5 (0.8%)	0 (0%)	2 (0.3%)	0.25
Urinary Tract Infections	13 (2%)	7 (1.2%)	4 (0.6%)	0.09
Clostridium Difficile	2 (0.3%)	1 (0.2%)	0 (0%)	0.39
Other	0 (0%)	1 (0.2%)	2 (0.3%)	0.36

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shitanshu Uppal: Nothing to disclose; Anca Tilea: Nothing to disclose; Daniel Morgan: Nothing to disclose; Mark D. Pearlman: Nothing to disclose.

17 A multicenter retrospective cohort comparing urethral diverticulectomy with and without concomitant pubovaginal sling

S. E. Bradley[1], D. A. Leach[2], J. Panza[3], J. Sassani[4], C. Escobar[5], J. Ogorek[6], E. Jackson[7], P. Hudson[8], J. J. Hamner[9], P. E. Smith[10], M. Schroeder[11], A. M. Wyman[7], R. E. Gutman[1]

[1]Female Pelvic Medicine and Reconstructive Surgery, MedStar Washington Hospital Center/Georgetown University, Washington, DC, [2]Female Pelvic Medicine and Reconstructive Surgery, Mayo Clinic, Rochester, MN, [3]Obstetrics & Gynecology, Vanderbilt University Medical Center, Nashville, TN, [4]Department of Obstetrics & Gynecology, University of Pittsburgh Medical Center, Pittsburgh, PA, [5]Obstetrics & Gynecology, New York University School of Medicine, New York, NY, [6]Obstetrics & Gynecology, Emory, Atlanta, GA, [7]Obstetrics & Gynecology, University of South Florida, Tampa, FL, [8]Female Pelvic Medicine & Reconstructive Surgery, Massachusetts General Hospital, Boston, MA, [9]Female Pelvic Medicine & Reconstructive Surgery, UTSW, Dallas, TX, [10]Female Pelvic Medicine & Reconstructive Surgery, The Ohio State University, Columbus, OH, [11]Female Pelvic Medicine & Reconstructive Surgery, Cooper, Camden, NJ

OBJECTIVES: The objective of this study was to compare the clinical presentation, outcomes, complications and recurrence rates in women who underwent urethral diverticulectomy (UD) with versus without a concurrent pubovaginal sling (PVS).

MATERIALS AND METHODS: This multi-center retrospective cohort study included women who underwent UD between Jan 1, 2000 and Dec 31, 2016. Subjects were identified by CPT code and records reviewed for demographics, medical/surgical history, symptoms, preoperative testing, concomitant surgeries, and postoperative outcomes. Symptoms, recurrence rates and complications were compared between women with and without a concomitant PVS. The primary outcome was the presence of postoperative stress urinary incontinence (SUI). Based on a SUI rate of 50% with no PVS and 10% with concomitant PVS, we needed 141 diverticulectomy alone and 8 with PVS to achieve 83% power, $p < 0.05$.

RESULTS: We identified 485 UD cases from 11 institutions; 96 (19.7%) had concomitant PVS. Women that had PVS were older (53 vs 46, $p < 0.001$) and had more prior diverticulectomy (31% vs 7%, $p < 0.0001$). Postoperative follow-up (14.6 ± 26.9 months) was similar between groups. The PVS group had greater preoperative SUI (70.8% vs 33.4%, $p < 0.0001$), dysuria (46.9% vs 30.3%, $p = 0.002$), and recurrent UTI (49% vs 33.4%, $p = 0.004$) (Table 1). Postoperatively, the PVS group had greater resolution of SUI (56.2% vs 22.1%, $p < 0.0001$), overactive bladder (23.9% vs 13.4%, $p = 0.01$) and urge urinary incontinence (21.8% vs 16.6%, $p = 0.045$). There were no differences in de novo SUI (4.1% PVS vs 10.2%, $p = 0.06$) and persistent SUI (14.6% PVS vs 11.3%, $p = 0.37$) between groups. However, more postoperative urinary retention (>6 weeks) (8.3% vs 1.3%, $p = 0.0001$) and recurrent UTI (49% vs 33.4%, $p = 0.004$) was seen in the PVS group (Table 2). Severe complications were infrequent and overall diverticulum recurrence rate was 10.1% and did not differ between groups.

CONCLUSION: This large retrospective cohort demonstrates greater resolution of SUI and overall UI with PVS at the time of UD. Recurrence rates and complications were similar except for more perioperative retention and UTIs following PVS.

	PREOPERATIVE			POSTOPERATIVE		
	No PVS n=389 n (%)	PVS n=96 n (%)	p	No PVS n=389 n (%)	PVS n=96 n (%)	p
UUI	90 (23)	33 (34.3)	0.022	78 (21.1)	26 (27)	0.213
OAB	64 (16.5)	26 (27.1)	0.022	78 (20.1)	26 (27.1)	0.134
SUI	130 (33.4)	68 (70.8)	<0.0001	84 (21.6)	18 (18.8)	0.546
Recurrent UTI	130 (33.4)	47 (49)	0.004	21 (5.4)	10 (10)	0.096
Bulge	141 (36.2)	28 (29.1)	0.190	11 (2.8)	0 (0)	0.097
Dysuria	118 (30.3)	45 (46.9)	0.002	22 (5.6)	5 (5.2)	0.877
Vaginal Pain	127 (32.6)	35 (36.4)	0.479	24 (6.2)	8 (8.3)	0.458
Dyspareunia	100 (25.7)	31 (32.2)	0.198	11 (2.8)	1 (1)	0.306
Post-Void Dribbling	84 (21.6)	23 (23.4)	0.702	11 (2.8)	4 (4.2)	0.476
Voiding Dysfunction.	100 (25.7)	21 (21.9)	0.449	20 (5.1)	14 (14.6)	0.001

Table 1: Preoperative and postoperative symptoms among women that underwent urethral diverticulectomy (UD) with vs without concomitant pubovaginal sling (PVS)

	No PVS (n=389) n (%)	PVS (n=96) n (%)	p
	PERIOPERATIVE COMPLICATIONS (<6 weeks postop)		
UTI	61 (15.7)	16 (16.6)	0.828
Urinary Retention	15 (3.9)	11 (11.4)	0.003
Wound Infection	4 (1)	1 (1)	1
Readmission	11 (2.8)	0 (0)	0.097
Reoperation	8 (2)	1 (1)	0.509
	POSTOPERATIVE COMPLICATIONS (>6 weeks postop)		
Urethral Stricture	7 (1.8)	2 (2)	0.896
Urethrovaginal Fistula	3 (0.7)	0 (0)	0.411
Recurrent UTI	10 (2.6)	10 (10.4)	0.0006
Urinary Retention	5 (1.3)	8 (8.3)	0.0001
Carcinoma	4 (1)	2 (2)	0.427
Vesicovaginal Fistula	2 (0.5)	0 (0)	0.487
		DIVERTICULUM RECURRENCE	
Recurrence	36 (9.3)	13 (13.5)	0.221

Table 2: Peri- and post-operative complications and recurrence rates among women that underwent urethral diverticulectomy (UD) with vs without concomitant pubovaginal sling (PVS).

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sarah E. Bradley: Nothing to disclose; Douglas A. Leach: Nothing to disclose; Joseph Panza: Nothing to disclose; Jessica Sassani: Nothing to disclose; Christina Escobar: Nothing to disclose; John Ogorek: Nothing to disclose; Elisha Jackson: Nothing to disclose; Patricia Hudson: Nothing to disclose; Jennifer J. Hamner: Nothing to disclose; Pamela E. Smith: Nothing to disclose; Michelle Schroeder: Nothing to disclose; Allison M. Wyman: Nothing to disclose; Robert E. Gutman: Boston Scientific, Site PI, Consultant on Strategic Advisory Board, Research grant for eVAULT, honorarium for consultant on advisory board.

01 Randomized controlled trial assessing the effect of patient education on postoperative opioid consumption after prolapse surgery

K. Buono[1], E. Whitcomb[2], N. Guaderrama[2], E. Lee[1], J. Ihara[2], N. T. Sudol[2,1], F. L. Lane[1], J. Lee[2], B. Dave[1], T. Brueseke[1]
[1]FPMRS, University of California, Irvine, Orange, CA, [2]FPMRS, Southern California Permanente Medical Group, Irvine, CA

OBJECTIVES: The aim of the study was to determine whether providing specialized perioperative counseling decreases opioid consumption within 2 weeks following pelvic organ prolapse (POP) surgery.

MATERIALS AND METHODS: This was a randomized, controlled, study of women undergoing POP surgery at a large academic medical center and community HMO. Subjects were randomized to either standard or specialized counseling; the latter included educational handouts with FDA recommendations regarding opioid consumption, storage, and disposal methods. Subjects in both groups were prescribed a standard analgesic regimen including ibuprofen, acetaminophen, and 150 oral morphine equivalents (OME) of oxycodone. The primary outcome was postoperative OME consumption. Secondary outcomes included pain scores, additional postoperative opioid prescriptions, patient satisfaction, and opioid storage/disposal patterns. An a priori sample size calculation demonstrated that 63 subjects were required in each group to detect a consumption difference of 37.5mg OME ($\sim$ 5 tablets of oxycodone) between groups with an alpha of 0.05 and 80% power.

RESULTS: One hundred thirty-five subjects were included in the final analysis (65 standard and 70 specialized counseling). There were no significant demographic differences between subjects in the two groups. Subjects in the educational group were more likely to have a concomitant perineorrhaphy (61.4% vs. 40%, $p=0.01$), but otherwise there were no significant differences between the 2 groups in type and duration of surgery, concomitant anti-incontinence procedures, perioperative complications, or length of postoperative hospitalization (all $p>0.05$). Subjects in the standard and specialized counseling groups consumed similar quantities of OME, both during the postoperative hospitalization (32.5 mg vs. 35.9 mg) and 2 weeks postoperatively (38.5 mg vs. 61.8 mg). The overall median OME consumed at 2 weeks after surgery was 15 mg (IQR 0,75), which is the equivalent of 2 tablets of oxycodone 5 mg. Fifty-four subjects (40%) did not consume any opioids post discharge. Subjects in both groups were found to have similar opioid storage/disposal patterns, opioid refill rates, satisfaction with the prescription, and pain scores (all $p > 0.05$). Subjects whose OME consumption were in the top quartile ($\geq$75 mg) were more likely to be younger and have a history of depression, anxiety or chronic pain. They were also more likely to have a preexisting opioid prescription, consume more OME during the postoperative hospitalization, and have an opioid refill within 2 weeks (all $p < 0.05$).

CONCLUSION: Specialized perioperative counseling did not affect postoperative opioid consumption, storage, or disposal after POP surgery. Forty percent of subjects did not consume opioids after hospital discharge. Postoperative opioid consumption was low with acceptable pain scores, which could help inform future prescribing patterns.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kristen Buono: Nothing to disclose; Emily Whitcomb: Nothing to disclose; Noelani Guaderrama: Nothing to disclose; Elizabeth Lee: Nothing to disclose; Jun Ihara: Nothing to disclose; Neha T. Sudol: Nothing to disclose; Felicia L. Lane: Nothing to disclose; Jennifer Lee: Nothing to disclose; Bhumy Dave: Nothing to disclose; Taylor Brueseke: Nothing to disclose.

02 The effect of music listening on preoperative anxiety in female pelvic medicine and reconstructive surgery: A randomized controlled trial

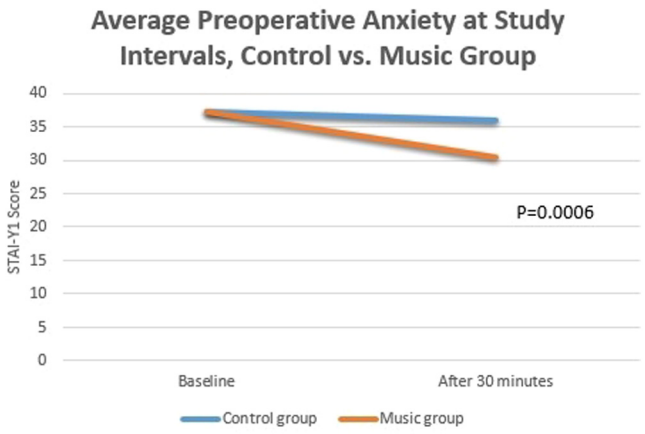
Y. B. Chen[1], H. Barnes[1], L. Westbay[1], W. Birte[2], M. Shannon[3], M. Acevedo Alvarez[1], E. R. Mueller[1], T. T. Pham[1]
[1]Female Pelvic Medicine and Reconstructive Surgery, Departments of Obstetrics/Gynecology and Urology, Loyola University Medical Center, Maywood, IL, [2]Obstetrics and Gynecology, Swedish Covenant Hospital, Chicago, IL, [3]Obstetrics and Gynecology, Virginia Women's Center, Richmond, VA

OBJECTIVES: Preoperative anxiety has been associated with increased postoperative pain and lower patient satisfaction. The purpose of this study was to evaluate the effect of listening to music just prior to surgery on preoperative anxiety compared to usual care in patients undergoing reconstructive pelvic surgery.

MATERIALS AND METHODS: Patients scheduled for reconstructive pelvic surgery at our tertiary care center were enrolled on the day of their surgery approximately 45 minutes prior to the anticipated surgery start time. Following consent, all participants completed the Spielberg State Trait Anxiety Inventory Y1 (STAI-Y1) to measure baseline state anxiety levels prior to surgery. Demographic information, past surgical history, and a questionnaire regarding musical background and preferences were collected. Participants were then randomized to either the usual care (control group) or listening to music on headphones (music intervention group). Those in the music group could choose between several genres of prerecorded music. After 30 minutes, the STAI-Y1 questionnaire was re-administered. The primary outcome was the change in anxiety score as measured by the STAI-Y1. Descriptive statistics, T-tests, and Fisher's Exact Test were used to analyze the data.

RESULTS: Sixty-six women completed the study; 34 participants in the control group and 32 participants in the music group. Racial/ethnic distribution, age, prior history of surgery, and music background and preferences were similar amongst those in the control group and the music group. Surgical indications included one or more of the following diagnosis: pelvic organ prolapse (44%), stress urinary incontinence (34%), urge urinary incontinence (6%), mesh exposure (5%), vaginal mass/diverticula (5%), genitourinary fistula (4%), and sling revision (2%). Participants reported that they found classical music (26%), soft rock (26%), country (17%), jazz (11%), and gospel music (10%) most relaxing. Baseline STAI-Y1 scores on the day of surgery were similar between the two groups (37.29 ± 11.57 in control group vs. 37.25 ± 9.02 in music group). STAI-Y1 scores significantly improved in the music group after 30 minutes of music listening compared to the control group (-6.81 vs. -1.59, $P = 0.006$).

CONCLUSION: Patients undergoing reconstructive pelvic surgery present with moderate anxiety on the day of surgery. Allowing patients to listen to their preferred music is a simple intervention that may lower preoperative anxiety in this patient population.



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Yufan B. Chen: Nothing to disclose; Hayley Barnes: Nothing to disclose; Lauren Westbay: Nothing to disclose; Wolff Birte: Nothing to disclose; Megan Shannon: Nothing to disclose; Marian Acevedo Alvarez: Nothing to disclose; Elizabeth R. Mueller: Nothing to disclose; Thythy T. Pham: Nothing to disclose.

03 Understanding patient interest and preferences for same-day discharge after minimally invasive hysterectomy

L. Westbay[1], A. Dixon[1], M. Tipton[1], W. Adams[2], S. Wagner[1], S. C. Graziano[1], L. C. Yang[1]
[1]Obstetrics and Gynecology, Loyola University Medical Center, Maywood, IL, [2]Loyola University of Chicago, Chicago, IL

OBJECTIVES: Over a decade of research has demonstrated that same-day discharge (SDD) after minimally invasive hysterectomy (MIH) is safe and does not impact readmission rates. However, patient interest in SDD has not been well studied. This study aimed to assess patient interest in SDD at varying time points in the perioperative period and to understand patient preferences for time to discharge.

MATERIALS AND METHODS: This prospective observational study recruited women undergoing MIH for benign or oncologic indications from April 2018 to 2019. Prior to and during the study period, MIH cases at this institution were mainly performed as inpatient cases with next-day discharge. Patients answered a survey assessing interest in SDD preoperatively, 4-6 hours postoperatively, and on postoperative day one, as well as expectations for length of stay. Patient demographics and perioperative parameters were abstracted from the electronic medical records. Univariable exact logistic regression models were used to estimate the odds of desiring SDD.

RESULTS: Ninety-two patients were enrolled in the study. The mean age was 47.8 (SD = 10.1). The most common surgery was total laparoscopic hysterectomy (n = 57, 62.6%). Seven patients (7.6%) were discharged home on the same day of surgery, although the majority (n = 63, 70.8%) were meeting discharge criteria. Preoperatively, 60 patients (65.2%) expressed interest in SDD. The most common reason for patients desiring overnight admission was pain control (n = 39, 61%). Patients who met discharge milestones were 4.24 (95% CI: 1.10 to 24.43, exact $p = 0.03$) times more likely to desire SDD. Additionally, patients expecting to stay at least one night were 0.12 (95% CI: 0.01 to 0.72, exact $p = 0.02$) times as likely to desire SDD compared to the few patients (n = 8) who expected SDD. Age, surgical route, indication, duration of surgery, start time, and time of postoperative check were not statistically associated with interest in SDD.

CONCLUSION: The majority of patients expressed interest in SDD after MIH. Patients meeting discharge criteria and expecting SDD were more likely to be interested in SDD, whereas patients expecting an overnight admission were less likely to desire SDD. Pain control was the most common reason for preference for next-day discharge. Preoperative counseling including expectations for length of stay and pain management strategies may positively impact and promote patient desire for SDD.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lauren Westbay: Nothing to disclose; Alison Dixon: Nothing to disclose; Matthew Tipton: Nothing to disclose; William Adams: Nothing to disclose; Sarah Wagner: Nothing to disclose; Scott C. Graziano: Nothing to disclose; Linda C. Yang: KLAAS, LLC, Partial Owner, Ownership Interest.

04 National trends in readmission rates for sling procedures by hospital type and synthetic vs autologous grafts

N. Ringel[1,2], S. E. Bradley[1,2], C. Iglesia[1,2]
[1]Female Pelvic Medicine and Reconstructive Surgery, Medstar Washington Hospital Center, Washington, DC, [2]Georgetown University School of Medicine, Washington, DC

OBJECTIVES: Readmission rates after sling procedures have been previously described, ranging from 0.59% to 1.16%. However, a national readmission rate has not been calculated at the population level, and no specific rates have been reported based on type of hospital or type of sling. As patients become increasingly wary of mesh use in pelvic surgery, surgeons must understand the impact that different graft types have on hospital readmissions. The purpose of this study is to calculate national 30-day readmission rates for sling procedures performed at various types of hospitals, and to compare readmission rates between autologous vs synthetic slings.

MATERIALS AND METHODS: A national collaborative readmissions database was queried from 2010 to 2016. Female patients greater than 18 years of age who underwent sling procedures were identified using International Classification of Diseases (ICD9-CM and ICD10-PCS) codes and stratified by age, type of hospital (urban vs rural and teaching vs non-teaching) and whether they had a synthetic or autologous graft. Readmission rates were determined based on calculated weighted frequencies of discharges in a month to approximate 30-day readmission rates and produce national estimates. Continuous variables were described by mean ± standard deviation (SD) and two sample t-tests were used to examine differences in the averages between two groups. Categorical variables were described by frequencies and percentages, and Chi-square was used to investigate differences between the two groups.

RESULTS: We identified 15,306 sling procedures and 492 readmissions (3.2%). Teaching hospitals and urban hospitals had higher rates of readmissions than non-teaching hospitals and rural hospitals (2.9% vs 3.7%, p = 0.01; 2.2 vs 3.4%, p = 0.029). Readmitted patients were slightly older (59.9 ± 15.5 vs 57.6 ± 13.4 years, p = 0.0002). Weighted frequencies depicting national estimates are shown in Figure 1. Coding for synthetic vs autologous slings was only available from 2015 to 2016 - 5.2% of slings were autologous. Weighted national readmission rates for synthetic vs autologous

slings were 3.28% and 6.6%, respectively, which approached statistical significance (p = 0.078).

CONCLUSION: Readmission rates for slings are higher in urban and teaching hospitals. While rates of readmissions after slings with autologous grafts were higher than those with synthetic grafts, this difference was not statistically significant. Further study is needed to better understand the impact that use of autologous grafts in sling procedures has on readmissions.

Figure 1: Weighted Frequencies for National Estimates of Readmission Rates

	TOTAL	READMISSIONS	RATE (%)	P-VALUE
SLINGS (ALL YEARS)	32,897	1,138	3.45%	
HOSPITAL TYPE				
URBAN	29,350	1,063	3.62%	0.0155
RURAL	3,548	74	2.09%	
TEACHING	17,529	441	2.52%	0.0018
NON-TEACHING	15,368	696	4.53%	

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Nancy Ringel: Nothing to disclose; Sarah E. Bradley: Nothing to disclose; Cheryl Iglesia: Nothing to disclose.

05 Perioperative adverse events in women undergoing vaginal prolapse repair with uterine preservation or hysterectomy

A. S. Yuan, O. Chang, C. Ferrando
Center of Urogynecology and Pelvic Reconstructive Surgery, Cleveland Clinic, Cleveland, OH

OBJECTIVES: To compare the incidence of perioperative adverse events in women undergoing vaginal prolapse repair with uterine preservation (hysteropexy) versus concurrent hysterectomy.

MATERIALS AND METHODS: This was a retrospective matched cohort study of women undergoing vaginal native tissue repair with or without hysterectomy for treatment of uterovaginal prolapse between January 2012 and June 2019. Subjects were included if they underwent either extraperitoneal native tissue colpopexy with sacrospinous suspension (CPT code 57282) or intraperitoneal native tissue colpopexy with uterosacral suspension (CPT code 57283). Mesh-augmented prolapse repair procedures were excluded. Cohorts (uterine preserving [hysteropexy] versus hysterectomy) were matched by surgeon, surgical year and subject age. The electronic medical record was queried for demographic and perioperative data. Clavien-Dindo grading was used for all clinically relevant adverse events.

RESULTS: A total of 390 subjects met inclusion criteria: 130 hysteropexies (89 sacrospinous, 41 uterosacral) and 260 concurrent hysterectomies (6 sacrospinous, 253 uterosacral, 1 both). Mean age and BMI for all patients were 58 (±13) years and 27.9 (±6) kg/m^2, respectively. Patient characteristics and concurrent procedures did not differ between groups, with the exception of concurrent non-prolapse procedures (e.g. salpingectomy), which were more common in the hysterectomy group. When postoperative UTIs were excluded, the overall incidence of adverse events was 13.9% (95% CI 11%-18%). Compared to hysteropexy, cases with concurrent hysterectomy were longer (median operative time 145 vs 96 min, p < 0.0001), had higher blood loss (median EBL 150 vs 50 mL, p < 0.0001) and were associated with longer hospital stay (≥ 2 day stay incidence 14.2% vs 6.9%, p = 0.03). Concurrent hysterectomy cases were also associated with higher rates of any perioperative adverse event (29.0% vs 10.5%, p = 0.02), including higher intraoperative ureteral obstruction (5% vs 0.0%, p = 0.0060). Overall, there was no difference in Clavien-Dindo grade 3 complications between concurrent hysterectomy and hysteropexy procedures (0.8% vs 1.3%, p = 0.12). In a sub-analysis looking at the two hysteropexy types (sacrospinous vs uterosacral), there were no significant differences in adverse events between the groups.

CONCLUSION: The overall incidence of serious adverse events is low in women with uterovaginal prolapse undergoing native tissue repair with or without hysterectomy. Prolapse repair with uterine preservation is associated with shorter operating times, a shorter length of stay, less blood loss, and a lower risk of intraoperative ureteral obstruction.

Table 3. Perioperative Adverse Events

Variable	All women (N = 390)	Hysteropexy (n = 130)	Hysterectomy + Colpopexy (n = 260)	p value
Intraop Complication % (n)	8.0 (31)	2.3 (3)	10.8 (28)	0.003
Bladder injury	1.0 (4)	1.5 (2)	0.7 (2)	0.60
Ureteral obstruction	3.3 (13)	0 (0)	5.0 (13)	0.006
Bowel injury	0.5 (2)	0 (0)	0.8 (2)	0.55
Vascular injury	0	0	0	N/A
Estimated blood loss ≥300 ml	3.3 (13)	0 (0)	5.0 (13)	0.006
Transfusion	0	0	0	N/A
Visceral (i.e. Uterine) injury	0.3 (1)	0.8 (1)	0 (0)	0.33
Length of Stay ≥2 Days % (n)	11.8 (46)	6.9 (9)	14.2 (37)	0.03
Post-Op Urinary Retention* % (n)	33.9 (132)	33.1 (43)	34.2 (89)	0.05
Reoperation within 30 d % (n)	1.8 (7)	3.1 (4)	1.2 (3)	0.23
Readmission within 30 d % (n)	3.3 (13)	0.8 (1)	4.6 (12)	0.07
ICU admission % (n)	0.3 (1)	0 (0)	0.4 (1)	1.00
Postop complication % (n)	34.1 (133)	30.0 (39)	36.2 (94)	0.22
Urinary tract infection (UTI)	29.5 (115)	26.2 (34)	31.2 (81)	0.30
Culture-proven		82.4 (28)	53.1 (43)	0.002
Postop complication excluding UTI % (n)	7.2 (28)	6.9 (9)	7.3 (19)	0.89
Surgical site infection	2.1 (8)	3.1 (4)	1.5 (4)	0.45
Delayed urinary tract injury	0	0	0	
Delayed bowel injury	0	0	0	
Neurologic injury	1.5 (6)	3.1 (4)	0.8 (2)	0.10
Hematoma	1.0 (4)	1.5 (2)	0.8 (2)	0.60
Transfusion	1.0 (4)	0.8 (1)	1.2 (3)	1.00
Venous thromboembolism	0.8 (3)	0 (0)	1.2 (3)	0.55
Cardiac complication	0.5 (2)	0 (0)	0.8 (2)	0.55
Respiratory complication	0.5 (2)	0 (0)	0.8 (2)	0.55
Bowel obstruction	0			
Ileus	0.5 (2)	0 (0)	0.8 (2)	0.55
Any adverse event % n/N (n)	39.5 (154)	10.5 (41)	29.0 (113)	0.02
Excluding UTI % n/N (n)	13.9 (54)	2.8 (11)	11.0 (43)	0.02
Clavien-Dindo Grade 3 complication % (n)	2.0 (8)	1.3 (5)	0.8 (3)	0.12

*Urinary Retention: Requiring indwelling catheter or intermittent straight catheterization

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Angela S. Yuan: Nothing to disclose; Olivia Chang: Nothing to disclose; Cecile Ferrando: Nothing to disclose.

06 Supracervical or total hysterectomy at the time of a laparoscopic colpopexy: national trends in surgical practice

W. D. Winkelman[1,2,3], A. Modest[2,3], M. Richardson[2,3]
[1]Department of Obstetrics and Gynecology, Mount Auburn Hospital, Cambridge, MA, [2]Department of Obstetrics, Gynecology, and Reproductive Biology, Beth Israel Deaconess Medical Center, Boston, MA, [3]Department of Obstetrics, Gynecology, and Reproductive Biology, Harvard Medical School, Boston, MA

OBJECTIVES: To assess national trends and associated morbidity in the preferred route of hysterectomy for patients undergoing a concurrent laparoscopic colpopexy and to determine if the 2014 FDA safety communication about power morcellation impacted these national trends.

MATERIALS AND METHODS: A retrospective cohort study of surgical cases from The American College of Surgeons National Surgical Quality Improvement Program was conducted from 2010 to 2017. Patients were included if they underwent a laparoscopic colpopexy and a concurrent hysterectomy. Surgical cases were identified using CPT codes. Patients who underwent concomitant surgery for a gynecologic cancer were excluded. To assess the effect of the 2014 FDA safety warning, an interrupted time-series analysis was conducted comparing the time period from the first quarter of 2010 to the first quarter of 2014 with the time period from the second quarter of 2014 to the fourth quarter of 2017.

RESULTS: We identified 7729 surgical cases of which 4292 (55.0%) involved a total hysterectomy and 3480 (45.0%) involved a supracervical hysterectomy. Demographics and comorbidities were similar between the two groups. Overall patients were a mean of 56.5 ± 11.7 years of age at the time of surgery and had a mean BMI of 28.4 ± 5.9 kg/m^2. The proportion of patients undergoing an abdominal colpopexy with a concurrent total hysterectomy remained relatively unchanged from 64.2% in 2010 to 52.5% in 2017. In the interrupted time series analysis, we did not see a significant change in the type of hysterectomy performed before and after the 2014 FDA safety communication about the electric power morcellator (p=0.37 in the first quarter after the FDA warning and p=0.26 for the remaining time period). Patients undergoing a concurrent total hysterectomy had similar postoperative morbidity when compared to those undergoing a concurrent supracervical hysterectomy, although patients undergoing total concurrent hysterectomy had higher organ space surgical site infections (0.6% vs. 0.2%, p=0.006). Overall 11.7% of patients undergoing a concurrent total hysterectomy were admitted to the hospital for at least two days following surgery and 17.0% of patients undergoing a supracervical hysterectomy were admitted for at least two days following surgery.

CONCLUSION: Patients undergoing a laparoscopic colpopexy and concurrent hysterectomy are as likely to undergo a concurrent supracervical hysterectomy as a concurrent total hysterectomy and there was no significant changed in this trend from 2010 to 2017. There does not appear to have been a change in the national trends despite the challenges with tissue extraction brought about by the FDA safety communication on power morcellation. The perioperative risks were similar between groups although patients with a concurrent supracervical hysterectomy were more likely to have a hospital admission of at least two days.

Table 1: Surgical approach to a minimally invasive abdominal colpopexy and concurrent hysterectomy from 2010 through 2017

Year	Total (n=7772)	Minimally invasive colpopexy, total hysterectomy	Minimally invasive colpopexy, supracervical hysterectomy
2010	109	70 (64.2)	39 (35.8)
2011	431	228 (52.)	203 (47.0)
2012	695	371 (53.4)	324 (46.6)
2013	970	500 (51.5)	470 (48.5)
2014	1065	608 (57.1)	457 (42.9)
2015	1238	769 (62.1)	469 (37.9)
2016	1522	832 (54.7)	690 (45.3)
2017	1742	914 (52.5)	828 (47.5)

Data presented as n (%) across the rows

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: William D. Winkelman: Nothing to disclose; Anna Modest: Nothing to disclose; Monica Richardson: Nothing to disclose.

07 Development of a "safety zone" for rectus abdominis fascia graft harvest based on dissections of the ilioinguinal and iliohypogastric nerves

O. O. Cardenas-Trowers[1], J. Bergden[2], J. T. Gaskins[3], A. Gupta[1], S. L. Francis[1], N. Herring[2]

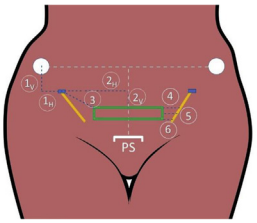
[1]Department of Obstetrics, Gynecology, and Women's Health, Division of Female Pelvic Medicine & Reconstructive Surgery, University of Louisville, Louisville, KY, [2]Department of Anatomical Sciences and Neurobiology, University of Louisville School of Medicine, Louisville, KY, [3]Department of Bioinformatics and Biostatistics, University of Louisville School of Public Health and Information Sciences, Louisville, KY

OBJECTIVES: As a result of the vaginal mesh controversy, surgeons are performing more non-mesh, autologous fascia pubovaginal slings to treat stress urinary incontinence in women. The rectus abdominis fascia is the most commonly harvested site for autologous pubovaginal slings, so it is crucial that surgeons are familiar with the relationship between this graft harvest site and the ilioinguinal and iliohypogastric nerves, which can be injured during this procedure. The aims of this study were to (1) estimate the safest area between the bilateral courses of the ilioinguinal and iliohypogastric nerves where a rectus abdominis fascia graft could be harvested with minimal risk of injury to these nerves; and (2) determine the location and dimensions of a graft harvest site that maximized graft length while remaining close to the pubic symphysis.

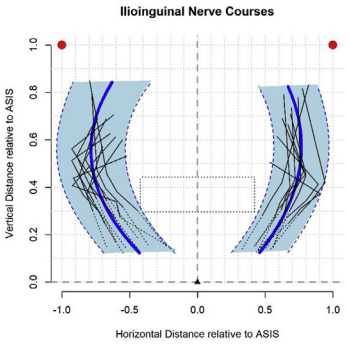
MATERIALS AND METHODS: The ilioinguinal and iliohypogastric nerves were dissected bilaterally in 12 unembalmed female anatomical donors. The distances of these nerves to a 10x2 cm rectus abdominis fascia graft site located 4 cm above the pubic symphysis were measured. Nerve courses inferior to the graft were determined for each donor by linearly extrapolating measurement points; analysis was performed with and without extrapolation. Average nerve trajectories were estimated assuming a linear regression function to predict the horizontal measurement as a quadratic function of the vertical distance; 95% confidence bands were also estimated. An estimated "safety zone" was determined to be the region between all credible nerve bounds.

RESULTS: The largest safety zone that was closest to the pubic symphysis was located at 5.4 cm superior to the pubic symphysis. At this location, the inferior border of the graft could measure 9.4 cm in length (4.7 cm bilaterally from the midline). Extrapolated nerve courses below the study graft site yielded a smaller safety zone located 2.7 cm superior to the pubic symphysis, allowing for the inferior border of the graft to be 4.8 cm (2.4 cm bilaterally from the midline).

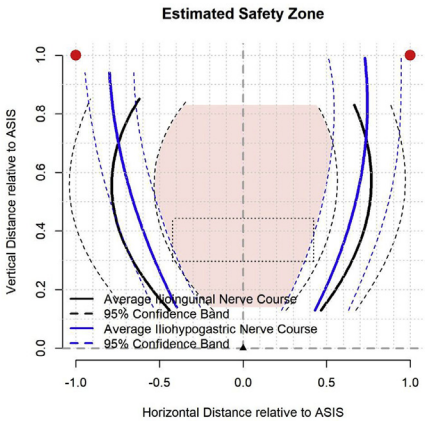
CONCLUSION: A rectus abdominis fascia graft harvested 5.4 cm superior to the pubic symphysis with the inferior border of the graft measuring 9.4 cm in length, should minimize injury to the ilioinguinal and iliohypogastric nerves. These dimensions allow for the longest graft while remaining relatively close to the pubic symphysis. The closer a graft is harvested to the pubic symphysis, the smaller in length the graft must be to avoid injury to the ilioinguinal and iliohypogastric nerves.



Graft and nerve measuring points. The green rectangle is the 10x2 graft site located at 4 cm above the pubic symphysis (PS). White circles are the anterior superior iliac spines. Blue boxes are the points of nerve emergence through the anterior abdominal wall. Orange lines are the nerves of interest. Only one nerve is shown on each side for simplicity. Numbers represent the study measurement points.



Ilioinguinal nerve course in relation to a rectus abdominis fascia graft site. The individual ilioinguinal nerve courses and average nerve trajectory with 95% confidence band are shown. Linear extrapolation shows the projection of the nerve courses inferior to the graft site.



Average courses of the ilioinguinal and iliohypogastric nerves with estimated "safety zone". The average courses of the ilioinguinal and iliohypogastric nerves and the 95% confidence bands based on the paths with linear extrapolation. The estimated "safety zone" is the shaded region in between the 95% confidence bands. The graft site is shown for reference.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Olivia O. Cardenas-Trowers: AMAG Pharmaceuticals, Inc., Investigator, Research grant; Jessica S. Bergden: Nothing to disclose; Jeremy T. Gaskins: Nothing to disclose; Ankita Gupta: Nothing to disclose; Sean L. Francis: Nothing to disclose; Nicole Herring: Nothing to disclose.

08 Regenerative medicine approach to augment surgical repair of anal sphincter injuries: Injection of purified exosome product may improve anorectal manometry parameters and sphincter integrity

C. K. Kisby[1], T. Rolland[2], I. Shadrin[3], P. Stalboerger[4], E. Trabuco[1]

[1]Urogynecology, Mayo Clinic, Rochester, MN, [2]Mayo Clinic, Rochester, MN, [3]Internal Medicine, Mayo Clinic, Rochester, MN, [4]Center for Regenerative Medicine, Mayo Clinic, Rochester, MN

OBJECTIVES: Our objective was to evaluate the utility of concomitant injection of a human plasma derived exosome product (Purified Exosome Product; PEP) during surgical repair of anal sphincter injuries in a porcine model of obstetric anal sphincter injury. We aimed to evaluate the impact on anorectal manometry parameters and wound healing.

MATERIALS AND METHODS: Six 80 Kg female pigs (2 control, 4 treatment) were utilized. Anal sphincter injury was induced with a proctoepisiotomy and repaired end-to-end in the standard fashion. During repair, the 2 control animals received injection of collagen gel into the anal sphincter and surrounding tissues; the 4 treatment animals received injection of collagen + PEP in the same distribution. Anorectal manometry was performed pre-injury, post-injury repair, and 6 weeks postoperatively. Rest and squeeze (induced by muscle stimulator) pressures were obtained in duplicate. Following the baseline intervention, animals underwent a 6-week healing period after which they were sacrificed and tissues were analyzed. Specimens were examined grossly for wound breakdown or sphincter non-union. Tissue analysis included Hematoxylin and Eosin and Masson's Trichrome staining and immunohistochemistry. Data visualization techniques were utilized.

RESULTS: All animals had grossly intact wounds at 6-weeks, although 2 control animals experienced diarrhea and bacteremia requiring antibiotic treatment. The 6-week median anorectal manometry rest pressure for the control group was 24.2 mmHg [16.1, 32.6] versus 27.5 mmHg [20.2, 30.3] in the PEP group. Median squeeze pressures were 39.6 mmHg [control group; 29.3, 50.3] versus 50.4 mmHg [PEP group; 40.9, 62.7] (Table 1). The animals who received PEP demonstrated a subjective increase in gross muscle volume and union at the prior injury site (Figure 1); whereas, control animals exhibited adipose and/or fibrotic tissue along the prior injury site. PEP treated animals had greater evidence of de novo skeletal muscle fiber regeneration (evidenced by localized EdU) and neovascularization at the prior injury site on immunohistochemistry (Figure 2).

CONCLUSION: The addition of PEP injection to standard of care surgical repair of anal sphincter injuries resulted in greater de novo skeletal muscle growth at the injury site and neovascularization as compared to controls. In this pilot study, these promising histological changes resulted in trends toward higher median rest and squeeze pressures on anorectal manometry for the PEP treated

group. If reproduced, PEP augmentation to end-to-end repair may have potential to improve fecal continence after obstetric anal sphincter injuries.

Table 1. Anorectal Manometry Pressures

	N	Median [IQR]
Resting Pressures (mmHg)		
Day 0	6	22.3 [16.5, 26.3]
Day 42 Control	2	24.2 [16.1, 32.6]
Day 42 PEP	4	27.5 [20.2, 30.3]
Squeeze Pressures (mmHg)		
Day 0	6	32.4 [30.9, 38.4]
Day 42 Control	2	39.6 [29.3, 50.3]
Day 42 PEP	4	50.4 [40.9, 62.7]

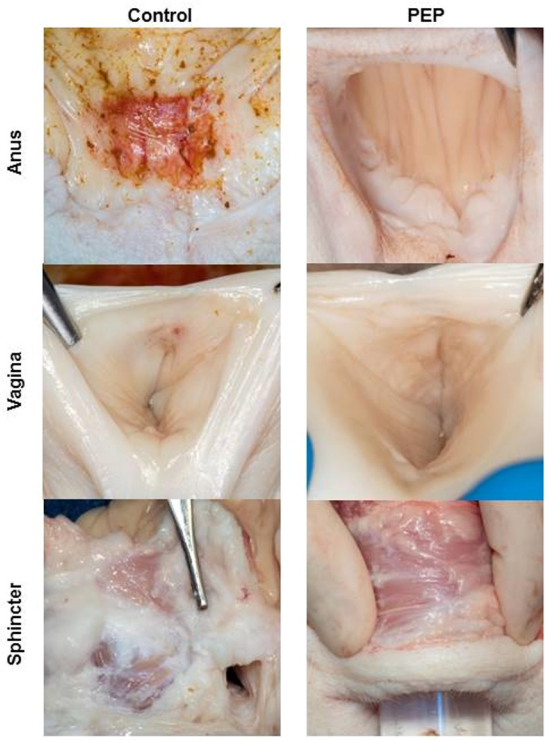


Figure 1. Gross and histologic specimens 6 weeks status post anal sphincter injury, surgical repair, and injection of collagen (control) or Purified Exosome Product (PEP) with collagen. The control animals showed persistent post-surgical changes in the anus > vagina (left, top & middle) and the anal sphincter had subjectively less muscle near the injury site. PEP-treated tissues regenerated to normal anal and vaginal architecture (right, top & middle) and had robust muscle growth at the injury site (right, bottom).

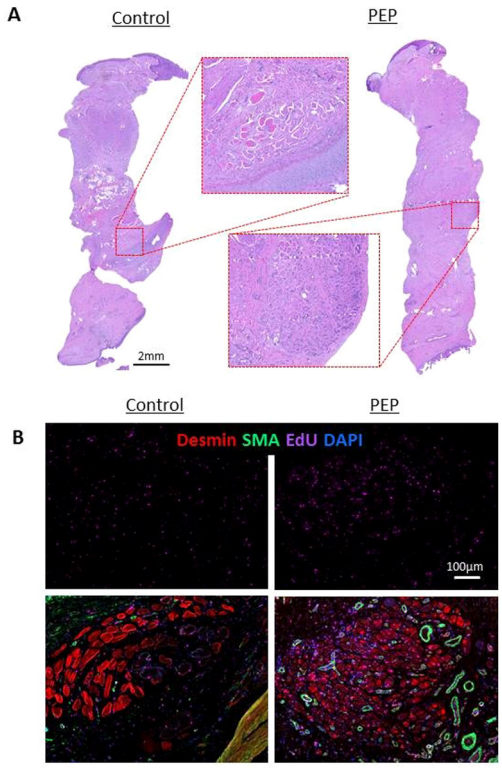


Figure 2. Histologic and Immunofluorescence Results. A: Hematoxylin and Eosin stained core biopsies with areas of striated muscle representing the external anal sphincter magnified. The PEP-treated tissues demonstrate more robust regeneration of muscle fibers. B: Tissues stained for desmin, smooth muscle, EdU (for regenerated cells), and DAPI (nuclear stain). Controls – moderate EdU presence (top, left) and muscle fiber regeneration (bottom, left). PEP – Robust presence of EdU (top, right) and muscle fibers demonstrate dense regrowth with higher neovascularization compared to control (bottom, right).

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Cassandra K. Kisby: Nothing to disclose; Tyler Rolland: Nothing to disclose; Ilya Shadrin: Nothing to disclose; Paul Stalboerger: Nothing to disclose; Emanuel Trabuco: UpToDate, writer/consultant, honorarium; Elsevier, writer/consultant, honorarium.

09 Adverse events associated with gender affirming vaginoplasty surgery

Cecile Ferrando
Cleveland Clinic, Cleveland, OH

OBJECTIVES: To describe perioperative adverse events related to vaginoplasty surgery for transgender women and to determine a threshold case number needed to reduce adverse events.

MATERIALS AND METHODS: This was a retrospective study of all women who underwent vaginoplasty at a tertiary care center. Women were included if 6-month outcomes were available. Once patients were identified, perioperative data were collected. Comparisons of adverse events and perioperative outcomes were made between varying threshold case numbers to determine the case number needed to significantly reduce adverse events. Once this threshold was determined, outcomes were compared between cases performed before and after this threshold.

RESULTS: Between December 2015 and March 2019, 76 vaginoplasty cases were performed. Mean age and BMI were 41 (±17) and 27.3 (±5.1). Of the patients, 83.4% (71) underwent full depth vaginoplasty while remaining patients underwent a zero-depth procedure. Median surgical time was 210 (138-362) minutes. Median follow-up was 12.5 (6-50) months. The incidence of any

intraoperative adverse event was 2.6% (95% CI 1.8, 4.1) while the incidence of any immediate (<30 days) and delayed (>30 days) postoperative event was 19% (95% CI 16.4, 22.2) and 25% (95% CI 22.4, 28.4). A threshold of 50 cases was determined to be necessary to reduce adverse events in a clinically and statistically significant way. Cases performed after the first 50 cases had lower surgical times: 240 (162-362) vs 187 (138-224) minutes, $p < 0.0001$ and a lower incidence of delayed postoperative events: 15.4% vs 36%, $p = 0.007$, with a lower incidence of urinary stream abnormalities, introital stenosis and need for revision surgery. The incidence of intraoperative and immediate adverse events was not different between groups.

CONCLUSION: The incidence of serious adverse events related to vaginoplasty surgery is low while minor events are common. A threshold of 50 vaginoplasty cases is necessary to reduce delayed events including the need for revision surgery.

Adverse events associated with vaginoplasty surgery

	All Patients N=76	Cases 1-50 n=50	Cases 51-76 n=26	p value
Any Immediate Postoperative Adverse Event (<30 days)	17.1 (13)	16.3 (8)	19.2 (5)	0.40
Readmission	2.6 (2)	2.0 (1)	3.8 (1)	0.11
Reoperation	2.6 (2)	4.0 (2)	0 (0)	0.36
Urinary Retention	2.6 (2)	4.0 (2)	0 (0)	0.36
GU Fistula	0 (0)	0 (0)	0 (0)	---
Rectovaginal Fistula	1.3 (1)	2.0 (1)	0 (0)	0.68
Flap Necrosis	3.9 (3)	2.0 (1)	7.7 (2)	0.14
Incision Dehiscence	10.5 (8)	10.0 (5)	11.5 (3)	0.57
Wound Infection	0 (0)	0 (0)	0 (0)	---
Other	2.6 (2)	4.0 (2)	0 (0)	0.36
Any Delayed Postoperative Adverse Event (>30 days)	28.9 (22)	36.0 (18)	15.4 (4)	0.007*
Abnormal Urinary Stream	13.2 (10)	16.3 (8)	7.7 (2)	0.015*
Vaginal Stenosis	3.9 (3)	4.0 (2)	3.9 (1)	0.87
Pelvic Pain	1.3 (1)	2.0 (1)	0 (0)	0.52
Introital Stenosis	9.2 (7)	12.0 (6)	3.9 (1)	0.04*
Other	2.6 (2)	4.0 (2)	0 (0)	0.36
Revision Surgery	35.5 (27)	44.0 (22)	19.2 (5)	0.004*

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Cecile Ferrando: UpToDate, author, royalties.

10 Quality of sexual function outcome reporting in pelvic organ prolapse trials

D. Antosh[1], K. V. Meriwether[2], S. Kim-Fine[3], E. Balk[4], A. Dieter[5], G. Kanter[6], M. Mamik[7], R. Singh[8], M. Good[8], A. Alas[9], M. Foda[10], D. D. Rahn[11], R. G. Rogers[12]

[1]Obstetrics and Gynecology, Houston Methodist Hospital, Houston, TX, [2]University of New Mexico, Albuquerque, NM, [3]University of Calgary, Calgary, Alberta, Canada, [4]Brown University School of Public Health, Providence, RI, [5]University of North Carolina, Hillsborough, NC, [6]Salinas Valley Medical Clinic, Salinas, CA, [7]Albert Einstein College of Medicine, New York, NY, [8]University of Florida Health, Jacksonville, FL, [9]University of Texas San Antonio, San Antonio, TX, [10]University of Central Florida College of Medicine, Starke, FL, [11]UT Southwestern Medical Center, Dallas, TX, [12]University of Texas at Austin Dell Medical School, Austin, TX

OBJECTIVES: Although sexual function outcomes in Pelvic Organ Prolapse (POP) trials are usually secondary outcomes, they are important outcomes to patients and should be reported in comparative trials. The IUGA-ICS Joint Report on Sexual Health in Women with Pelvic Floor Disorders recommends a minimum of reporting sexual activity, pain/dyspareunia, and overall sexual function based on a validated sexual function questionnaire. It is also important to report not only postoperative dyspareunia and sexual activity rates but also preoperative rates. We aimed to systematically review the literature and describe and compare sexual activity and function before and after prolapse surgery. The aim of this abstract is to describe the quality of reporting in currently published POP surgery trials used in this review.

MATERIALS AND METHODS: We included prospective, comparative and randomized studies of pelvic organ prolapse (POP) surgeries that reported any sexual function outcome. MEDLINE, Embase, and clinicaltrials.gov databases were searched from inception to April 2018. Studies were extracted for population characteristics, sexual function outcomes, and methodological quality. Data collected included baseline and postoperative sexual activity, dyspareunia, and validated sexual function questionnaire scores.

RESULTS: We screened 3124 abstracts and identified 63 original studies, of which 50 were randomized trials. The overall quality of evidence was moderate to high. Only 43/63 (68%) studies reported on prevalence of sexual activity; 38/63, (60%) studies reported on preoperative, 33/63 (52%) reported on postoperative, and 28 (44%) reported both baseline and postoperative. Dyspareunia outcome was reported at baseline in 27/63 (43%) of studies, postoperative total in 39/63 (62%), and de novo in 20/63 (32%) of studies. Five studies reported on 'Return to the operating room for dyspareunia'. Approximately 71% of studies (45/63) reported validated sexual function questionnaires, most commonly PISQ-12. Only 5/63 (8%) studies reported on all recommended outcomes (validated SF questionnaire, de novo dyspareunia, and both baseline and postoperative sexual activity and dyspareunia).

CONCLUSION: Sexual function outcome reporting is poor in POP trials; 71% of POP studies in our review report using SF questionnaires, while 8% of studies report all recommended SF outcomes. Dyspareunia is an important outcome, but only 44 % of studies reported both baseline and postoperative prevalence after surgery. Moving forward, we urge randomized trials of POP surgeries to include baseline, postoperative, and de novo dyspareunia, sexual activity and overall sexual function using validated questionnaires.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Danielle Antosh: Nothing to disclose; Kate V. Meriwether: Elsevier, obgyn textbook writer, royalties; Shunaha Kim-Fine: Nothing to disclose; Ethan Balk: Nothing to disclose; Alexis Dieter: Nothing to disclose; Gregg Kanter: Nothing to disclose; Mamta Mamik: Nothing to disclose; Ruchira Singh: Nothing to disclose; Meadow Good: Nothing to disclose; Alexandriah Alas: Nothing to disclose; Mohamed Foda: Nothing to disclose; David D. Rahn: Pfizer, Researcher, research support grant; Rebecca G. Rogers: UpToDate, writer, royalties.

11 DEVELOPS: Description of vaginal laxity and prolapse and correlation with sexual function

A. Polland[2], J. J. Fitzgerald[1], A. Iwamoto[3], R. L. Furuya[4], V. Duong[1], S. E. Bradley[1], H. Wang[5], C. Iglesia[1]

[1]Gynecology and Obstetrics, Georgetown School of Medicine/MedStar Health, Washington, DC, [2]Urology, Maimonides Medical Center/ Zucker School of Medicine at Hofstra/Northwell, Brooklyn, NY, [3]Georgetown University School of Medicine, Washington, DC, [4]The Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Brooklyn, NY, [5]MedStar Health Research Institute, Hyattsville, MD

OBJECTIVES: Vaginal laxity (VL) is a sensation of looseness of the vagina. Pelvic organ prolapse (POP) is a disorder in which one or more of the pelvic organs descends from the normal position. VL has attracted recent attention due to the advent of energy-based treatments for this symptom. There is limited data on the incidence of concurrent POP and symptoms of VL. The primary objective of this study is to determine the correlation between VL symptoms and POP physical exam findings, specifically genital hiatus (GH).

MATERIALS AND METHODS: This was a multi-center cohort study of sexually active, English-speaking women over the age of 18 with a parity of one or greater. Subjects completed the Pelvic Floor Distress Inventory-20 (PFDI-20), the VL questionnaire (VLQ) and the Female Sexual Function Index (FSFI). Their treating physician performed a physical exam, including the pelvic organ prolapse quantification (POP-Q), and Kegel pelvic floor muscle strength. VL symptoms were determined by VLQ scores and GH was determined by the POP-Q measurements. Correlation between VL and GH was assessed using Spearman's correlation due to the skewed nature of VLQ. Sample size was calculated to perform a two-tailed correlation with a beta of 0.2 and a correlation coefficient of 0.3.

RESULTS: Ninety-five subjects were included. Average age was 54.3 years with an average parity of 2.12. Sixty-three percent of patients were postmenopausal and 61% were not on hormone replacement. Average VLQ score was 4.2 (1.35). Average FSFI was 23.42. There was no significant correlation between VLQ and prolapse stage or POP-Q measure such as GH, perineal body (PB) or total vaginal length (TVL). There was no correlation between VLQ and Brinks score or mid-vaginal caliber. VLQ was not correlated with PFDI or FSFI. FSFI was correlated with PFDI ($p = 0.01$). VLQ was not correlated with parity however trended towards correlation with number of vaginal deliveries ($p = 0.06$). A sensation of vaginal tightness (as opposed to laxity) was significantly associated with both age ($p = 0.03$) and menopausal status ($p = 0.04$). It also correlated with partner comment on tightness ($p = < 0.0001$) but without significant GH differences. There was no significant difference in either VLQ or FSFI for women on hormone replacement therapy. Most partners did not comment on VL (72%) and the majority of commenters noted the vagina to be tight (21%) rather than loose (7%).

CONCLUSION: VL symptoms measured by the VLQ are not correlated with POP-Q measures. With menopause more subjects commented on tightness but HRT did not appear to change this sensation. Most partners did not comment on laxity. Average FSFI in this population met the criteria for female sexual dysfunction (<26). Vaginal deliveries did result in looseness but measure of prolapse (POP-Q and PFDI) did not correlate with VLQ.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Allison Polland: Nothing to disclose; Jocelyn J. Fitzgerald: Nothing to disclose; Aya Iwamoto: Nothing to disclose; Rachel L. Furuya: Nothing to disclose; Vi Duong: Nothing to disclose; Sarah E. Bradley: Nothing to disclose; Haijun Wang: Nothing to disclose; Cheryl Iglesia: Nothing to disclose.

12 Vaginal electrical stimulation for postpartum neuromuscular recovery: The VESPR study

O. Brown[1], B. Dave[2], J. Geynisman[1], K. Warner[1], A. W. Gillingham[1], K. Kenton[1], M. G. Mueller[1], S. A. Collins[1], C. Lewicky-Gaupp[1]

[1]Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine, Chicago, IL, [2]Obstetrics and Gynecology, University of California, Irvine, Orange, CA

OBJECTIVES: To compare anal incontinence (AI) symptoms 3 months postpartum in women who sustain obstetric anal sphincter injuries (OASIS) and begin immediate vaginal electrical stimulation (VES) vs sham therapy.

MATERIALS AND METHODS: This was a double-blinded randomized controlled trial in women who sustained OASIS and presented to a peripartum urogynecologic clinic. At one-week postpartum, participants were randomized to receive 12 weeks of self-administered VES for 10 minutes daily at the highest tolerable stimulation (using the "In Control Medical's Apex M" device) or sham therapy with an identical device. Anal incontinence symptom severity and quality of life impact were assessed at baseline and 13 weeks postpartum using the Fecal Incontinence Severity Index (FISI), Colorectal-Anal distress Inventory 8 (CRADI-8), and Colorectal Anal Impact Questionnaire (CRAIQ-7). The primary outcome was anal incontinence symptoms as measured by the median FISI score at 13 weeks. Secondary outcomes included the change in CRADI-8 and CRAIQ-7 scores at 13 weeks. Using previous data on 13-week FISI scores in this population, we determined that 32 women (16 in each group) were needed to show a 4-point decrease (MCID of the FISI) with 80% power at a 0.05 significance level. Baseline demographics, clinical characteristics, and questionnaire scores were compared between groups using independent T-test or Mann-Whitney U test for continuous variables, and Chi-square test for nominal variables. Wilcoxon signed rank test and paired T-test were used to compare the change from baseline scores for each treatment group as appropriate.

RESULTS: Sixty-six women were randomized, and 73% ($n = 48$) completed 13-week follow up. There were no differences in demographics, clinical characteristics, or baseline FISI scores between those who did and did not complete study. Mean $\pm$ SD age of the cohort was 33 ± 4 years. Baseline characteristics of VES and sham groups did not differ. Table 1 shows baseline and 13-week FISI, CRADI, and CRAIQ scores for both groups. Baseline FISI scores and rates of AI did not differ between groups. At 13 weeks, FISI scores were significantly lower (more improved) in sham group than VES group. Median FISI scores improved significantly in the sham group from baseline to 13-weeks. The improvement also met clinical significance (MCID FISI = 4). In contrast, change in FISI scores from baseline to 13-weeks in the VES group did not reach statistical or clinical significance.

CONCLUSION: At 13 weeks postpartum, women with OASIS who underwent VES had more AI symptoms compared to sham therapy. VES in the immediate postpartum period following OASIS was not beneficial in reducing anal incontinence symptoms and may impede recovery.

Table 1: Clinical measures at baseline and at 13-weeks postpartum

	VES (N=26)	Sham (N=22)	p-value*
FISI total, *median (IQR)*			
Baseline	12.0 (8- 22)	11.5 (6.3-17.8)	0.466
13 weeks	11.5 (0- 23.3)	4.0 (0-11)	0.043
Change from baseline p-value§	0.115	<0.001	
FISI gas, *median (IQR)*			
Baseline	6.0 (0-12)	4 (0-12)	0.770
13 weeks	5.0 (0-11.3)	4 (0-6.50)	0.152
Change from baseline p-value§	0.550	0.084	
FISI mucus, median *(IQR)*			
Baseline	0 (0-0)	0 (0-0)	0.898
13 weeks	0 (0-1.75)	0 (0-0)	0.071
Change from baseline p-value§	0.498	0.102	
FISI liquid, *median (IQR)*			
Baseline	0 (0-8)	0 (0-8)	0.285
13 weeks	0 (0-0)	0 (0-0)	0.866
Change from baseline p-value§	0.007	0.039	
FISI solid, *median (IQR)*			
Baseline	0 (0-13)	0 (0-8)	0.351
13 weeks	0 (0-2)	0 (0- 0)	0.061
Change from baseline p-value§	0.325	0.039	
CRADI-8, *median (IQR)*			
Baseline	13.0 (0-28.3)	7.5(0-39.5)	0.933
13 weeks	6.0 (0- 17.5)	6.0 (0- 13.0)	0.991
Change from baseline p-value§	0.051	0.028	
CRAIQ-7, *median (IQR)*			
Baseline	14.3 (0 - 57.1)	2.4 (0- 25)	0.232
13 weeks	0 (0- 4.8)	0 (0- 0)	0.288
Change from baseline p-value§	0.001	0.005	
Rates of anal incontinence, *N (%)*			
Baseline	21 (81%)	18 (82%)	0.926
13 weeks	19 (73.1%)	13 (59.1%)	0.306

*P value for treatment group comparisons using Mann-Whitney U Test or independent T-test
§p- value for within- group change from baseline using Wilcoxon signed rank test or Paired T-Test

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Oluwateniola Brown: Nothing to disclose; Bhumy Dave: Nothing to disclose; Julia Geynisman: Nothing to disclose; Kristina Warner: Nothing to disclose; Akira W. Gillingham: Nothing to disclose; Kimberly Kenton: Nothing to disclose; Margaret G. Mueller: Nothing to disclose; Sarah A. Collins: Nothing to disclose; Christina Lewicky-Gaupp: Nothing to disclose.

13 Route of hysterectomy and mesh attachment at the time of minimally invasive sacrocolpopexy: A retrospective multicenter cohort comparison

J. Ton[1], X. Jia[2], A. Gupta[3], D. Maheshwari[4], M. Schroeder[5], A. Small Layne[6], V. O. Demtchouk[7]

[1]Anne Arundel Medical Center, Annapolis, MD, [2]Christiana Care, Newark, DE, [3]University of Louisville, Louisville, KY, [4]UMass Baystate, Springfield, MA, [5]Cooper University, Camden, NJ, [6]Midatlantic Permante Group, Largo, MD, [7]Mount Auburn Hospital, Cambridge, MA

OBJECTIVES: To compare outcomes after minimally invasive sacrocolpopexy based on the route of hysterectomy. The primary outcome was rate of mesh exposure.

MATERIALS AND METHODS: This was a multicenter, retrospective cohort study. Patients who underwent minimally invasive sacrocolpopexy were stratified into three groups by route of hysterectomy: total vaginal hysterectomy (TVH); total laparoscopic hysterectomy (TLH), and laparoscopic supracervical hysterectomy (LSH). Laparoscopic cases included those with robotic assistance. Demographic data, intraoperative and postoperative outcomes were collected. Patients were excluded from analysis of the primary outcome if they had follow-up of less than 6 months (unless they had an exposure prior to 6 months). Data were analyzed using unadjusted methods, with $p < 0.05$ denoting statistical significance.

RESULTS: A total of 501 patients were collected: 263 TVH, 128 TLH, and 110 LSH. Demographic data is described in Table 1. There was a higher average BMI and percentage of postmenopausal patients in the TVH group and a higher rate of active smoking in the TLH group. Primary and secondary outcomes are outlined in Table 2. There was no significant difference in exposure rates between groups: TVH = 6.5% (14/214); TLH = 0% (0/48) for TLH, and LSH = 3.7% (3/79) ($p = 0.14$). Within the TVH group, 13 of the 14 exposures occurred when the mesh was attached laparoscopically, with only 1 occurring when the mesh was attached vaginally. TVH demonstrated significantly shorter operating time but higher median EBL. When comparing TVH and TLH, TVH had a higher rate of vaginal cuff separation and infection. Within the TVH group, mean OR time was 256 min with vaginal mesh attachment compared to 227 min for laparoscopic attachment. There were no reported ureteral injuries across the three groups, and bowel and bladder injuries were rare.

CONCLUSION: There was insufficient evidence to suggest that route of hysterectomy or preservation of the cervix significantly impacts mesh exposure rates after minimally invasive sacrocolpopexy. The incidence of mesh exposure after vaginal hysterectomy is lower than previously reported, and vaginal attachment of mesh did not demonstrate an increased rate of exposure. The strengths of this study include multicenter collaboration and a relatively large sample size. Limitations include limited follow-up beyond 6 months, retrospective design, and limited number of total exposures.

Table 1. Demographic data.

	Total vaginal hysterectomy (TVH) (n=263)	Total Laparoscopic Hysterectomy TLH)* (n=128)	Laparoscopic Supracervical Hysterectomy (LSH)* (n=111)	p-value**
Age (mean±SD)	59.4±9.0	58.3 ±11.1	59.1 ±10.6	0.61
BMI (mean±SD)	28.4±5.6	27.9 ±6.0	26.3 +4.7	0.003
Parity (Median, range)	2 (0-12)	2 (0 – 9)	2 (0 – 6)	0.17
Menopausal status (n,%)	Pre-menopausal 41/263 (15.6%) Peri or post-menopausal 222/263 (84.4%)	Pre-menopausal: 29/126 (23%) Peri- or post-menopausal: 97/126 (77%)	Pre-menopausal: 30/111 (27%) Peri- or post-menopausal: 81/111 (73%)	0.03
Smoking status (n, %)	Former: 70/263 (26.6%) Current: 28/263 (10.6%) Non-smoker: 165/263 (62.7%)	Former: 13/118 (11%) Current: 20/118 (16.9%) Non-smoker: 85/118 (72%)	Former: 16/111 (14.4%) Current: 5/111 (4.5%) Non-smoker: 90/111 (81.1%)	<0.0001
Diabetes (n, %)	24/263 (9.1%)	9/128 (7%)	7/111 (6.3%)	0.59

*Cases include those with robotic assistance
** Based on separate chi square, one-way analysis of variance (ANOVA) or Kruskal-Wallis tests, as appropriate.

Table 2. Primary and secondary outcomes for sacrocolpopexy based on route of hysterectomy.

	Total Vaginal Hysterectomy (TVH) (n=263)	Total Laparoscopic Hysterectomy (TLH) (n=128)	Laparoscopic supracervical including robotics (LSH) (n=111)	p-value*
Mesh Exposure (n, %)	14/214 (6.5%)	0/48 (0%)	3/79 (3.7%)	0.14
Operating Time¶ (min) (median, range)	228 (166-393) (n = 239)	246 (95-453) (n = 114)	283 (171-532) (n = 34)	<0.0001**
Estimated Blood Loss (ml) (median, range)	200 (10-800) (n = 263)	75 (10-500) (n = 128)	50 (10-300) (n = 102)	<0.0001**
Transfusion (n, %)	3/263 (1.1%)	1/128 (0.8%)	1/111 (0.9%)	n/a*
Bladder injury (n, %)	2/263 (0.8%)	2/128 (1.6%)	0/111 (0%)	n/a*
Ureteral injury (n, %)	0/263 (0%)	0/128 (0%)	0/111 (0%)	n/a*
Bowel injury (n, %)	0/263 (0%)	3/128 (2.3%)	0/111 (0%)	n/a*
Vaginal cuff separation (n, %)	8/263 (3%)	2/128 (1.5%)	n/a (no cuff)	n/a*
Vaginal cuff infection (n, %)	8/263 (3%)	0/128 (0%)	n/a (no cuff)	n/a*

¶OR time denotes procedure time only, not total OR time
*Because 50% of expected cell counts were less than 5, p-values may be inaccurate and are not reported.
**Based on separate Kruskal-Wallis and chi square tests.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jessica Ton: Nothing to disclose; Xibei Jia: Nothing to disclose; Ankita Gupta: Nothing to disclose; Deepali Maheshwari: Nothing to disclose; Michelle Schroeder: Nothing to disclose; Alyssa Small Layne: Nothing to disclose; Veronica O. Demtchouk: Nothing to disclose.

14 Voiding assessment based on minimum spontaneous void of 150 mL compared to retrograde fill method after female pelvic floor procedures: A randomized controlled trial

P. Popiel, O. Harmanli, F. Getaneh, X. Xu, J. Yeh, L. Rickey
Yale-New Haven Hospital, New Haven, CT

OBJECTIVES: To compare voiding assessment based on a minimum spontaneous voided volume of 150 mL with the standard retrograde fill approach in women after pelvic floor procedures.

MATERIALS AND METHODS: All 18-year-old or older women undergoing surgery for urinary incontinence and/or pelvic organ prolapse were eligible for this randomized controlled study. Those needing catheter placement due to a urinary system injury or a suprapubic tube were excluded. Prior to discharge, the patients who were randomly assigned to the retrograde void (RV) group were backfilled with 300 mL of saline prior to Foley removal and were required to void at least 200 mL at one time within 60 min. to pass the voiding trial (VT). The subjects assigned to the Spontaneous Void (SV) group were required to perform a single spontaneous void of 150 mL in order to pass their VT. Although measured, postvoid residual volume did not factor into the decision of whether or not to replace the catheter for the SV group. This evaluation occurred in the recovery room for patients who had an outpatient procedure. Those who were admitted to the hospital had the VT before their discharge typically in the morning of the postoperative day 1. The primary outcome was failure rate/urinary retention necessitating post-operative catheterization based on the void trial criteria. A sample size of 110 would detect a difference in voiding trial failure rate of 10%, with 80% power, two-sided alpha of 0.05, and allow 10% dropout. We compared the baseline characteristics including concomitant procedures and urodynamic parameters, relevant perioperative indices and patient satisfaction between the groups.

RESULTS: Of the 109 women enrolled in the study, 54 had RV and 55 underwent SV. Baseline characteristics between groups was not significantly different. Median and interquartile range for age, parity, body mass index was 59 (49-69), 2 (2-3), and 27.2 (24.1-32.2), respectively. There was no significant difference in procedures performed including hysterectomy, midurethral sling and anterior repair. Eight patients (14.8%) in the RF group failed their voiding trial, compared to 4 patients (7.3%) in the SV group. This was not statistically different ($p = 0.21$). There was no false pass (rate of patients who passed the VT and returned with voiding difficulty requiring catheterization) in either group. Patient satisfaction specific to the voiding trial was similar between the RV and SV groups (median satisfaction score = 96 vs. 90, $p = 0.13$). Post operatively, there was no difference in urinary tract infection rates (16.7% vs. 10.9%, $p = 0.38$) between the groups.

CONCLUSION: Spontaneous void of 150 mL is a safe and effective method of testing voiding function after pelvic reconstructive surgery when compared to current standard voiding trial performed after a retrograde fill.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Patrick Popiel: Nothing to disclose; Oz Harmanli: Blossommed, Owner, N/A; Feven Getaneh: Nothing to disclose; Xiao Xu: Nothing to disclose; Judy Yeh: Nothing to disclose; Leslie Rickey: Renovia, clinical advisory board, honorarium; ArmadaHealth, clinical advisory board, honorarium.

15 National trends in the surgical approach to an abdominal colpopexy with a concurrent hysterectomy

W. D. Winkelman[1,2,3], A. Modest[2,3], M. Richardson[2,3]
[1]Department of Obstetrics and Gynecology, Mount Auburn Hospital, Cambridge, MA, [2]Department of Obstetrics, Gynecology, and Reproductive Biology, Beth Israel Deaconess Medical Center, Boston, MA, [3]Department of Obstetrics, Gynecology, and Reproductive Biology, Harvard Medical School, Boston, MA

OBJECTIVES: To understand the national trends in laparotomy compared to laparoscopy for patients undergoing an abdominal colpopexy with a concurrent hysterectomy and to more fully characterize the 30-day complications for this subset of patients.

MATERIALS AND METHODS: This is a retrospective cohort study of surgical cases from The American College of Surgeons National Surgical Quality Improvement Program of female patients who underwent an abdominal colpopexy and concurrent hysterectomy from 2010 through 2017. Patients were classified as having either a laparoscopic abdominal colpopexy with a concurrent hysterectomy or an open abdominal colpopexy with concurrent hysterectomy (laparotomy).

RESULTS: We identified 9327 surgical cases, of which 1555 (16.7%) of surgical cases were performed through a laparotomy while 7772 (85.3%) were performed laparoscopically. There were no clinically significant differences in baseline patient characteristics between those who underwent a laparotomy and those had laparoscopy.

Patients were a mean of 56.6 ± 11.7 years of age at the time of surgery and had a mean BMI of 28.3 ± 5.9 kg/m 2. The proportion of patients undergoing a laparotomy decreased by 2.4% per year from 2010 through 2018 (R2=0.77) (Figure 1). Patients undergoing a laparoscopic colpopexy had from similar postoperative morbidity compared to patients undergoing a laparotomy; however, those undergoing a laparotomy were more likely to stay in the hospital 2+ days postoperatively (14.1% vs 68.0%), were more likely to need a blood transfusion (1.9% vs 0.6% p<0.01) and more likely to have a surgical site infection (2.8% vs 1.1%, p<0.01, Table 1).

CONCLUSION: A laparoscopic approach is the most common for patients undergoing a colpopexy and concurrent hysterectomy. As we become increasingly adept at minimally invasive surgery, it is possible that laparotomy will become increasingly rare. We should feel reassured by the lower morbidity associated with minimally invasive surgery despite the longer operative time.

Figure 1: National trends in laparotomy compared to laparoscopy for patients undergoing an abdominal colpopexy with a concurrent hysterectomy

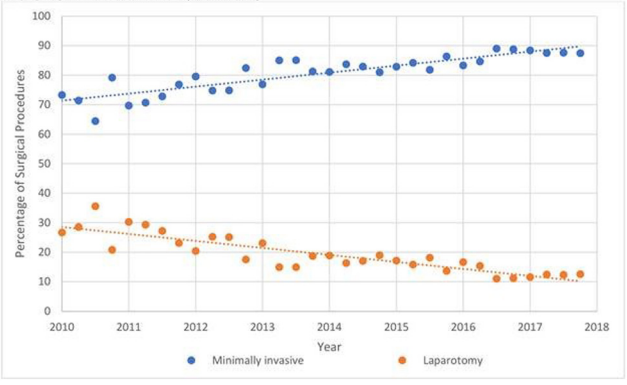


Table 1: Perioperative characteristics and postoperative outcomes following colpopexy and concurrent hysterectomy stratified by surgical approach

Perioperative characteristics and postoperative outcomes	Minimally Invasive (n=7772)	Laparotomy (n=1555)	p
OR time, minutes	187 (131 – 245)	169 (131 – 230)	0.006
Length of stay, days	1 (1 – 1)	2 (1 – 2)	<0.001
0	913 (11.7)	30 (1.9)	<0.001
1	5765 (74.2)	467 (30.0)	
2+	1093 (14.1)	1058 (68.0)	
Missing	1 (0.01)	0 (0.0)	
Concurrent surgery for SUI	3181 (40.9)	662 (42.6)	0.23
Blood transfusion	43 (0.6)	30 (1.9)	<0.001
Surgical site infections	89 (1.1)	44 (2.8)	<0.001
Superficial	47 (0.6)	26 (1.7)	<0.001
Deep	10 (0.1)	4 (0.3)	0.27
Organ space	33 (0.4)	14 (0.9)	0.03
Urinary tract infection	251 (3.2)	52 (3.3)	0.82
Pneumonia	12 (0.2)	4 (0.3)	0.32
Pulmonary embolism	8 (0.1)	4 (0.3)	0.13
CVA/Stroke	1 (0.0)	0 (0.0)	1.0
Cardiac arrest	3 (0.0)	0 (0.0)	1.0
Myocardial infarction	4 (0.1)	0 (0.0)	1.0
DVT/thrombophlebitis	11 (0.1)	3 (0.2)	0.72
Sepsis	17 (0.2)	10 (0.6)	0.01
Septic shock	6 (0.1)	2 (0.1)	0.63
Renal insufficiency	5 (0.1)	1 (0.1)	1.0
Renal failure	2 (0.0)	0 (0.0)	1.0
Death	3 (0.0)	0 (0.0)	1.0

Data presented as mean ± standard deviation or n (%)

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: William D. Winkelman: Nothing to disclose; Anna Modest: Nothing to disclose; Monica Richardson: Nothing to disclose.

16 The double-hump: Clinical significance in sacrocolpopexy

M. Good[1], D. Rao[2], C. Evans[1], C. Smotherman[3], R. Singh[1]

[1]Obstetrics and Gynecology, University of Florida, Jacksonville, FL, [2]Radiology, University of Florida College of Medicine, Jacksonville, FL, [3]Center for Health Equity and Quality Research, University of Florida College of Medicine, Jacksonville, FL

This abstract was published but not presented at SGS 2019. It will be presented at SGS 2020.

OBJECTIVES: Technical challenges with mesh fixation during robotic-assisted laparoscopic sacrocolpopexy include difficulty finding and visualizing the sacral promontory (most superior portion of the S1). This may lead to mesh placement above in the L5-S1 and L4-L5 vertebral discs and subsequent catastrophic complications including discitis and osteomyelitis. The objective of this study was to further characterize the relevant relationships of the bony anatomy relevant to the sacral promontory to use as a guide for safe mesh placement.

MATERIALS AND METHODS: The anatomical relationships in of the lumbar and sacral spine were reviewed in 25 female patient's computed tomography (CT) studies for benign indications. Anatomy quantified included 1) angle of descent between the anterior surfaces of the L4 and L5 vertebra 2) angle of descent between the anterior surfaces of the L5 and S1 vertebra 3) L4-L5 disc height and width 4) L5-S1 disc height and width 5) L4, L5, S1 vertebral heights 6) distance between ASIS 7) distance between midpoint of pubic symphysis and sacral promontory.

RESULTS: The mean age of the female patients was 54.7 years. The mean height, weight, and BMI was 64.4 inches, 93.8 kg, 34.7, respectively. The patients were 64% white and 36% Black. The mean L4-L5 angle of descent was 19.9 degrees (range 0.5-40.8 degrees) and mean L5-S1 angle was 57.2 degrees (27.8-70.1). Eight of 25 (32%) women had an L4-L5 angle >30 with L5-S1 angle of <40 degrees. The mean heights (range) included: L4-L5 disc 1.1 cm (0.68-1.7), L5-S1 disc 1.12 cm (0.3-1.9), L4 vertebra 2.7 cm (2.1-3.1), L5 vertebra was 2.8 cm (2.1-3.0), and S1 was 3.3 cm (2.7-3.6). The mean distance between the ASIS was 21.3 cm (16-25.8 cm), the mean distance between midpoint of pubic symphysis and sacral promontory was 12.1 cm (9.9-14). There was a positive correlation between the L5-S1 angle of descent and the L5-S1 disc height (0.716 (95% CI 0.53-0.897). There was a negative correlation between the L4-L5 angle of descent and the L5-S1 angle of descent (95% CI -0.37 to -0.84) (Figures 1 and 2).

CONCLUSION: The majority of women have steep 60 degree L5-S1 angle of descent in comparison to the 20-degree L4-L5 angle. As described in this study, 32% of women may have conditions such as degenerative disc disease causing decreased L5-S1 disc height, increased L4-L5 and decreased L5-S1 angle of descent, leading to the "double-hump" anatomical relationship. In these cases, the L4-L5 may be the most prominent structure in the lower lumbosacral spine and the surgeon may inadvertently attach mesh above the true sacral promontory and attach mesh to the disc. Awareness of this relationship may assist intraoperative localization of the "good point" on the sacral promontory (12 centimeters from the pubic symphysis), for safe mesh attachment.

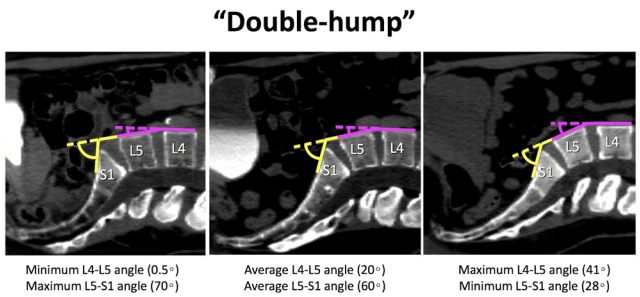


Figure 1. Computed tomography images demonstrating the double-hump anatomical relationships with minimum, maximum and average angles of descent of L4-L5 and L5-S1.

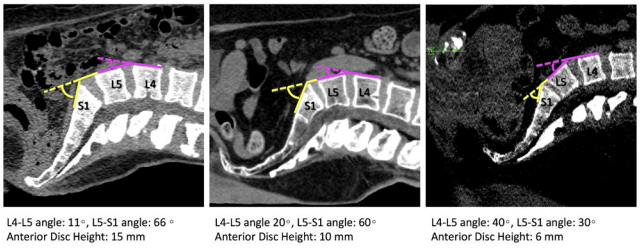


Figure 2. Computed tomography image examples of the L4-L5 and L5-S1 angle of descent relationships relative to the L5-S1 disc height.

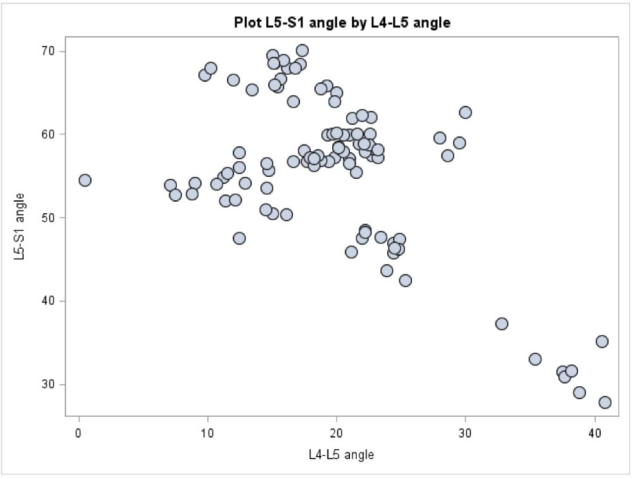


Figure 3. Relationship between L4-L5 angle of descent and L5-S1 angle of descent on computed tomography.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Meadow Good: Nothing to disclose; Dinesh Rao: Nothing to disclose; Casey Evans: Nothing to disclose; Carmen Smotherman: Nothing to disclose; Ruchira Singh: Nothing to disclose.

16A Performance, acceptability, and validation of a phone application bowel diary

H. Zyczynski[1,2], H. E. Richter[3], E. Lukacz[4], V. Sung[5], L. A. Arya[6], D. D. Rahn[7], A. G. Visco[8], B. Carper[10], D. Mazloomdoost[9], M. G. Gantz[10]

[1]University of Pittsburgh, Pittsburgh, PA, [2]Magee-Womens Research Institute, Pittsburgh, PA, [3]University of Alabama Birmingham, Birmingham, AL, [4]University of California San Diego, San Diego, CA, [5]Brown University, Providence, RI, [6]University of Pennsylvania, Philadelphia, PA, [7]University of Texas Southwestern, Dallas, TX, [8]Duke, Durham, NC, [9]Eunice Kennedy Shriver National Institute of Child Health and Human Development, Bethesda, MD, [10]Research Triangle International, Research Triangle Park, NC

OBJECTIVES: To assess performance, acceptability, test-retest reliability, and internal consistency of a phone app electronic bowel diary (eDiary) in women with accidental bowel leakage (ABL).

MATERIALS AND METHODS: In this randomized crossover trial of paper and eDiary bowel diaries, women with refractory ABL were instructed to "record as you go" bowel movements (BM) without leak, fecal incontinence episode (FIE) distinct from BM (Leak), and combined BM/Leak. Events were date/time stamped and characterized by presence of urgency. Women were randomized to complete 3 consecutive 14-day diaries (42 total days) in 2 different sequences: Group A completed eDiary, paper, eDiary sequence while group B completed paper, eDiary, eDiary sequence. Phone notifications (2/day) prompted subjects to confirm or modify eDiary data. Adherence was defined as data recorded on ≥10/14 days and ≥3 consecutive days per week. System Usability Scale (SUS) assessed eDiary usability, acceptability, and preference. Comparisons were made with Pearson's correlations and Chi-squared tests. Test-retest reliability of eDiaries was assessed with Intraclass correlations (ICCs).

RESULTS: 60/69 (87%) women, mean (SD) age 63.8 (9.8) years, provided diary data. The app was incompatible with 4/69 (5.8%) phones. Overall, subjects reported 13.2 BM/week, 6.5 fecal incontinence episodes (FIE)/week, nearly half characterized by urgency. Adherence did not differ by format (93.3% paper, 95% eDiary). Daily recording did not diminish over time within 14-day eDiaries: mean (SD) 6.7 (.8) days recorded on days 1-7, 6.6 (.8) days on days 8-14. Response to notifications accounted for 29.6% of recorded episodes which improved adherence from 70% to 95%. Compared to the youngest tertile (≤62 years), the oldest tertile (>69 years) were as likely to provide complete eDiaries (95.7% youngest, 94.4% oldest). ICCs between the 1st and 2nd eDiary found good test-retest reliability (BMs/week 0.81; urgency BMs/week 0.79, FIE/week 0.74, urgency FIE/week 0.62). The mean (SD) SUS Score was 82.3 (17.5) (range 0-100, higher is better) with 44/58 (75.9%) women preferring the eDiary over paper.

CONCLUSION: The eDiary correlated well with paper diary, was considered easy to use, was preferred to paper diaries, and had high rates of real time diary completion that obviated staff data entry.

Table 1:

	Weeks 1-4			Weeks 5-6	
	eDiary (N=60)	Paper diary (N=56)	Correlation[a]	eDiary (N=53)	Correlation[b]
Days/week, mean (SD)	6.6 (0.6)	6.9 (0.3)	.19	6.3 (0.9)	.63
Consecutive days/week, mean (SD)	6.3 (1.1)	6.9 (0.4)	.07	5.9 (1.4)	.63
LEAK/week, mean (SD), %with urgency	6.2 (5.3), 44%	7.8 (7.7), 54%	.66	5.8 (5.0), 44%	.76
BM/week, mean (SD), % with urgency	12.9 (6.7), 47%	14.2 (8.5), 49%	.61	12.6 (5.5), 52%	.84

4 subjects did not return a paper diary. [a] Comparison of paper and eDiary data. [b] Comparison of 1st and 2nd eDiaries.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Halina Zyczynski: Nothing to disclose; Holly E. Richter: Allergan, investigator, research contract; Renovia, investigator, research contract; BlueWind Medical, DSMB member, consulting fee; Emily Lukacz: Axonics, consultant, consulting fee; Boston Scientific,

investigator, research grant; Uroplasty/Cogentix, investigator, research grant; UpToDate, author, royalties; Vivian Sung: Nothing to disclose; Lily A. Arya: Nothing to disclose; David D. Rahn: Nothing to disclose; Anthony G. Visco: Nothing to disclose; Benjamin Carper: Nothing to disclose; Donna Mazloomdoost: Boston Scientific, Project Scientist PFDN, Grant to the PFDN for SUPeR Trial; Marie G. Gantz: Medspira, PI Data Coordinating Center, Discounted equipment in exchange for PFDN consultation on biofeedback software.

17 Randomized trial of early versus later void trials for women with immediate urinary retention after reconstructive vaginal surgery for multicompartment prolapse

J. Schachar[1], D. Ossin[2], E. Hurtado[2], C. Parker-Autry[1], G. Badlani[1], W. Davila[2], C. A. Matthews[1]
[1]Wake Forest Baptist Health, Hollywood, FL, [2]Cleveland Clinic Florida, Weston, FL

OBJECTIVES: To compare outcomes of a voiding trial (VT) performed 2-4 days (early group) versus 7 days (later group) postoperatively in women with acute urinary retention following vaginal prolapse surgery. The secondary aim was to evaluate the effect of narcotic utilization on VT outcomes.

MATERIALS AND METHODS: Across 2 sites, women undergoing multicompartment native tissue vaginal repair were enrolled. Within 6 hours postoperatively, subjects had an active retrograde VT. Those who passed exited the study; those who failed (PVR >100 ml) had an indwelling catheter replaced and were randomized to return for an early versus later repeat office VT. Subjects were followed for 6 weeks post-surgery. The primary outcome was the rate of failed repeat VT. A power calculation based on projected 31% difference, a power of 0.8, and alpha of 0.05 revealed that 30 subjects were needed in each group.

RESULTS: A total of 94 subjects were enrolled; 36 exited on postoperative day 0, leaving 58 subjects for randomization (4 of which withdrew after randomization). A comparison of data revealed that randomization was effective with no differences between the early and later groups in terms of demographic data or surgical procedures (Table 1). Using an intention to treat analysis, women in the early group were more likely to have an unsuccessful repeat VT (26.9%) compared to the latter group (3.6%) with a Relative Risk of 7.53, [95% CI 0.99-57.18], p = 0.01. NNT found that for every 4 patients wearing a catheter for 7 days post-operatively, 1 case of postoperative urinary retention was prevented. Rates of catheter bother did not differ between groups at the time of the repeat office VT or at 6 weeks, p = 0.1181 and p = 0.1226, respectively. UTI rates were higher in the early group but did not reach statistical significance (27% vs 7%, p = 0.0585). Multiple regression analysis revealed that for each unit increase in morphine equivalents on the day of surgery there was a 10% increase in the odds of failing the repeat office VT.

CONCLUSION: Women with acute urinary retention following multicompartment prolapse repair had a 7-fold higher risk of failing a repeat office void trial if performed within 4 days of surgery. In addition, higher total morphine equivalents on the day of surgery increased the risk of an unsuccessful office repeat void trial.

Table 1: Demographic/Surgical Data

	Early VT (N=26)	Later VT (N=28)	p-Value
Age	63.15 ± 12.02	64.61 ± 11.86	0.6152
Race Caucasian Hispanic African American	 17 (65.38) 3 (11.54) 6 (23.08)	 22 (78.57) 5 (17.86) 1 (3.57)	0.0980
POP-Q Stage 2 3 4	 13 (50.00) 12 (46.15) 1 (3.85)	 9 (32.14) 18 (64.29) 1 (3.57)	0.3954
Concurrent Vaginal Hysterectomy	9 (34.62)	11 (39.29)	0.7225
Apical Suspension	21 (80.77)	23 (82.14)	0.8967
Colporrhaphy Anterior Only Posterior Only Anterior and Posterior	 1 (3.85) 7 (26.92) 18 (69.23)	 0 (0.00) 4 (14.29) 24 (85.71)	0.2719
Sling	14 (53.85)	13 (46.43)	0.5860

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jeffrey Schachar: Nothing to disclose; David Ossin: Nothing to disclose; Eric Hurtado: Nothing to disclose; Candace Parker-Autry: Nothing to disclose; Gopal Badlani: Nothing to disclose; Willy Davila: Boston Scientific, Consultant, Honorarium; Laborie, Consultant, Honorarium; Coloplast, Consultant, Honorarium; FEMSelect, Consultant, Honorarium; Alma Lasers, Researcher/Consultant, Research Grant/Honorarium; Wyeth, Researcher, Research Grant; Cook BioMedical, Researcher, Research Grant; Astellas, Speaker, Honorarium; Catherine A. Matthews: Boston Scientific, Consultant, Honorarium; Johnson and Johnson, Expert Witness, Honorarium.

18 Adherence to recommended practices when performing a risk-reducing bilateral salpingo-oophorectomy

L. K. Newcomb, C. Toal, N. Rindos, S. Mansuria
Minimally Invasive Gynecologic Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVES: To determine the adherence to the recommended practices for performing a risk-reducing bilateral salpingo-oophorectomy (RRBSO) as described by the American College of Obstetricians and Gynecologists and Society of Gynecologic Oncology. We sought to determine if adherence differed by type of training i.e., gynecologic oncologists versus benign gynecologists. Additionally, we aimed to determine the incidence of ovarian cancer diagnosed at the time of RRBSO in a large cohort of patients with a BRCA mutation.

MATERIALS AND METHODS: This descriptive, retrospective analysis was performed in an academic medical center. We examined the charts of 269 patients with a known BRCA mutation who underwent prophylactic RRBSO between July 2007 and September 2018. Surgery was performed either by a gynecologic oncologist or a benign gynecologist. Comparisons between groups were performed in the statistical analysis.

RESULTS: Among 269 patients who underwent RRBSO, 220 were performed by gynecologic oncologists and 49 were performed by benign gynecologists. Washings were not performed in 5% of cases performed by gynecologic oncologists, and 37% of cases performed by benign gynecologists ($p < 0.0001$). Complete serial sectioning of

the adnexa was not performed in 12% of cases performed by oncologists, and 13% of cases performed by benign gynecologists ($p = 0.714$). There were 8 cases (2.9%) of tubal or ovarian cancer diagnosed within this cohort. Of these cases, only 3 (1.1%) were diagnosed at time of surgery and met criteria for conversion to a staging procedure. Fifty-five percent of all patients also underwent concomitant hysterectomy.

CONCLUSION: The incidence of ovarian cancer diagnosis at the time of RRBSO is low, and often not diagnosed at the time of surgery due to presence of only microscopic disease. For this reason, it may not be necessary for gynecologic oncologists to exclusively perform RRBSO procedures. However, this study also reveals that when this procedure is being performed by benign gynecologic surgeons, the recommended practices (washings and serial frozen section) are not routinely being followed. If benign gynecologic surgeons are to begin to routinely perform RRBSO, it is imperative to promote better adherence to these practices.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Laura K. Newcomb: Nothing to disclose; Coralee Toal: Nothing to disclose; Noah Rindos: Nothing to disclose; Suketu Mansuria: Nothing to disclose.

19 Vaginal intraperitoneal vs. extraperitoneal uterosacral ligament vault suspensions: A comparison of a standard and novel approach

D. Mounir, N. O. Vasquez-Tran, D. Antosh, T. Muir
Female Pelvic Medicine & Reconstructive Surgery, Houston Methodist Hospital, Houston, TX

OBJECTIVES: Intraperitoneal uterosacral vault suspension is a viable option for treatment of post-hysterectomy prolapse, but intraperitoneal access can be challenging. A novel approach is an extraperitoneal uterosacral vault suspension. We sought to compare surgical outcomes of vaginal intraperitoneal and extraperitoneal uterosacral ligament suspension in patients with post-hysterectomy vaginal vault prolapse.

MATERIALS AND METHODS: We conducted a retrospective cohort study of all women who underwent treatment of post-hysterectomy vaginal vault prolapse with an intraperitoneal or extraperitoneal uterosacral vaginal vault suspension between May 2016 and January 2019 at our institution. Cases were identified by CPT codes and case logs. The primary outcome was surgical efficacy and cure that was assessed by a composite outcome for surgical failure, defined as ANY of the following: 1) apical descent $>$ 1/3 of the total vaginal length or anterior or posterior vaginal wall beyond the hymen 2) retreatment for prolapse or 3) bothersome vaginal bulge symptoms with a positive response with bother to either of 2 questions on the PFDI-20. Secondary outcomes included EBL, operating time, LOS, and perioperative complications. Two-sample t-tests and chi-square tests were used for the bivariate analysis. A p-value of $<$ 0.05 was considered to be statistically significant.

RESULTS: 80 patients were included (44 extraperitoneal & 36 intraperitoneal). Baseline characteristics, such as age, BMI, parity, race, prior prolapse or incontinence procedures, and preoperative POP stage was similar between the groups. Mean age was 66 years in both groups ($p = 0.818$). The majority of the patients had stage 3 POP (extraperitoneal group 77.29% vs intraperitoneal group 77.78%, $p = 0.957$). The intraperitoneal group had a slightly more proximal preoperative POPQ point C compared to the extraperitoneal group (-1.71 $\pm$ 3.72 vs -4.26 $\pm$ 2.94, $p = 0.001$). Concurrent procedures did not differ significantly between groups. EBL was lower in the extraperitoneal group (50.68 $\pm$ 32.31 vs 75.00 $\pm$ 41.13, $p = 0.004$). Mean operating time (133 $\pm$ 43 minutes vs 190 $\pm$ 54 minutes, $p <.001$) and LOS (13 $\pm$ 8 hours vs 33 $\pm$ 6 hours, $p <.001$) were significantly less in the extraperitoneal group than the intraperitoneal group. For our primary outcome, there was no difference in surgical success (extraperitoneal group 81.82% vs intraperitoneal group 72.22%, $p = 0.307$). Perioperative complications did not differ significantly between the groups.

CONCLUSION: In our study, extraperitoneal uterosacral ligament vaginal vault suspension demonstrated similar efficacy compared to intraperitoneal uterosacral vault suspension for post-hysterectomy prolapse, with shorter operative time and length of stay. Future prospective studies are warranted to further evaluate these initial findings and the potential benefits of the extraperitoneal approach.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Danny Mounir: Nothing to disclose; Nyla O. Vasquez-Tran: Nothing to disclose; Danielle Antosh: Nothing to disclose; Tristi Muir: Nothing to disclose.

20 Urinary tract infection following midurethral sling

S. Bhandari Randhawa[1], C. Chen[3], M. Varasteh Kia[3], J. B. Long, MD[2]
[1]Dept. of Obstetrics and Gynecology, Reading Hospital, King of Prussia, PA, [2]Dept of Obstetrics and Gynecology, Penn State Hershey, Hershey, PA, [3]Dept. of Obstetrics and Gynecology, Johns Hopkins Medicine, Baltimore, MD

OBJECTIVES: Urinary tract infections (UTIs) are common in women following urogenital surgery and are associated with significant individual and societal burdens. Therefore, the need to further understand clinical risk factors and subsequent strategies for prevention is imperative. The purpose of this study is to identify risk factors for post-operative UTIs following midurethral sling (MUS). We also describe the bacterial species responsible for postoperative UTIs in our community and the antibiotics prescribed.

MATERIALS AND METHODS: This is a retrospective analysis of patients who underwent MUS from 2010-2018 within a FPMRS practice of 2 surgeons. Data was extracted from review of charts and UTIs were documented up to 12 months following MUS. Risk factors evaluated included patient factors (age, BMI, parity, medical comorbidities, urinary incontinence, post void residual (PVR), smoking history, prolapse stage, vaginal estrogen use, menopausal status, recurrent UTI history, sexual activity, pessary use, hormone replacement use, neurogenic bladder), surgical factors (operative time, antibiotic use, estimated blood loss, concomitant reconstructive surgery, bladder perforation) and postoperative factors (duration of voiding dysfunction, sling revision, urinary incontinence resolution, PVR at 6 week visit). Categorical variables were analyzed with the Chi-square test, and continuous variables were analyzed using Student's *t*-tests. Statistically significant demographic and perioperative characteristics were studied in the Multiple Regression Analysis.

RESULTS: 915 MUS cases were reviewed. 23% of patients developed at least 1 UTI in the 12-month period postoperatively. On a bivariate analysis, statistically significant associations were found between postoperative UTI and patients with higher age, greater BMI, stage 3 prolapse, recurrent UTI history, asymptomatic bacteriuria, and cardiovascular disease. Significant perioperative characteristics included concomitant reconstructive surgery, voiding dysfunction requiring catheterization, continued post-operative urinary incontinence, and elevated PVR. On a multivariate analysis, prior history of recurrent UTI and PVR $>$100mL at 6 weeks were associated with UTI postoperatively. A history of recurrent UTIs and UTI within the first 6 weeks postoperatively was both independently associated with development of recurrent UTI in the first year following MUS. Escherichia coli was the predominant bacterial species of both recurrent and nonrecurrent UTIs, and macrobid was the most common antibiotic utilized.

CONCLUSION: This study provides additional power and confirmation of risk factors involved with postoperative UTIs following earlier studies of this topic. Local bacterial species and treatment patterns are described.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sonia Bhandari Randhawa: Nothing to disclose; Chi Chiung Grace Chen: Nothing to disclose; Mujan Varasteh Kia: Nothing to disclose; Jaime B. Long, MD: Nothing to disclose.

21 Now appearing as Oral Poster 16A

22 Laparoscopic-assisted myomectomy with uterine artery occlusion in morbidly obese patients at a freestanding ambulatory surgery center

P. Mackoul, N. Danilyants, L. van der Does, L. Haworth, N. Kazi
Research, Center for Innovative GYN Care, Rockville, MD

OBJECTIVES: To compare the outcomes of laparoscopic-assisted myomectomy (LAM) in morbidly obese patients (BMI $\geq$ 40 k/m2) versus non-obese patients (BMI $<$ 30 k/m2) and obese patients (BMI $\geq$ 30 and $<$ 40 k/m2) at a freestanding ambulatory surgery center.

MATERIALS AND METHODS: A retrospective comparative analysis was performed of 1,143 women, age 18 years or older, non-pregnant, who underwent LAM by one of two laparoscopic gynecologic surgical specialists at a freestanding ambulatory surgery center serving the Washington, DC, area, between October 2013 and February 2019. The study was deemed exempt from informed consent according to 45 CFR 46.101(b) by IntegReview IRB, an independent institutional review board. Blood loss was controlled by uterine artery occlusion, reversible and/or permanent. Reversible occlusion performed by placing a laparoscopic silicone tourniquet around the isthmus of the uterus, causing a causing temporary occlusion of the bilateral uterine arteries; permanent occlusion performed via retroperitoneal dissection and uterine artery ligation at the origin at the anterior branch of the internal iliac artery. Minilaparotomy performed for specimen removal in all cases. No power morcellation used. Postoperative complications graded using the Clavien-Dindo Classification system.

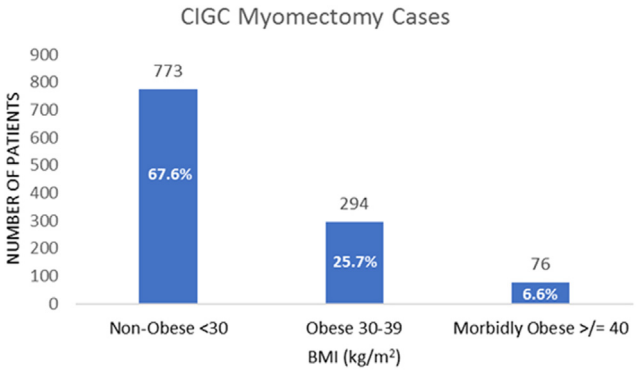
RESULTS: Estimated blood loss (EBL) was higher in morbidly obese patients, but the 103 mL difference is not considered clinically meaningful. No significant difference in intraoperative complications was seen across BMI categories. Grade 2 postoperative complication rate was significantly higher in both obese and morbidly obese patients, and consisted of blood transfusions and incisional infections treated with antibiotics, with a similar distribution in all three groups. Low rate of hospital transfers in all patients (Table 1, Figure 1).

CONCLUSION: Laparoscopic-assisted myomectomy can be performed safely in a freestanding ambulatory surgery setting, even in obese and morbidly obese patients.

Table 1. Surgical Outcomes

	Non-obese BMI < 30 (n=773)	Obese BMI 30 - 39 (n=294)	Morbidly Obese BMI ≥ 40 (n=76)	p value*
Mean BMI (k/m2)	24.3 (14 - 29)	33.2 (30 - 39)	44.4 (40 - 90)	N/A
Mean Myoma Weight (g)	374 (0 - 3800)	424 (0.5 - 3149)	429 (2.5 - 2800)	.628
Mean Operative Time (min)	68	70	72	.849
Mean EBL (mL)	169 (5 - 2000)	193 (5 - 2000)	272 (5 - 1500)	.002
Blood Transfusion, N (%)	19 (2.5)	9 (3.1)	3 (3.9)	.448
Intraoperative Complications, N (%)	12 (1.6)	5 (1.7)	2 (2.6)	.786
Grade 1 Postoperative Complications N (%)	19 (2.5)	10 (3.4)	0.0	.255
Grade 2 Postoperative Complications N (%)	20 (2.6)	13 (4.4)	6 (7.9)	.026
Grade 3a Postoperative Complications N (%)	4 (0.5)	2 (0.7)	0.0	.765
Grade 3b Postoperative Complications N (%)	8 (1.0)	2 (0.7)	1 (1.3)	.970
Transfer to Hospital N (%)	5 (0.6)	2 (0.7)	1 (1.3)	.793

*Pearson Chi-Square



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Paul Mackoul: Center for Innovative GYN Care, Owner, Salary; Natalya Danilyants: Center for Innovative GYN Care, Owner, Salary; Louise van der Does: Center for Innovative GYN Care, Employee, Salary; Leah Haworth: Center for Innovative GYN Care, Independent Contractor, Hourly wage; Nilofar Kazi: Center for Innovative GYN Care, Employee, Salary.

23 Postoperative urinary retention following benign gynecologic surgery with a liberal vs. strict voiding protocol

M. T. Siedhoff, K. N. Wright, M. Misal, A. Molina, N. Greene
Minimally Invasive Gynecologic Surgery, Cedars-Sinai Medical Center, Los Angeles, CA

OBJECTIVES: The study evaluated the risk of postoperative urinary retention (POUR) after major benign gynecologic surgery, comparing a liberal voiding protocol (no requirement to void prior to discharge) to more strict protocols. Secondary outcomes included length of hospital stay (LOS) and urinary tract infection (UTI).

MATERIALS AND METHODS: We conducted a retrospective cohort study examining one year of hysterectomies and myomectomies at Cedars-Sinai from August 2017 through July 2018. Cases involving incontinence operations, correction of pelvic organ prolapse, malignancy, or peripartum hysterectomy were excluded. POUR, defined as the need for re-catheterization within 24 hours of catheter removal, along with UTI and LOS, were compared between liberal and strict voiding protocols. Sub-group analysis was performed for those undergoing minimally invasive surgery (MIS).

RESULTS: Three hundred three (46.5%) women underwent surgery with a liberal postoperative voiding protocol and 349 (53.5%) with a strict voiding protocol. Women in the strict voiding protocol group were older; otherwise baseline characteristics were similar. The most common procedures performed were total laparoscopic hysterectomy (N=274), laparoscopic myomectomy (N=115), abdominal myomectomy (N=94), and total abdominal hysterectomy (N=71). Overall, the incidence of POUR was low at 3.8% and not different among groups (2.6% liberal vs. 4.9% strict, p=0.14). UTI also occurred infrequently (2.6% liberal vs. 2.9% strict, p=0.86). Similar results were seen among those that underwent MIS: POUR (2.8% liberal vs. 5.3% strict, p=0.17) and UTI (2.4% liberal vs. 4.7% strict, p= 0.28). Median length of stay (IQR) was shorter for MIS patients with a liberal voiding protocol (median 9 hours (IQR 4) liberal vs. 36 (34) strict, p<0.01). LOS was similar among groups for laparotomies (p=0.13). Among those discharged same-day (72.6% of MIS cases), patients with a liberal voiding protocol had a significantly shorter

LOS than those with strict (mean (SD) 9.4 (2.5) hours vs. 10.6 (35) hours, p<0.01). Postoperative complications occurred less frequently among those with MIS procedures (11.8% in MIS vs 20.2% in laparotomies, p<0.01), as well as those with liberal voiding protocols (11.2% liberal vs 16.9% strict p=0.04).

CONCLUSION: Overall, POUR occurs infrequently after major benign gynecologic surgery and does not differ among those with a liberal and a strict voiding protocol. Our data suggest same-day discharge after MIS hysterectomy and myomectomy without a requirement to void does not increase the risk of POUR and shortens LOS. Eliminating voiding protocols after these procedures may facilitate greater efficiency in the post-anesthesia recovery unit (PACU), and may contribute to Enhanced Recovery After Surgery (ERAS) protocols.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Matthew T. Siedhoff: Applied Medical, Consulting, Honorarium; Medtronic, Consulting, Honorarium; Olympus, Speaking and teaching, Honorarium; Eximis Surgical, Consulting, Honorarium; Hologic, Consulting, Honorarium; Caldera Medical, Consulting, Honorarium; Kelly N. Wright: Caldera Medical, Consulting, Honorarium; Applied Medical, Consulting, Honorarium; Hologic, Consulting, Honorarium; Karl Storz, Consulting, Honorarium; Meenal Misal: Nothing to disclose; Andrea Molina: Nothing to disclose; Naomi Greene: Nothing to disclose.

24 Validation of the body image in pelvic organ prolapse questionnaire in Spanish-speaking Latinas

T. I. Montoya[1], O. Morera[2], S. Sanchez[1], V. T. Mallett[1]
[1]Obstetrics and Gynecology, Texas Tech University HSC El Paso, El Paso, TX, [2]Psychology, University of Texas at El Paso, El Paso, TX

OBJECTIVES: The Body Image in Pelvic Organ Prolapse questionnaire (BIPOP) is a validated measure to assess body image impact in women with pelvic organ prolapse (POP). BIPOP consists of 10 items and 2 subscales, attractiveness and partner-related. Previously, we demonstrated similarity of body image themes in Latinas with symptomatic POP with those found in BIPOP, which was developed and validated in white women. Our objective was to examine the psychometric properties of a Spanish-translated version of the BIPOP (BIPOP-S) in Spanish-speaking Latinas.

MATERIALS AND METHODS: Spanish-speaking Latina women with a diagnosis of symptomatic POP at the Urogynecology clinics at Texas Tech University HSC El Paso were recruited to participate. Demographic information was collected. BIPOP was translated into Spanish by certified bilingual translators by a process of translation and back-translation, following guidelines to conserve equivalence across cultures. As with the original BIPOP, two versions were prepared, one for partnered and one for non-partnered women. Participants completed the BIPOP-S, as well as a series of additional measures: Rosenberg's Self Esteem scale (RSE), Patient Health Questionnaire-9 (PHQ-9), Pelvic Floor Impact Questionnaire (PFIQ) and Body Image Quality of Life inventory (BIQOL). Internal consistency reliability was calculated for each scale of the BIPOP-S with Cronbach's alpha. Convergent validity was assessed by correlating the BIPOP-S scores with the RSE, PHQ-9, PFIQ and BIQOL.

RESULTS: Forty-five women participated in the study. Participants had a mean age of 60.1 ± 9.1, 55.6% were partnered and 44.4% were non-partnered. Reliability, as indexed by coefficient α, was excellent (α=0.938 for total BIPOP-S score, α=0.911 for partner subscale and α=0.928 for attractiveness subscale). Scores on BIPOP-S correlated negatively with PHQ-9 and PFIQ scales, and had positive correlations with self-esteem and body image quality of life scores (Table). There was no difference in BIPOP-S total scores or its subscales between partnered and non-partnered participants.

CONCLUSION: Our Spanish-translated version of the BIPOP questionnaire, BIPOP-S, demonstrated high internal consistency and convergent validity in partnered and non-partnered Spanish-speaking Latina women. The measure may be useful tool in the assessment of impact of POP on body image in the Spanish-speaking Latina population.

Table: Convergent Validity of BIPOP-S Total Score, Partner and Attractiveness subscales (n=45)

Scale	BIPOP-S Total score	BIPOP-S Partner	BIPOP-S Attractiveness
RSE	0.53***	0.375*	0.592***
PHQ-9	-0.456***	-0.379**	-0.458***
PFIQ-Total	-0.555***	-0.42***	-0.598***
PFIQ-Bladder	-0.566***	-0.402**	-0.631***
PFIQ-Bowel	-0.415**	-0.401**	-0.365**
PFIQ-Vagina	-0.47***	-0.319**	-0.537***
BIQOL	0.407***	0.271	0.469***

*p<0.10, **p<0.05, ***p<0.01

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Teodoro I. Montoya: Nothing to disclose; Osvaldo Morera: Nothing to disclose; Sheralyn Sanchez: Nothing to disclose; Veronica T. Mallett: Nothing to disclose.

25 Mechanisms underlying nocturia in women with bladder pain syndrome/interstitial cystitis

J. Suyama[1], F. Yang[2], A. Soriano[1], H. Rao[3], L. A. Arya[1]
[1]Obstetrics & Gynecology, Hospital of the University of Pennsylvania, Philadelphia, PA, [2]Neuroscience, Georgetown University, Washington, DC, [3]Neurology, University of Pennsylvania, Philadelphia, PA

OBJECTIVES: Little is known about mechanisms underlying nocturia in women with bladder pain syndrome/interstitial cystitis (BPS/IC). The thalamus plays a primary role in the organization of the sleep-wake cycle. Our hypothesis was that nocturia is associated with activation of the thalamus in women with BPS/IC as compared to controls.

MATERIALS AND METHODS: Data from 27 subjects (14 women with BPS/IC and 13 age-matched controls) enrolled in a Multi-Disciplinary Approach to Chronic Pelvic Pain (MAPP) ancillary study through November 30, 2018 were analyzed. All subjects completed the Interstitial Cystitis Symptom and Problem Indices and PROMIS Sleep Disturbance Short Form to assess BPS/IC and sleep quality, respectively. All subjects also underwent arterial spin labeling functional magnetic resonance imaging to quantitatively measure cerebral blood flow (CBF) in the thalamus in the empty-bladder state and after oral bladder fill in low urgency (score 1-3) and high urgency (score > 3) states. Nocturia was defined as ≥2 episodes of nocturnal voiding. CBF in the thalamus at baseline, low urgency, and high urgency states in women with BPS/IC and controls was compared using two-way mixed model ANOVA. Associations between nocturia, CBF, sleep disturbance and BPS/IC scores were analyzed using linear regression.

RESULTS: There was no significant difference in the mean age (49 ± 13 vs. 45 ± 12 years, p=0.4) of BPS/IC subjects and controls. The BPS/IC group had a greater number of nocturia episodes (median 3 vs. 1, p <0.01) and greater sleep disturbance (60.7 ± 8.8 vs. 41.2 ± 9.9, p<0.001) than controls. CBF in bilateral thalamus increased as the level of urgency increased in the BPS/IC group but not in controls (p<0.01, Figure 1). Baseline CBF in bilateral thalamus correlated with the number of episodes of nocturia in women with BPS/IC but not in controls (Figure 2). CBF at baseline and in the low

urgency state was not significantly associated with sleep disturbance or bladder pain scores. However, CBF in the right thalamus in the high urgency state was significantly associated with sleep disturbance score (r= -0.42, p=0.03).

CONCLUSION: Nocturia and sleep disturbance in women with BPS/IC are likely modulated through the thalamus.

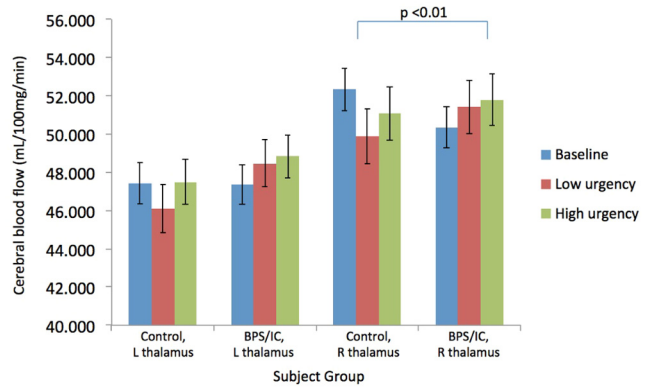


Figure 1. Interaction between subject group and regional cerebral blood flow during different urgency states in bilateral thalamus

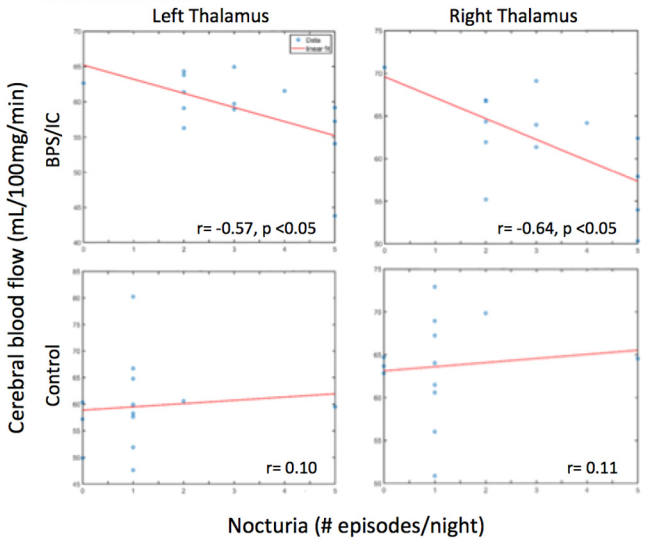


Figure 2. Association between nocturia and regional cerebral blood flow in thalamus at baseline

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Julie Suyama: Nothing to disclose; Fan Nils Yang: Nothing to disclose; Alex Soriano: Nothing to disclose; Hengyi Rao: Nothing to disclose; Lily A. Arya: Nothing to disclose.

26 Relationship between pelvic organ prolapse and age at first birth

R. Wang, P. Tulikangas, E. Tunitsky
Hartford Hospital, Hartford, CT

OBJECTIVES: It is increasingly more common to have childbirth later in life among U.S. women and childbirth is considered to be a risk factor for pelvic organ prolapse. We hypothesized that there is a relationship between age at first birth and subsequent risk of pelvic organ prolapse.

MATERIALS AND METHODS: The National Health and Nutrition Examination Survey (NHANES) is a nationally representative sample of the non-institutionalized population in the U.S. We performed a retrospective cross-sectional study using NHANES data from 2005-2012. Our primary outcome was presence of prolapse, defined as a positive response to the validated question, "Do you see or feel a bulge in the vaginal area?" Data was pooled across all available years and prevalence calculated with appropriate sample weights. Multivariable logistic regression models were constructed to assess factors associated with reporting prolapse for women with only vaginal deliveries or only cesarean deliveries.

RESULTS: There were a total of 9,810 women included in the survey data, with 2,357 in the vaginal delivery only group and 1,079 in the cesarean delivery only group. The overall prevalence of prolapse from 2005-2012 was 2.82%. Of women with only vaginal deliveries, 4.53% reported prolapse, with prevalence ranging from 3.62% among those aged 25-29 at first birth to 8.57% among those aged 30-34 at first birth; while of women with only cesarean delivery, 1.99% reported prolapse, with prevalence ranging from 1.94% among those aged 25-29 at first birth to 4.28% among those aged 30-34 at first birth. The number of women aged 35 and above at first birth was small in both the vaginal delivery only (n=26) and cesarean delivery only (n=21) groups and none had reported prolapse. Adjusting for age, number of deliveries, BMI, history of hysterectomy, race/ethnicity, marital status, and college education, among women with only vaginal deliveries, having the first birth at age 30-34 was associated with 3.77 times odds of reporting prolapse (95% CI 1.37-10.42, P=0.010) compared to having the first birth at age less than 20. Other factors in the multivariable model significantly associated with reporting prolapse include number of deliveries (OR 1.13, 95% CI 1.02-1.26, P=0.022), history of hysterectomy (OR 1.72, 95% CI 1.04-2.82, P=0.033), and Hispanic ethnicity (OR 2.34, 95% CI 1.38-3.98, P=0.002). Among women with only cesarean deliveries, the only variable in the multivariable model significantly associated with reporting prolapse was marital status (OR 0.27, 95% CI 0.08-0.92, P=0.037).

CONCLUSION: In a nationally representative sample of U.S. women, the prevalence of prolapse varied by age at first birth and mode of delivery. After adjusting for potential confounders, age at first birth appears to be associated with risks for prolapse among women with only vaginal deliveries.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rui Wang: Nothing to disclose; Paul Tulikangas: Nothing to disclose; Elena Tunitsky: Nothing to disclose.

27 Costs of delayed vs intraoperative recognition of lower urinary tract injury at the time of laparoscopic hysterectomy

D. Gilchrist-Scott, M. G. Mueller, J. Geynisman-Tan, K. Kenton
OB/GYN, Northwestern University, Chicago, IL

OBJECTIVES: To evaluate the direct medical costs associated with delayed versus immediate recognition of lower urinary tract injury (LUTI) at the time of laparoscopic hysterectomy and estimate the relative costs and savings associated with universal cystoscopy (UC) as compared to selective cystoscopy (SC).

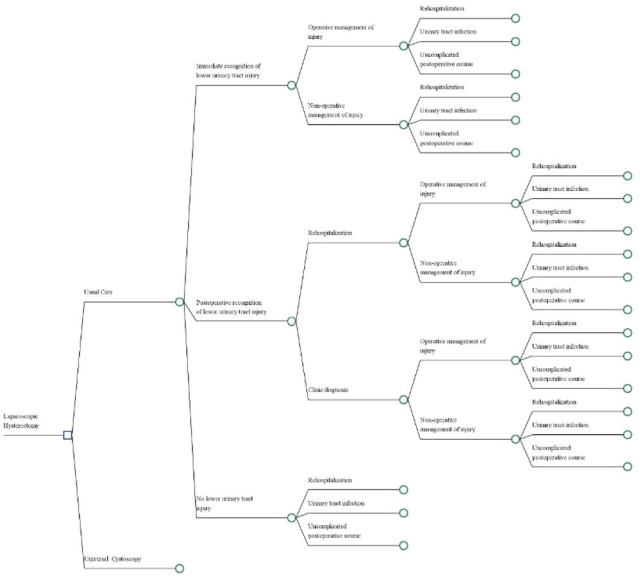
MATERIALS AND METHODS: A decision tree model was used to estimate the costs associated with delayed vs intraoperative recognition of LUTI at the time of laparoscopic hysterectomy for benign indications. Probability distributions of injury and its associated complications were drawn from published literature. Where multiple published probabilities were available, a sample-size-weighted average was used with a PERT distribution. Healthcare payer costs were drawn from 2016 Centers for Medicare and Medicaid Services

national reimbursement schedules and included estimated physician fees, anesthesia fees, facility fees, imaging fees and pathology fees, using Current Procedural Terminology or Diagnosis Related Group codes as appropriate. The payer cost of cystoscopy was estimated using bundled outpatient reimbursement rates, as it is not separately billed at the time of hysterectomy. Total costs were estimated under both SC and UC. SC assumed an average 25% cystoscopy rate based on published literature. A three-way threshold analysis was performed to determine the proportion of LUTI with delayed diagnosis that would need to be diagnosed intraoperatively to favor UC under three scenarios: low injury rates (0.5%; estimated using pooled retrospective and prospective data), high injury rates (4%; estimated using prospective data with universal screening), and moderate injury rates (2.2%). Probabilistic sensitivity analysis was used to assess the robustness of the findings. Given insufficient data, no other healthcare system costs, such as malpractice liability, differential operating room time, or out-of-pocket expenses were included.

RESULTS: The SC estimated cost of laparoscopic hysterectomy, inclusive of LUTI complications, ranged from $8,807 to $9,132, while the UC cost ranged from $8,962 to $9,034. Assuming high LUTI rates, UC can be cost saving with ureteral injury detection rates above 50% or bladder injury detection rates above 96%; maximal estimated costs savings were $98 per hysterectomy. UC does not achieve cost savings to the payer assuming low injury rates with a median incremental cost of $143 per hysterectomy (incremental cost to prevent one delayed diagnosis $113,186). Moderate injury rates were estimated to be cost neutral.

CONCLUSION: Estimated UC costs vary based on LUTI rates, and UC policy has the potential to be cost saving through increased intraoperative diagnosis of LUTI. When not cost saving, the incremental costs of UC are modest and may still be outweighed by other health system and malpractice liability costs not accounted for within this model.

Figure:



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Douglas Gilchrist-Scott: Nothing to disclose; Margaret G. Mueller: Nothing to disclose; Julia Geynisman-Tan: Nothing to disclose; Kimberly Kenton: Nothing to disclose.

28 Prevalence of pelvic organ prolapse after vaginal hysterectomy with prophylactic apical support

J. Talbott[1], R. Butterfield III[3], M. Girardo[3], J. Yi[2], M. Wasson[2]

[1]Mayo Clinic Alix School of Medicine, Tempe, AZ, [2]Gynecology, Mayo Clinic, Phoenix, AZ, [3]Health Sciences Research, Mayo Clinic, Scottsdale, AZ

OBJECTIVES: To evaluate the five year prevalence and patient demographics of pelvic organ prolapse (POP) after vaginal hysterectomy (TVH) for benign indications with simultaneous McCall's culdoplasty.

MATERIALS AND METHODS: An IRB exempt retrospective chart review was conducted for women ≥ 45 years old undergoing McCall's culdoplasty at time of TVH for benign indications at two different sites of a tertiary care, academic medical institution. The follow-up period was 4.5-5.5 years.

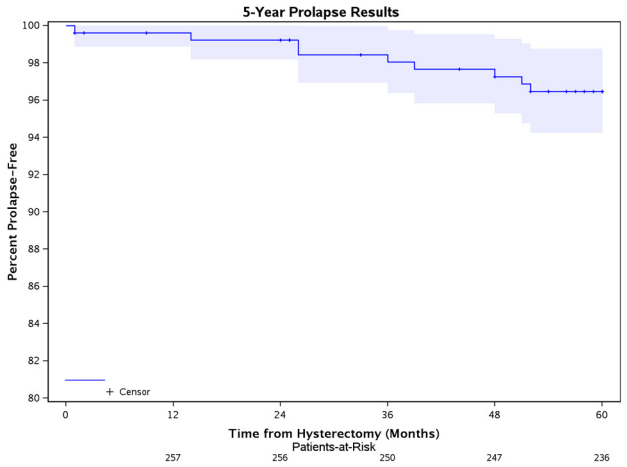
RESULTS: A total of 1,289 TVH were performed for women ≥ 45 years old between May 1, 2000 and May 1, 2013. 916 were excluded for these one or more reasons: 669 (73.0%) had POP at time of TVH; 115 (12.6%) had no prophylactic McCall's; 91 (9.9%) had a known neoplasm; 29 (3.2%) were missing operative reports; 9 (1.0%) died before 5 years; 4 (0.4%) were abdominal conversions from vaginal attempts. Of the 262 remaining, 9 (3.4%) developed POP within a 5-year period. No differences were found in demographics between women who did and did not develop POP.

CONCLUSION: For primarily white, multiparous women of average BMI who received a McCall's at time of TVH, there were no observed differences between patients who did and did not develop POP. Additionally, women had lower post-hysterectomy POP rates compared to rates in the literature among McCall's non-specific patients.

Table: Demographics Characteristics by Prolapse within 5yrs of Hysterectomy

		Prolapse No (N = 253)	Prolapse Yes (N = 9)	Total (N = 262)	p value
Age at Hysterectomy (years)					0.9103*
	Mean (SD)	49.9 (5.8)	49.2 (3.6)	49.8 (5.8)	
	Range	(45.0-77.0)	(45.0-55.0)	(45.0-77.0)	
BMI (kg/m2)					0.0891*
	Mean (SD)	28.3 (7.0)	24.4 (3.3)	28.2 (6.9)	
	Range	(17.8-59.5)	(20.0-29.0)	(17.8-59.5)	
Race					0.4380**
	White	238 (94.1%)	8 (88.9%)	246 (93.9%)	
	Black	4 (1.6%)	0 (0.0%)	4 (1.5%)	
	Asian	5 (2.0%)	1 (11.1%)	6 (2.3%)	
	American Indian/Alaska Native	1 (0.4%)	0 (0.0%)	1 (0.4%)	
	Native Hawaiian/Other Pacific Islander	1 (0.4%)	0 (0.0%)	1 (0.4%)	
Ethnicity					0.4032**
	Hispanic White	11 (4.3%)	1 (11.1%)	12 (4.6%)	
	Non-Hispanic White	228 (90.1%)	8 (88.9%)	236 (90.1%)	
Parity					0.7862*
	Median	2.0	2.0	2.0	
	Range	(0.0-9.0)	(1.0-3.0)	(0.0-9.0)	
Vaginal Delivery					0.6020**
	No	23 (11.1%)	0 (0.0%)	23 (10.6%)	
	Yes	184 (88.9%)	9 (100.0%)	193 (89.4%)	
History of Smoking					0.7221**
	No	167 (66.0%)	7 (77.8%)	174 (66.4%)	
	Yes	86 (34.0%)	2 (22.2%)	88 (33.6%)	

*Wilcoxon **Fisher Exact



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jennifer Talbott: Nothing to disclose; Richard Butterfield III: Nothing to disclose; Marlene Girardo: Nothing to disclose; Johnny Yi: Nothing to disclose; Megan Wasson: Nothing to disclose.

29 Effect of tunneling on colorectal and prolapse symptoms during sacrocolpopexy

F. Dursun, K. Lewis, T. Lee, G. Kilic
University of Texas Medical Branch, Galveston, TX

OBJECTIVES: Currently there are two techniques commonly used during mesh placement between the vagina and sacral promontories in a sacrocolpopexy. Non-tunneling is the complete incision of peritoneum from sacral promontory down to the vaginal apex. Tunneling, on the other hand, requires only two small incisions on the sacral promontory and vaginal apex followed by undermining of the peritoneum. We hypothesized that the autonomic innervation between the presacral area and pelvic side wall can be better preserved during the tunneling technique. The objective of this study was to compare the effect of tunneling vs non-tunneling mesh placement, and colorectal and POP related symptoms during robotic-assisted sacrocolpopexy (RASC).

MATERIALS AND METHODS: A single-institution, single-surgeon randomized clinical trial was performed from August 2016 to September 2017. Sixty patients were enrolled and randomized to 2 groups. All patients had a POP-Q examination and were asked to fill out a Pelvic Floor Disability Index (PFDI-20) questionnaire prior to the procedure and at 6 and 12 weeks postoperatively. The differences between the groups from pre-op to post-op assessments were calculated by Welch's two-sample t-test.

RESULTS: Twenty-eight patients completed the study (Figure 1). The average follow-up time was 8.7 weeks. There was no difference in baseline characteristics and surgery times (p=0.12) between the two groups. There were statistically significant differences between pre-op and post-op POP-Q stages and Pelvic Organ Prolapse Distress Inventory (POPDI-6) scores of patients for both groups. Improvement after the surgery was similar between the two groups (p=0.07). There also were statistically significant differences between the tunneling and non-tunneling groups in colorectal symptom scores based on the colorectal-anal distress inventory (CRAD-8) (p=0.026). Non-tunneling CRAD-8 scores declined by an average of 9.4 (p=.003) while tunneling scores declined by an average of 20.8 (p=.0002) (Table 1).

CONCLUSION: Our study results suggest that the tunneling technique, when compared to the non-tunneling technique used during mesh placement of RSCP demonstrates a greater improvement in colorectal symptoms. Both groups demonstrated similar anatomic improvement of POP-Q stage and POPDI score. One potential explanation might be the better preservation of sympathetic innervation of pelvic organs during the tunneling technique. Further larger studies are warranted to explore our hypothesis.

Table 1: Improvement of POPDI Scores and CRAD-8

	Non-Tunneling group n=13			Tunneling group n=15			Statistics		
	Pre-op Mean+/- SD	Post-op Mean+/- SD	Difference (Post op - Preop Score)	Pre-op Mean+/- SD	Post-op Mean+/- SD	Difference (Post op - Preop Score)	Welch's t-test p-value	Non-Tunneling 1-sample p-value	Tunneling 1-sample p-value
POPDI-6	48.1 ± 24.3	17.3 ± 26.7	-30.8 ±26.2	56.9 ± 26.1	6.1 ± 12.5	-50.8 ± 30.9	0.0743	0.0012	<.0001
CRAD-8	19.7 ± 14.7	10.3 ± 10.1	-9.4 ± 8.9	33.1 ± 19.9	12.3 ± 12.3	-20.8 ± 15.9	0.0257	0.0026	0.0002

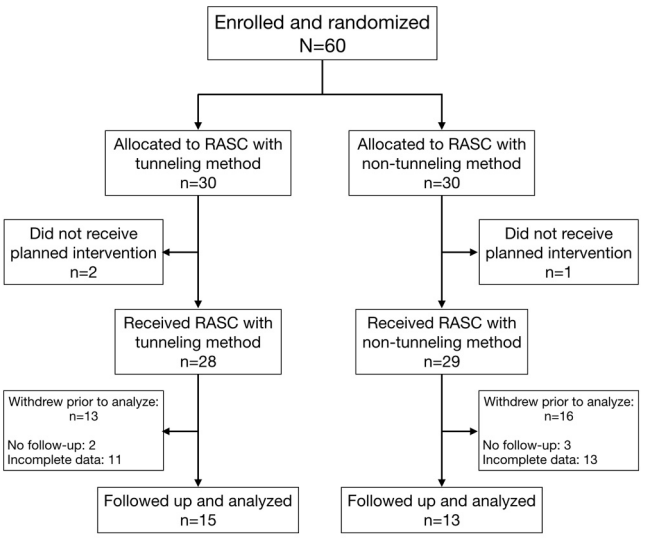


Figure 1: Allocation and follow-up in the trial.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Furkan Dursun: Nothing to disclose; Kelsey Lewis: Nothing to disclose; Toy Lee: Nothing to disclose; Gokhan Kilic: Nothing to disclose.

30 Preoperative evaluation with MRI and LDH testing in patients undergoing intra-abdominal surgery for fibroids: Effect on surgical route

A. J. Kim[2], L. Boyd[4], N. Ringel[1], J. Meyer[1], G. Bennett[3], V. Lerner[2]
[1]Obstetrics and Gynecology, New York University Langone Health, New York, NY, [2]Obstetrics and Gynecology, Albert Einstein College of Medicine / Montefiore Medical Center, Bronx, NY, [3]Radiology, New York University Langone Health, New York, NY, [4]Gynecologic Oncology, New York University Langone Health, New York, NY

OBJECTIVES: The use of power morcellation has been restricted in many centers due to concerns for inadvertent spread of an undiagnosed leiomyosarcoma. Our institution implemented a preoperative protocol to avoid power morcellation in high risk cases. In this retrospective cohort study, we report the impact of this protocol on

institutional surgical practice patterns, and the influence of MRI and LDH results on surgical route.

MATERIALS AND METHODS: An institutional protocol requiring preoperative MRI with diffusion-weighted imaging and serum LDH levels was implemented on 4/23/2014 at a single academic hospital. A retrospective chart review was performed including all women who underwent intra-abdominal surgery for symptomatic fibroids from 4/23/2013 to 4/23/2015. Statistical analyses included univariate comparisons between the cohorts pre- and post-protocol, as well as overall adherence to protocol, trends in surgical patterns, and incidence of uterine pathology.

RESULTS: A total of 1085 patients were included, 479 before and 606 after implementation of the MRI/LDH protocol. The pre-protocol group had more post-menopausal women (4% vs. 2%, p=0.022) and women using tamoxifen (2% vs. 0%, p=0.022) than those in the post-protocol group, but baseline patient characteristics were otherwise similar between groups. Incidence of malignant pathological diagnoses did not change significantly over the time period in relation to protocol implementation. The rate of minimally invasive surgery (MIS) for both hysterectomy and myomectomy remained the same in the year preceding and the year following initiation of the protocol (81% vs. 84% and 90% vs. 91%, respectively). There was a significant decrease in the use of power morcellation (66% in pre- and 50% in post-protocol cohorts, p<0.001) and an increased use of containment bags when specimens were removed abdominally (1% in pre- and 19% in post-protocol cohort). When analyzing the subset of patients who had abnormal MRI and LDH results, abnormal MRI results alone resulted in higher rates of open approach (65% for abnormal vs. 35% for normal). Similarly, a combination of abnormal MRI and LDH tests resulted in higher rates of open approach (70% for abnormal and 17% for normal). Abnormal LDH results alone did not influence route.

CONCLUSION: Though earlier studies have suggested an overall decrease in minimally invasive hysterectomies in response to the FDA warning on power morcellation, there was no change in rates of minimally invasive hysterectomies and myomectomies at our institution during a similar time period. Changes in surgical techniques, such as decreased use of power morcellation and increased use of contained tissue extraction, were seen. Decreased rates of MIS were seen for patients with abnormal preoperative MRI.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Annie J. Kim: Nothing to disclose; Leslie Boyd: Nothing to disclose; Nancy Ringel: Nothing to disclose; Jessica Meyer: Nothing to disclose; Genevieve Bennett: Nothing to disclose; Veronica Lerner: Nothing to disclose.

31 Randomized controlled trial of ultrasound-guided intrauterine device insertion

L. Li, T. Wright, S. J. Estes
Obstetrics and Gynecology, Penn State Milton S. Hershey Medical Center, Harrisburg, PA

OBJECTIVES: Malpositioned intrauterine devices (IUDs) are identified in 20% of women undergoing pelvic ultrasound (US) for gynecologic indication and may necessitate surgical intervention for removal; this study evaluates whether US-guided IUD insertion decreases malposition and discontinuation rates compared to the traditional blind method of insertion.

MATERIALS AND METHODS: Randomized single-blind trial (pilot) using a 1:1 allocation ratio of traditional insertion to US-guided insertion at a single academic outpatient setting. All IUD types were included. Exclusion criteria included being less than 6 weeks postpartum, IUD insertion in the operating room, pregnancy, prisoners, or cognitive impairment. At the insertion visit, pre and post-insertion visual analog scale (VAS) were assessed for pain. All subjects were seen in the Reproductive Endocrinology Infertility clinic for their 4-6 week and 6 months ultrasounds and string check by providers that were blinded to the allocated arm. Malposition, adverse events, and satisfaction were noted at both follow up visits. Outcomes included 6-month discontinuation rate, malposition rate, pain post-insertion, satisfaction with IUD, and side effects.

RESULTS: A total of 85 participants were randomized: 43 to traditional blind insertion and 42 to US-guided insertion. Sixty-nine and 52 participants completed the 4-6 week visit and 6 month visit, respectively. The malposition rate at 4-6 weeks post IUD insertion was 3/32 (9.4%) and 6/37 (16.2%) in the US and traditional arms with relative risk of 0.58 (95% CI 0.15, 2.18; P=0.41). The 6-month discontinuation rate was 6/33 (18.2%) and 8/32 (25.0%) in the US and traditional arms respectively with relative risk of 0.73 (95% CI 0.28, 1.90; P=0.51). All malpositioned IUD's were identified at the 4-6 week follow-up visit. Two participants elected to continue with their malpositioned IUD at the 4-6 week visit, however both discontinued the IUD prior to the 6-month visit (1 expulsion and 1 IUD removal). Discontinuation for correctly positioned IUDs occurred in 2 participants in the traditional arm and 3 participants in the US-guided arm due to side effects. Post-insertion pain and satisfaction were not statistically significantly different between the two arms. Side effects were similar between traditional vs US-guided as follows: vaginal bleeding (39%, 38%), pelvic pain (20%, 13%), menstrual changes (5%, 0%), and hormonal side effects (7%, 0%).

CONCLUSION: In this randomized trial, 9% of IUDs were malpositioned in the US-guided insertion arm compared to 16% in the traditional arm. While not statistically significant due to the sample size, this difference is certainly of interest for further evaluation. The 4-6 week time period is critical for identification of IUD malposition which has pivotal implications for clinical management that may involve potential surgical intervention including hysteroscopic or laparoscopic IUD removal.

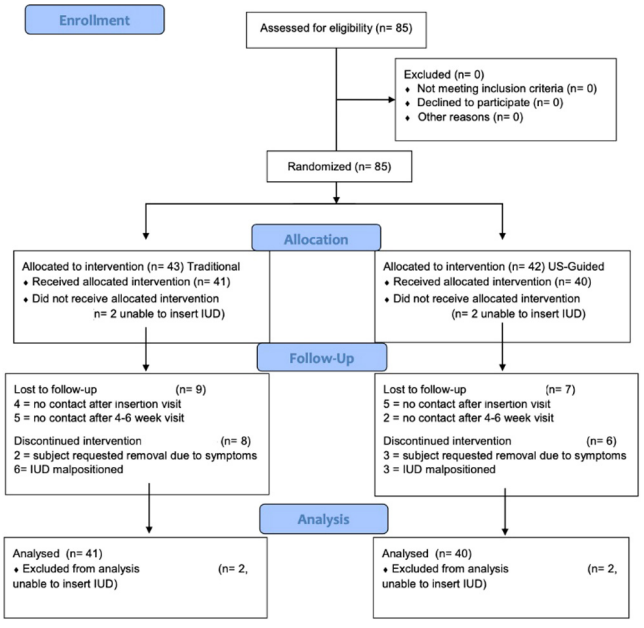


Image 1: Enrollment

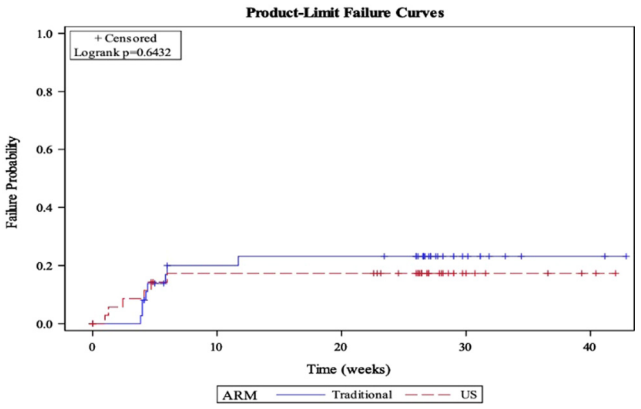


Image 2: Kaplan-Meier curve 6 month discontinuation rate

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Linda Li: Nothing to disclose; Tonya Wright: Nothing to disclose; Stephanie J. Estes: Nothing to disclose.

32 Patient experience and unplanned patient contact after implementation of an enhanced recovery after surgery protocol for laparoscopic hysterectomy

K. N. Wright[1], I. Ronen[1], M. T. Siedhoff[1], I. Cass[2]
[1]OB/GYN, Cedars-Sinai Medical Center, Los Angeles, CA, [2]Dartmouth Hitchcock Medical Center, Lebanon, NH

OBJECTIVES: Enhanced recovery after surgery (ERAS) is an evidence-based approach to perioperative care shown to hasten recovery and attenuate the stress response to surgery. While the literature to date supports quality evidence for individual components of the ERAS pathway, there is little data on the impact of an ERAS protocol on the patient-reported recovery experience after laparoscopic hysterectomy. The primary objective of this study is to evaluate the impact of an ERAS protocol on patient experience after discharge home from laparoscopic hysterectomy. Secondary outcomes include same day discharge rates, unplanned patient contacts, and analgesic requirements at home.

MATERIALS AND METHODS: This is an IRB-approved prospective cohort study comparing patients undergoing laparoscopic hysterectomy by high volume surgeons (>10 hysterectomies per year) at a single institution from August 2018 to May 2019. Patients were divided into two cohorts: a perioperative ERAS protocol adopted by the institution or standard perioperative care according to the patient's surgeon. To evaluate patient experience, patients were given a validated questionnaire of self-reported recovery scores in domains of daily functional activities at their two-week postoperative visit.

RESULTS: 40 patients were enrolled into the ERAS group and 44 into the standard perioperative care group. There was 100% follow-up through the two-week postoperative visit. ERAS patients spent the same amount of time in the recovery room as those in the standard group (3.3 vs. 3.4 hours, p=0.8) and did not have statistically different rates of same day discharge (88% vs. 73%, p=0.09). ERAS and standard care patients reported similar physical activity scores (1.12 vs. 1.12, p=1.0), day at first bowel movement (2 vs. 3, p=0.6), and days of narcotic use after surgery (2.5 vs. 1.5, p=0.1). Interestingly, ERAS patients had significantly fewer unplanned patient contacts (phone calls, office visits, urgent care visits, and emergency room presentations) than the standard care group (15% vs. 50%, $p<0.05$). There were no readmissions. Overall, patients took few opioids, with 90% of all patients using less than 10 narcotic tablets after surgery (5mg oxycodone equivalents).

CONCLUSION: Same day discharge, patient-reported recovery experience, and narcotic requirements of patients did not differ between patients under an ERAS protocol vs. standard perioperative care. Patients do well after laparoscopic hysterectomy, and it is uncertain if ERAS elements can improve functional outcomes further. However, unplanned patient contacts were significantly decreased by implementation of an ERAS protocol, which included a preoperative patient education packet. Providing patients with information preoperatively may set appropriate expectations and decrease patient concerns and questions after surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kelly N. Wright: Applied Medical, Consultant, Honorarium; Caldera Medical, Consultant, Honorarium; Hologic, Consultant, Honorarium; Karl Storz, Consultant, Honorarium; Itai Ronen: Nothing to disclose; Matthew T. Siedhoff: Applied Medical, Consultant, Honorarium; Caldera Medical, Consultant, Honorarium; Cooper Surgical, Consultant, Honorarium; Olympus, Consultant, Honorarium; Ilana Cass: Nothing to disclose.

33 Relationship between symptoms and urinary biomarkers in women with dry overactive bladder

D. Hassani, A. Soriano, L. A. Arya, A. U. Uduak
University of Pennsylvania, Philadelphia, PA

OBJECTIVES: Urinary urgency without incontinence, frequently referred to as "dry overactive bladder" is a poorly understood condition. Our aim was to investigate the relationship of clinical symptoms (urgency and pain) with urinary biomarkers of neuroinflammation in women with urinary urgency without incontinence.

MATERIALS AND METHODS: We conducted a prospective cohort study. Patients were included if they reported at least mild urinary urgency on the Indevus urgency scale. Women with urinary incontinence or urinary tract infection were excluded. All subjects completed validated questionnaires to measure urinary symptoms including Interstitial Cystitis Symptom Index (ICSI), Interstitial Cystitis Problem Index (ICPI), Female Genitourinary Pain Index (GUPI) and neuropathic pain (PainDETECT). Levels of the urinary biomarkers VEGF, osteopontin, NGF and BDNF were normalized with urinary creatinine (Cr). Linear regression was used to determine the relationship between symptom scores and urinary biomarkers.

RESULTS: The mean age and BMI of our cohort of 85 subjects were 40.9 ± 16.4 years and 25.0 ± 6.3 kg/m^2, respectively. Of these, 33 (38.8%) had mild, 38 (44.7%) had moderate, and 14 (16.5%) had severe urgency. The median (range) of symptom scores were as follows: ICSI 8 (0-20), ICPI 7 (0-16), F-GUPI 23.5 (2-42), and PainDETECT 10 (0-36). The most common locations of pain were vaginal opening (44%), labia (33%), and bladder (26%). Neuropathic pain score was higher in women with moderate-severe urgency than in women with mild urgency but not significantly different (11.7 ± 7.9 vs. 9.5 ± 8, p = 0.14). Severity of urgency was associated with NGF/Cr and BDNF/Cr levels on univariable analysis and the relationship between urgency and NGF/Cr persisted after adjusting for age and BMI (Table 1). Severity of neuropathic pain was also associated with NGF/Cr level after adjusting for age and BMI (p = 0.01). Presence of tingling pain was associated with osteopontin/Cr levels (p = 0.03) and total ICSI symptom score was marginally associated with VEGF/Cr levels (p = 0.05).

CONCLUSION: Pain and urgency are associated with the expression of neuroinflammatory biomarkers in the urine. A mechanism of neurogenic inflammation may explain the co-existence of urinary symptoms and pain in women with urgency without incontinence.

Table:

Biomarker (mean ± SD)	Mild Urgency (N = 33)	Moderate-Severe Urgency (N=52)	P value	P value (adjusted for age and BMI)
NGF/Cr	0.082 ± 0.1	0.384 ± 0.7	0.02	0.02
BDNF/Cr	2.038 ± 3.0	3.668 ± 4.0	0.05	0.09
VEGF/Cr	0.288 ± 0.4	0.377 ± 0.5	0.39	0.64
Osteopontin/Cr	2.781 ± 3.2	3.406 ± 4.0	0.45	0.49

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Daisy Hassani: Nothing to disclose; Alex Soriano: Nothing to disclose; Lily A. Arya: Nothing to disclose; Andy U. Uduak: Nothing to disclose.

34 Baseline pain medication use before and after anti-opioid legislation in a preoperative urogynecologic population

P. Edge[1], H. Leazer[2], J. M. Wu[3], M. Willis-Gray[3]
[1]Obstetrics and Gynecology, University of North Carolina at Chapel Hill, Chapel Hill, NC, [2]University of North Carolina School of Medicine, Chapel Hill, NC, [3]Female Pelvic Medicine and Reconstructive Surgery, University of North Carolina at Chapel Hill, Chapel Hill, NC

OBJECTIVES: Despite the increasing morbidity and mortality of the opioid epidemic, the rates of pain medication use among the urogynecology patient population is not known. Our objective was to describe the baseline prevalence of preoperative opioid and neuropathic pain medication use in patients presenting for urogynecologic surgery and to determine whether this rate changed before and after passage of anti-opioid state legislation.

MATERIALS AND METHODS: This is a retrospective, cohort study of women presenting for urogynecologic surgery at a single academic center before and after anti-opioid state legislation. This legislation took effect on January 1, 2018 and limited the duration of opioid prescriptions for post-operative and acute pain to 7 days. We compared a Pre-Law cohort (surgery from 07/2017 – 12/2017) and a Post-Law cohort (surgery from 07/2018 – 12/2018, which allowed 6 months for implementation). Our primary outcome was baseline prevalence of preoperative opioid and neuropathic pain medication, defined as having an opiate or neuropathic pain medication as an active medication at the preoperative visit. We then assessed if this rate changed before and after passage of legislation.

RESULTS: A total of 535 women were included: 260 (48.6%) in the Pre-Law group and 275 (51.4%) in the Post-Law group. There were no differences in age (58 years vs. 60 years, p= 0.18), race (79% White vs. 83% White, p = 0.2) or BMI (29 kg/m^2 vs. 29 kg/m^2 p= 0.67) between the Pre- and Post-Law groups, respectively. The rate of preoperative opioid use among all patients was 14.6%. The most common opioid used was tramadol (6.0%), followed by oxycodone (3.9%) and hydrocodone (3.7%). The rate of preoperative neuropathic pain medication use among all patients was 13.1% with the most common being gabapentin (9.7%) and pregabalin (1.7%). Regarding the anti-opioid legislation, there was no difference in the prevalence of preoperative opioid or neuropathic pain medication use between Pre- and Post-Law groups (Table).

CONCLUSION: The baseline rate of opiate and neuropathic pain medication use in patients presenting for urogynecologic surgery were 14.6% and 13.1%, respectively, and did not change in the short-term after passage of anti-opioid legislation.

Table: Primary Outcome

	Pre-Law (n = 260)	Post-Law (n = 275)	p Value
Preoperative Opioid Use	36 (14)	42 (15)	0.71
Tramadol	15 (6)	17 (6)	0.86
Oxycodone	9 (4)	12 (4)	0.66
Hydrocodone	8 (3)	11 (4)	0.64
Other	4 (2)	2 (1)	0.44*
Preoperative Medication for Neuropathic Pain	33 (13)	37 (14)	0.80
Gabapentin	26 (10)	26 (10)	0.88
Pregabalin	3 (1)	6 (2)	0.51*
Other	4 (2)	5 (2)	1.00*

Data are presented as n (%). All p values are from Pearson $\chi 2$ test unless otherwise specified: * p value from Fisher's Exact.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Preston Edge: Nothing to disclose; Haley Leazer: Nothing to disclose; Jennifer M. Wu: Nothing to disclose; Marcella Willis-Gray: Nothing to disclose.

35 Body image improves among women undergoing prolapse repair regardless of whether or not hysterectomy is performed or transvaginal mesh is used

R. G. Rogers[1,2], M. Ackenbom[4], L. Barden[3], N. Korbly[5], I. Meyer[6], D. Mazloomdoost[7], A. L. Smith[8], S. Thomas[3], C. Nager[9]
[1]Women's Health, University of Texas, Austin, Austin, TX, [2]Obstetrics and Gynecology, University of New Mexico, Albuquerque, NM, [3]RTI International, Research Triangle Park, NC, [4]Obstetrics and Gynecology, University of Pittsburg, Pittsburgh, PA, [5]Obstetrics and Gynecology, Brown University, Providence, RI, [6]Obstetrics and Gynecology, University of Alabama, Birmingham, AL, [7]NICHD, Bethesda, MD, [8]Division of Urology, University of Pennsylvania, Philadelphia, PA, [9]Obstetrics and Gynecology, University of California, San Diego, San Diego, CA

OBJECTIVES: To compare changes in body image among women with uterovaginal prolapse undergoing vaginal mesh hysteropexy (mesh hysteropexy) or vaginal hysterectomy with uterosacral ligament suspension (hysterectomy).

MATERIALS AND METHODS: This was a planned secondary analysis of a multi-center, randomized trial of women undergoing prolapse repair with a vaginal mesh hysteropexy versus hysterectomy. Women were masked to whether or not a hysterectomy was performed or whether or not mesh was used in the repair. The modified Body Image Scale (BIS) was completed at baseline and at 1.5, 6, 12, 18, 24, and 36 months after surgery. We estimated the minimally important difference (MID) in BIS scores based on half the standard deviation of baseline scores and compared women who had a change that met this standard. Individual BIS items were dichotomized into no impact versus any impact on body image to determine which aspects of body image changed the most following surgery. Comparison of baseline and follow-up scores were analyzed with linear and logistic repeated measures models adjusted for site, intervention, visit, and intervention × visit interaction.

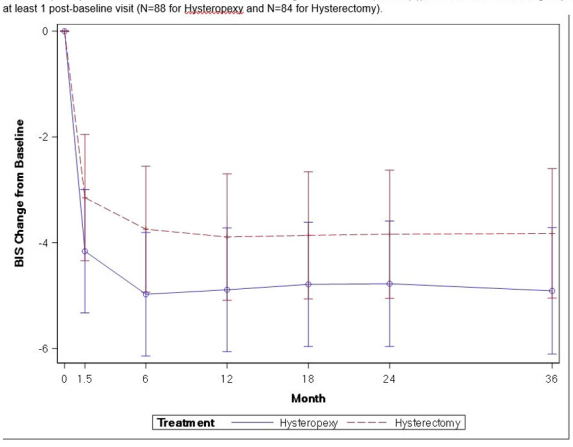
RESULTS: Eighty-eight women underwent mesh hysteropexy and 87 women underwent hysterectomy; women did not differ in baseline characteristics. Mean age of this cohort was 65.9 +/- 7.3 years, the majority were white (86%) and had advanced stage prolapse (stage 3 or 4) (81%). Mean BIS scores were not different at baseline and improved in both groups by 1.5 months after surgery. The improvement was sustained through 36 months postoperatively with

no significant differences between groups (all $p > 0.05$) (Figure). The estimated MID was 3; by 36 months more women in the mesh hysteropexy group had achieved the MID than women in the hysterectomy group (63 vs 47%, p=0.04). No differences between groups were found on individual item scores (all $p > 0.05$). Aggregated changes in specific BIS items included improvements in feeling less physically attractive from prolapse (47 vs 6%), improvements in feeling less feminine (48 vs 6%), and improvements in feeling less sexually attractive (53 vs 13%) between baseline and 36 months postoperatively (all $p < 0.001$).

CONCLUSION: Body image improves following prolapse surgery regardless of whether or not a hysterectomy is performed or transvaginal mesh is used at the time of repair.

Figure: Body Image Scale (BIS) Change from Baseline - Adjusted Means*

*Adjusted means, mean difference, 95% confidence intervals compare the change from baseline of BIS scores of the intervention arms are obtained from general linear models adjusted for site, intervention, visit, interaction between intervention and visit, while modeling the within participant correlations across visits with an auto-regressive order 1 (i.e. AR(1)). Models were fitted using all participants with at least 1 post-baseline visit (N=88 for Hysteropexy and N=84 for Hysterectomy).



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rebecca G. Rogers: Uptodate, Writer, Royalties; Mary Ackenbom: Nothing to disclose; Lindsay Barden: Nothing to disclose; Nicole Korbly: Nothing to disclose; Isuzu Meyer: Nothing to disclose; Donna Mazloomdoost: Nothing to disclose; Ariana L. Smith: Allergan, Faculty Advisor, Research Support; Sonia Thomas: Nothing to disclose; Charles Nager: Uptodate, Writer, Royalties.

36 Correlation of endometriosis on preoperative MRI and surgical pathology

D. Shustarovich, M. McNeely, C. Andrew, S. A. Scheib
OB GYN, LSU HSC, New Orleans, LA

OBJECTIVES: The aim of this study is to assess whether the use of MRI as part of preoperative workup in the setting of patients with chronic pelvic pain and presumed diagnosis of endometriosis is predictive of pathology-proven endometriosis.

MATERIALS AND METHODS: Retrospective chart review of patients operated on by one fellowship trained minimally invasive gynecologist over the course of 16 months was completed. All surgical cases performed at one of two tertiary hospitals between November 2017 and February 2019 were reviewed and laparoscopic cases were identified. Laparoscopic cases in which a preoperative MRI was performed were then identified. These cases were reviewed to assess for presence or absence of: (1) a preoperative prediction of endometriosis, (2) identification of endometriosis on preoperative MRI, and (3) surgical diagnosis of endometriosis based on intraoperative findings or surgical pathology.

RESULTS: 25 surgical cases had MRI performed preoperatively. 10 predicted endometriosis preoperatively and all had pathology confirmed endometriosis. Of the patients with positive MRIs and positive pathology for endometriosis, 5(50%) were stage 4, 3(30%) stage 3, 1(10%) stage 2, and 1(10%) stage 1. Of the 15 of the preoperative MRIs that did not predict endometriosis, 7 had pathology confirmed endometriosis and 8 were pathology confirmed negative for endometriosis. Of the patients with negative MRIs and positive pathology for endometriosis, 4(57.1%) were stage 1, 2(28.6%) stage 2, and 1(14.3%) stage 3. A Fisher exact test for equality of accuracy in the patients showed that patients who had a positive MRI had a significantly higher endometriosis pathologic diagnosis accuracy than patients who had a negative MRI ($p<0.05$).

CONCLUSION: Ultrasound is the most common form of imaging done in the setting of suspected endometriosis. The advanced dynamic ultrasound techniques in the literature for endometriosis assessment is not universally available in the US. Preoperative MRI may be used as part of the workup of patients with presumed endometriosis because it allows for evaluation of all pelvic compartments as well as increased accuracy in suspected diagnosis. MRI is also less susceptible to interobserver variability that can be associated with ultrasound, which is dependent on the technician and the radiologist. Preoperative MRI was predictive for both presence and absence of endometriosis. The MRI was more predictive of advanced stage endometriosis. Advanced disease endometriosis is best treated by a surgeon with advanced surgical skills and experience with endometriosis so that the patient has clear expectations of outcomes and recurrence, to optimize resection, to minimize complications, and to reduce need for repeat surgery due to inadequate resection.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Diana Shustarovich: Nothing to disclose; Meghan McNeely: Nothing to disclose; Chapple Andrew: Nothing to disclose; Stacey A. Scheib: Nothing to disclose.

37 Use of colpotomy for contained tissue extraction during laparoscopic myomectomy

K. Kossl, L. Rosen, A. Copperman, V. Kolev, K. Zakashansky
Department of Obstetrics, Gynecology, and Reproductive Science, Mount Sinai Hospital, New York, NY

OBJECTIVES: To describe the technique and perioperative outcomes of laparoscopic myomectomy with contained manual morcellation through a colpotomy for specimen extraction.

MATERIALS AND METHODS: This was a retrospective analysis of consecutive patients who underwent a laparoscopic myomectomy by a single surgeon at a major academic institution. The procedure was performed using three 5mm incisions (umbilical, left lower quadrant, and suprapubic). A Rumi-Koh device was used for uterine manipulation and a harmonic scalpel was used to perform the myomectomy and colpotomy. An Endo Catch bag was placed through the colpotomy to retrieve and remove the fibroids. The colpotomy was then sutured laparoscopically with Stratafix. Outcomes included intraoperative and postoperative complications.

RESULTS: A total of 31 women underwent the procedure from May 2018 to August 2019. Based on a pre-operative MRI, the largest fibroid removed was 11 cm, the mean size of the largest fibroid removed for each patient was 7.1 cm (SD 2.4), and the median number of fibroids was 2 (IQR 1-3). The median myomectomy specimen weight was 155.0 grams (IQR 102.5-208.3), the median

EBL was 50 mL (IQR 50-100), and the mean operative time was 126.5 minutes (SD 32.6). Vaginal lacerations occurred in 4 (12.9%) cases, and were repaired intra-operatively. No other intraoperative complications occurred. The final pathologic diagnosis was fibroids in all cases. All patients presented for post-operative examination, and no patients experienced pelvic infection, vaginal dehiscence, or complained of dyspareunia. There were no thirty-day hospital readmissions.

CONCLUSION: The use of colpotomy for contained tissue extraction during laparoscopic myomectomy is a safe and efficient method for removing fibroids. This method is beneficial to avoid extension of abdominal incisions beyond 5mm, which can decrease pain and avoid incisional complications such as hernia. None of the patients reported post-operative dyspareunia, which has been a historic concern regarding the use of posterior colpotomy. This is the first study in the United States presenting data on posterior colpotomy for fibroid removal, and adds an alternative safe and efficient method for tissue extraction to the current literature.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kelsey Kossl: Nothing to disclose; Leigh Rosen: Nothing to disclose; Alan Copperman: Nothing to disclose; Valentin Kolev: Nothing to disclose; Konstantin Zakashansky: Nothing to disclose.

38 Hospital revisits following hysterectomy for benign indications

C. E. Bretschneider[1], S. Crawford[4], J. Schold[4], D. Sheyn[2], K. Propst[3]

[1]Obstetrics and Gynecology, Northwestern Medicine, Chicago, IL, [2]The MetroHealth System, Cleveland, OH, [3]OB/GYN & Women's Health Institute, Cleveland Clinic, Cleveland, OH, [4]Center for Population Health Research, Cleveland Clinic, Cleveland, OH

OBJECTIVES: To assess factors and charges associated with hospital revisits following benign hysterectomy in the United States.

MATERIALS AND METHODS: We identified hysterectomy discharges in New York and Florida using State Inpatient Database (SID) and State Ambulatory Surgery and Services Database (SASD) from the Healthcare Cost and Utilization Project. Exclusion criteria included age less than 18 years, cancer diagnosis, homeless patients and cases that resulted in hospitalized death. We linked identified cases with the 2006-2012 SID, SASD and State Emergency Department Database (SEDD) to identify all-cause inpatient readmissions, observations stays or emergency department (ED) visits occurring within 30 days of the index surgery discharge. Risk factors of interest included patient demographics such as age, race and location of residence; community characteristics such as median household income and education level based on patient zip code; as well as patient comorbidities, route of hysterectomy and expected primary payer. We used chi-square and Wilcoxon rank sum tests to compare characteristics of patients with and without 30-day revisits and mixed effects logistic regression to model the relationship between stated risk factors and 30-day revisits, treating hospital as a random effect. We also calculated total charges of the 30-day inpatient readmissions, observation stays, and ED visits.

RESULTS: Between 2006 and 2011, 330,793 patients underwent a hysterectomy for benign indications. Median age was 46 years (IQR 11), 63% white and 71% had private insurance. The majority of procedures were inpatient (82%) with abdominal hysterectomy the most common route (50%). Within 30-days, 13,154 patients(3.98%) experienced an inpatient readmission while 29,455 patients(8.90%) experienced an ED visit and 4,597 (1.39%) patients had observation stays. After adjustment, Black race was associated with higher odds of both inpatient readmissions (aOR 1.30, 95% CI 1.24-1.37) and ED visits(aOR 1.28, 95% CI 1.24-1.33), as was non-private insurance status (Medicare, aOR 1.58, 95% CI 1.47-1.69; Medicaid, aOR 1.58, 95% CI 1.49-1.67; Self-pay, aOR 1.19, 95% CI 1.05-1.34; no charge, aOR 1.53, 95% CI 1.30-1.78; and other, aOR 1.25, 95% CI 1.13-1.38). Minimally invasive routes, with the exception of robotic, were associated with decreased odds of inpatient readmission while only vaginal (aOR 0.68, 95% CI 0.64-0.72) and laparoscopic (aOR 0.91, 95% CI 0.99-0.95) routes were associated with decreased odds of ED visits. The range of the median charge per inpatient readmission was $19,229-23,410, per observation stay was $4,311-5,407, and per ED visit was $1,710-2,787.

CONCLUSION: Black race and non-private insurance status are independently associated with higher odds of both inpatient readmissions and ED visits following benign hysterectomy. Thirty-day readmissions and ED visits incur substantial charges, and efforts to attenuate costs associated with hospital revisits should be made.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: C. E. Bretschneider: Nothing to disclose; Sara Crawford: Nothing to disclose; Jesse Schold: Nothing to disclose; David Sheyn: Nothing to disclose; Katie Propst: Nothing to disclose.

39 D-Mannose vs other agents for recurrent urinary tract infection prevention in adult women: A systematic review and meta-analysis

S. Lenger[1], M. S. Bradley[2], D. Thomas[1], M. Bertolet[2], J. Lowder[1], S. Sutcliffe[1]

[1]Washington University in St. Louis, St. Louis, MO, [2]University of Pittsburgh, Pittsburgh, PA

OBJECTIVES: To systematically review published original literature comparing D-mannose to other agents for recurrent urinary tract infection (rUTI) prevention in adult women and to synthesize evidence for its effectiveness and side effects.

MATERIALS AND METHODS: We performed a systematic literature search using strategies for the concepts of rUTIs and mannose in 6 medical databases, including Ovid Medline 1946- and Embase 1946-. Full text original rUTI research studies written in English were included if they contained 1 study arm or group utilizing D-mannose as an outpatient UTI prevention regimen. Exclusion criteria were lab or animal-based research, study protocols, and participants not including adult women. Relative risks (RRs) and confidence intervals (CIs) were computed, both individually and pooled for the overall summary.

RESULTS: Literature searches in February 2018 and March 2019 identified 553 unique citations. Eight publications met eligibility criteria: 2 using D-mannose only for rUTI prevention and 6 using D-mannose in combination with another treatment. Seven studies were prospective: 2 randomized controlled trials, 1 randomized cross-over trial, and 4 prospective cohort studies. The other study was a retrospective cohort study. Ultimately, data from 3 studies were included in the meta-analysis (MA). The other 5 studies were not included because they did not report the number of participants with UTIs (n=3) or the dose of D-mannose administered (n=1), or they compared different D-mannose formulations (n=1). RRs of rUTI comparing D-mannose to placebo varied from 0.14 (95% CI 0.02, 1.04) to 0.24 (95% CI 0.15, 0.39; pooled RR=0.23, 95% CI 0.14, 0.37; n=125 participants taking D-mannose and 123 taking

placebo). RRs of rUTI comparing D-mannose to preventative antibiotics varied from 0.22 (95% CI 0.13, 0.37) to 0.71 (95% CI 0.38, 1.30; pooled RR=0.36, 95% CI 0.25, 0.53; n=163 participants taking D-mannose and 163 taking antibiotics). Adverse side effects (AEs) were reported in 2 studies assessing D-mannose only (not in combination with other supplements or compounds). One study (n=10) reported no AEs to D-mannose and the other reported a low incidence (8 of 103 participants, 7.8%) of diarrhea. The other studies that evaluated D-mannose in combination with other supplements or components did not report significant side effects in participants taking D-mannose.

CONCLUSION: Our MA suggests that D-mannose is protective for rUTI compared to both preventative antibiotics and placebo. Overall, D-mannose appears well tolerated with minimal adverse side effects – only a small percentage experiencing diarrhea.

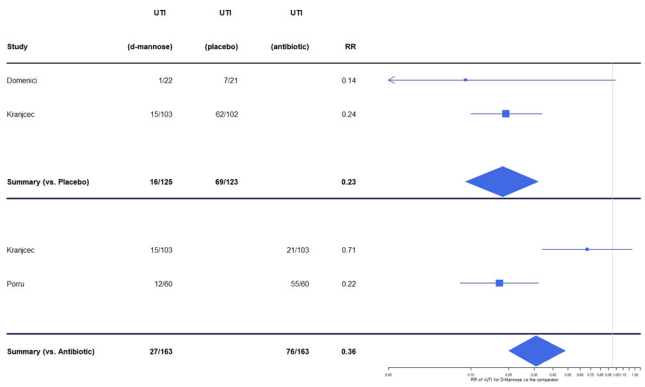


Figure 1: D-mannose for recurrent urinary tract infection prevention forest plot

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Stacy Lenger: Nothing to disclose; Megan S. Bradley: Nothing to disclose; Debbie Thomas: Nothing to disclose; Marnie Bertolet: Nothing to disclose; Jerry Lowder: Nothing to disclose; Siobhan Sutcliffe: Nothing to disclose.

40 Pelvic cross sectional area at the level of the levator ani is associated with prolapse

A. G. Sammarco[1], D. Sheyn[2], C. X. Hong[3], E. K. Kobernik[4], C. W. Swenson[5], J. O. DeLancey[5]

[1]Female Pelvic Medicine and Reconstructive Surgery, Rush University Medical Center, Chicago, IL, [2]Female Pelvic Medicine and Reconstructive Surgery, MetroHealth Medical Center, Cleveland, OH, [3]Obstetrics and Gynecology, University of Pennsylvania, Philadelphia, PA, [4]Obstetrics and Gynecology, Michigan Medicine, Ann Arbor, MI, [5]Female Pelvic Medicine and Reconstructive Surgery, Michigan Medicine, Ann Arbor, MI

OBJECTIVES: Pressure is transferred to the pelvic floor through an aperture bordered by the pubic bone anteriorly, sacrum, sacrospinous ligaments and coccygeus muscles posteriorly, and obturator internus muscles (OIM) laterally (Figure 1a-c). A prior small study showed that the anterior portion of this plane is larger in prolapse. This study aims to assess the relationship between prolapse and both anterior (APA) and posterior pelvic area (PPA) in a larger, more diverse population.

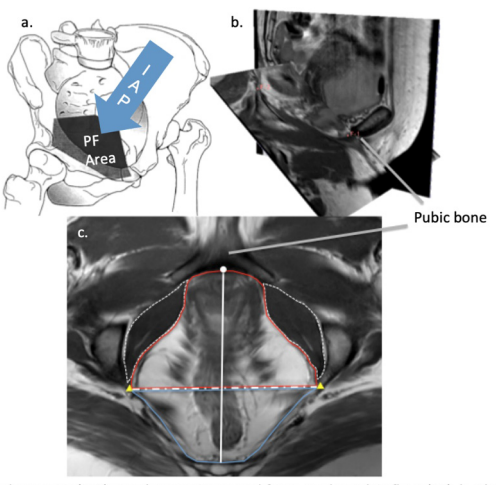
MATERIALS AND METHODS: Pelvic MRIs from 96 women (66 without prolapse, 30 with prolapse) were included in this case-control study. Using 3D Slicer software, the measurement plane was tilted to include the ischial spines and the inferior pubic point, approximating the level of the levator ani attachments (Figure 1b, c). The borders of the measurements can be seen in Figure 1c. Three raters made all measurements and interrater reliability was assessed. Demographic characteristics were compared across groups using Wilcoxon Rank and Fisher's exact tests. A multivariate logistic regression model was developed to identify factors independently associated with prolapse.

RESULTS: Women without prolapse were an average of 3.7 years younger than cases and had lower parity but groups were similar in terms of race, height, and BMI. Patients with prolapse had a significantly larger interspinous distance (ISD), anterior-posterior (AP) diameter, APA, and smaller OIM area (Figure 2). There was no difference in PPA. Bivariate regression showed that age, parity, ISD, AP diameter, APA and OIM size were significantly associated with prolapse (Table). PPA was not significantly associated with prolapse (OR 1.06, P=0.12). After adjusting for age, race, parity, ISD and AP distance, prolapse was significantly associated with increased APA (OR 1.19, p=0.01), while larger OIM area had decreased odds of prolapse (OR 0.76, p=0.03). Intraclass correlation coefficient was 0.92 indicating good interrater reliability.

CONCLUSION: In a larger, more diverse group of women we confirm that APA is larger in prolapse, allowing for greater force transference to the pelvic floor. Decreasing OIM area is also associated with prolapse, possibly due to sarcopenia. The posterior measurements of this plane were not significantly associated with prolapse.

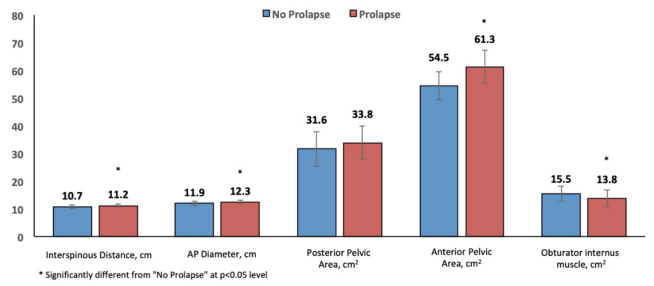
Table:

Characteristic	Unadjusted Odds Ratio	95% Confidence Interval	p-value
Age, Years	1.05	(1.01,1.08)	0.007
White Race	1.69	(0.33, 8.66)	0.53
Parity, number	1.90	(1.17, 3.06)	0.009
Interspinous Distance, cm	3.20	(1.52, 6.74)	0.002
Anterior Posterior (AP) Diameter, cm	2.21	(1.15, 4.24)	0.02
Posterior Pelvic Area (PPA), cm2	1.06	(0.99, 1.14)	0.12
Anterior Pelvic Area (APA), cm2	1.27	(1.14, 1.42)	<0.0001
Obturator Internus Muscle (OIM, total), cm2	0.79	(0.66, 0.95)	0.01



a. Intraabdominal pressure (IAP) translates to increased force on the pelvic floor (PF). b. Plane at the level of the insertion of the levator ani muscles. c. Study Measures. White circle = Inferior pubic point, White dashed lines= Obturator internus muscles (OIM), yellow triangles- Ischial spines, red solid line= anterior pelvic area (APA), white dashed dot line= Interspinous distance (ISD), Blue solid line= Posterior pelvic area (PPA), White solid line= Anterior-posterior (AP) diameter

Figure 2: Pelvic floor measurements in women with and without prolapse



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Anne G. Sammarco: Nothing to disclose; David Sheyn: Nothing to disclose; Christopher X. Hong: Nothing to disclose; Emily K. Kobernik: Nothing to disclose; Carolyn W. Swenson: Nothing to disclose; John O. DeLancey: Nothing to disclose.

41 Laparoscopic retroperitoneal hysterectomy with uterine artery ligation in morbidly obese patients at a freestanding ambulatory surgery center

P. Mackoul, N. Danilyants, L. van der Does, L. Haworth, N. Kazi
Research, Center for Innovative GYN Care, Rockville, MD

OBJECTIVES: To compare the outcomes of laparoscopic retroperitoneal hysterectomy (LRH) in morbidly obese patients (BMI $\geq$ 40 k/m2) versus non-obese patients (BMI $<$ 30 k/m2) and obese patients (BMI $\geq$ 30 and $<$ 40 k/m2) at a freestanding ambulatory surgery center.

MATERIALS AND METHODS: A retrospective comparative analysis was performed of 1,679 women, age 18 years or older, non-pregnant, who underwent LRH by one of two laparoscopic gynecologic surgical specialists at a freestanding ambulatory surgery center serving the Washington, DC area, between October 2013 and January 2019. The study was deemed exempt from informed consent according to 45 CFR 46.101(b) by IntegReview IRB, an independent institutional review board. LRH performed via retroperitoneal dissection, uterine artery ligation at the origin at the anterior branch of the internal iliac artery, vaginal uterine extraction, and transvaginal cuff closure. No power morcellation used. Postoperative complications graded using the Clavien-Dindo Classification system.

RESULTS: The only statistically significant differences in surgical outcomes were higher mean operative time and estimated blood loss (EBL) in the obese groups, however these differences were not clinically meaningful (3-4 minutes and 25-31 mL, respectively). There was no difference in intraoperative complication rates across BMI categories. The postoperative complication rates were lower in the in the morbidly obese group compared to the non-obese group. There were a total of 2 postoperative hospital transfers out of the 1,679 patients (Table 1, Figure 1).

CONCLUSION: Laparoscopic retroperitoneal hysterectomy can be performed safely in a freestanding ambulatory surgery setting, with low rate of complications and hospital transfers, and no significant difference in surgical outcomes in morbidly obese patients.

Table 1. Operative Outcomes

	Non-Obese BMI < 30 (n=1009)	Obese BMI 30 - 39 (n=516)	Morbidly Obese BMI ≥ 40 (n=154)	p value*
Mean BMI (k/m2)	24.4 (15 - 29)	33.4 (30 - 39)	45.5 (40-76)	N/A
Mean Uterine Weight (g)	318 (19 - 2006)	349 (27 - 1950)	303 (8 - 1595)	.658
Mean Operative Time (min)	53	56	57	.004
Mean EBL (mL)	104 (5 - 3000)	129 (10 - 1000)	135 (10 - 1300)	.019
Intraoperative Complications (%)	1.3	2.3	1.3	.237
Postoperative Complications: Grade 1 (%)	1.4	0.8	1.3	.450
Postoperative Complications: Grade 2 (%)	1.6	0.2	1.3	.021
Postoperative Complications: Grade 3a (%)	0.2	0.2	0.0	.114
Postoperative Complications: Grade 3b (%)	4.6	2.1	4.5	.071
Transfer to Hospital (%)	0.0	0.2	0.6	.302

*Pearson Chi-Square

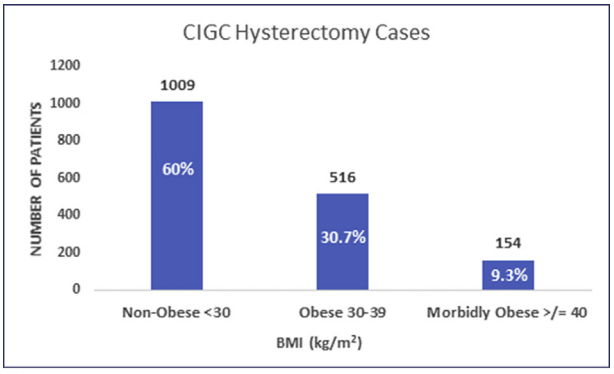


Figure 1.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Paul Mackoul: Center for Innovative GYN Care, Owner, Ownership Interest; Natalya Danilyants: Center for Innovative GYN Care, Owner, Ownership Interest; Louise van der Does: Center for Innovative GYN Care, Employee, Salary; Leah Haworth: Center for Innovative GYN Care, Independent Contractor, Consulting fee; Nilofar Kazi: Center for Innovative GYN Care, Employee, Salary.

42 What do residents want in a surgical video? Trainee perspectives on the vaginal hysterectomy

A. Soriano, J. Oh, D. Hassani, U. U. Andy, L. A. Arya
Obstetrics and Gynecology, University of Pennsylvania, Philadelphia, PA

OBJECTIVES: To describe the critical components and features of an educational vaginal hysterectomy surgical video from the resident perspective. Our secondary aim was to compare junior and senior level resident responses.

MATERIALS AND METHODS: Individual semi-structured qualitative interviews were conducted with Ob/Gyn residents from two separate academic-based residency programs. Participants were selected based on key informant sampling in which individuals known to be interested in vaginal surgery or gynecologic sub-specialty training were invited to participate. Investigators explored 4 principal topic areas: 1) Components of high-yield vaginal hysterectomy videos; 2)

Supplemental features for educational videos; 3) Differences between high and low quality surgical videos; 4) Barriers to viewing video prior to surgery. Individual qualitative interviews were transcribed verbatim, coded and analyzed by two independent reviewers using NVivo12 Pro.

RESULTS: Eighteen residents participated in qualitative interviews with 12 (67%) senior level residents (post-graduate year 3 or 4) and 6 (33%) junior level residents (post-graduate year 1 or 2). All residents had completed 10 or less vaginal hysterectomies at the time of the interviews. Gynecology residents characterized high-yield vaginal hysterectomy videos as short, accessible surgical videos available on mobile applications (Figure 1). Residents desired videos that highlight and provide insight into challenging techniques: anterior peritoneal entry, uterosacral pedicles and vaginal cuff closure. With regards to desired supplemental material, senior level residents identified intraoperative complications and troubleshooting as important whereas junior level residents identified instrumentation and anatomy review. Trainees described high quality videos as those with adequate visualization, graphics to demarcate anatomy overlaid on the dissection, review of challenging techniques and descriptive audio. Low quality videos were described as long duration, poor visualization and inadequate audio explanation. Resident awareness and video accessibility were common barriers that prevented residents from viewing vaginal hysterectomy videos prior to surgery. The importance of an accessible mobile application with short, descriptive videos were congruent across all resident experience levels.

CONCLUSION: Gynecology residents desire short, app-based vaginal hysterectomy videos that are easily accessible. Understanding residents' perspective can aid educators to create videos directed toward resident learning preferences.

Figure 1. Gynecology residents' perspectives of the vaginal hysterectomy educational video

Major Themes	Gynecology Trainee Quotes
High-yield Components	JR: "I usually want a video 10 minutes or less…if I get assigned to a case last minute then I could watch something on my phone." SR: "I usually watch videos at home the night before but an app on my phone would allow me to prepare for cases if I'm at home or at work." SR: "It's helpful to have a brief overview in the beginning and then focus on the most challenging portions such as the anterior and posterior peritoneal entry… and uterosacral ligament clamp placement"
Supplemental Features	JR: "Where I'm at in my learning is just trying to get ahold of the anatomy so the videos that point out the anatomy as they're going." JR: "Making sure the instruments and sutures are reviewed…everything that's going to be needed for the procedure and indications for surgery" SR: "Common pitfalls and how to avoid entering the bladder…techniques for better visualization…tips and tricks tor making it go as smooth as possible." SR: "Complication management is always important and when you get yourself into a bind how you get out of it."
High versus Low Quality	*High Quality* JR: "The ones [videos] that have models where they're at the cross-section of ligaments and show highlights on the video of all the anatomy…in the OR it's very hard to see especially in vaginal surgery." SR: "Being able to pause the video and highlight avascular planes or proper dissection planes with a visual effect or audio."
Barriers to Viewing	JR: "Knowing where to find good quality videos…I was just always using YouTube and never really know if you can trust what you're seeing." SR: "Finding the time to do it is the biggest barrier and making sure it [video] is short enough…less than 10 to 15 minutes." SR: "It took me awhile to get access to a surgical library but when I finally got access, it was very easy to view"

JR: junior level resident
SR: senior level resident

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Alex Soriano: Nothing to disclose; Jinhee Oh: Nothing to disclose; Daisy Hassani: Nothing to disclose; Uduak U. Andy: Nothing to disclose; Lily A. Arya: Nothing to disclose.

43 First-in-human clinical trial of a new robot-assisted surgical system for total laparoscopic hysterectomy

D. Kelkar[1], M. Borse[1], G. Godbole[1], U. Kurlekar[1], E. Dinneen[2], L. Stevens[3], M. Slack[4]

[1]Deenanath Mangeshkar Hospital and Research Center, Maharashtra, India, [2]Division of Surgical and Interventional Sciences, University College London, London, United Kingdom, [3]Queen Mary University London, London, United Kingdom, [4]CMR Surgical, Cambridge, United Kingdom

OBJECTIVES: Versius is a new tele-operated robotic surgical system designed to assist surgeons in performing minimal access surgery (MAS). Versius has been developed broadly in line with recommendations from the IDEAL (Idea, Development, Exploration, Assessment, Long-term study) collaboration for surgical research.[1,2] Versius is currently undergoing a first-in-human clinical study to confirm the safety and effectiveness of the device when performing MAS procedures. The aim of this study was to perform an interim analysis to confirm the safety of the device when performing total laparoscopic hysterectomy (TLH) procedures (aligned with IDEAL Stage 2a).

MATERIALS AND METHODS: This is an interim analysis of an ongoing prospective, cohort, clinical study designed to confirm the safety of Versius when performing minor or intermediate surgical procedures. All potentially eligible patients were identified from hospital surgical lists and approached directly by their surgeon or existing clinical team. Subjects provided consent before the start of surgery and the study was reviewed and approved by the Institutional Ethics Committee (DGCI registration No. ECR/15/Inst/Maha/2013/RR-16). All surgeons completed and passed the validated 3.5-day Versius training program immediately prior to the start of the study. Patients completed a pre-operative screening visit prior to surgery and were followed up on post-operative Day 30 (+/- 7 days) and Day 90 (+/- 7 days). Procedures were completed at the Deenanath Mangeshkar Hospital and Research Center, Erandawne, Pune, Maharashtra, India.

RESULTS: The first 15 TLH procedures performed using Versius have been included for analysis (Table 1). One procedure was converted to open surgery due to the patient's raised body mass index (BMI); all other procedures were completed as planned and without recorded complication. Surgical indications included adenomyosis, abnormal uterine bleeding, uterine fibrosis, endometriosis and menorrhagia. Patients were aged 28−51 years (median: 40 years) and represented a wide range of BMIs, 21.8−47.8 kg/m^2 (median: 26.3 kg/m^2). Operating time ranged between 110−345 mins (median: 205 mins) and all patients had an estimated blood loss <500 mL. Median stay in hospital was 4 days (range: 3−7 days). No adverse events were reported at the 30-day follow-up.

CONCLUSION: Surgeons and surgical teams were able to successfully complete robot-assisted TLH using the Versius system without experiencing any device-related difficulties. The first-in-human cases presented here justify continued patient recruitment onto the Versius clinical trial and progression to major procedures. Additional recruitment and analysis will ensure continued alignment with the IDEAL Framework Stage 2b.[1]

References

1. McCulloch P. Lancet 2009;374:1105−12.
2. Sedrakyan A, *et al.* BMJ 2016;353:i2372.

Table 1. Outcome data for the first 15 patients undergoing robot-assisted TLH

Case	BMI (kg/m²)	Operative time (mins)	Conversion?	Estimated intraoperative blood loss (ml)	Blood transfusion products used?	Return to OR within 24 hrs	Length of hospital stay (days)	Complications	Adverse events
1	24.8	210	No	<5	No	No	4	No	No
2	22.6	120	No	<5	No	No	7	No	No
3	25.9	120	No	<5	No	No	3	No	No
4	29.0	210	No	<5	No	No	4	No	No
5	33.5	306	No	<500	No	No	4	No	No
6	25.0	140	No	<5	No	No	6	No	No
7	31.7	225	No	<500	No	No	5	No	No
8	31.1	205	No	<500	No	No	4	No	No
9	26.3	110	No	<5	No	No	4	No	No
10	21.8	216	No	<500	No	No	4	No	No
11	32.4	165	No	<500	No	No	5	No	No
12	47.8	345	Yes*	<500	No	No	5	No	No
13	27.1	215	No	<5	No	No	3	No	No
14	25.8	124	No	<500	No	No	4	No	No
15	23.4	191	No	<500	No	No	4	No	No

*Conversion was due to the patient's raised BMI. BMI: body mass index; OR: operating room; TLH: total laparoscopic hysterectomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: D Kelkar: CMR Surgical, Consultant, Consulting fees; Mahindra Borse: CMR Surgical, Consultant, Consulting fees; Girish Godbole: CMR Surgical, Consultant, Consulting fees; Utkrant Kurlekar: CMR Surgical, Consultant, Consulting fees; Eoin Dinneen: CMR Surgical, Consultant, Consulting fees; Lewis Stevens: CMR Surgical, Consultant, Consulting fees; Mark Slack: CMR Surgical, Founder of CMR Surgical, Ownership Interest.

44 Oxycodone use during the post-operative period after hysterectomy for benign indications

J. M. Miranne[1,2], T. Abdalian[1], I. Gabriel[1], S. Cohen[3,2], M. Ajao[3,2], J. Einarsson[3,2], V. Minassian[1,2]
[1]Urogynecology, Brigham and Women's Hospital, Boston, MA, [2]Harvard Medical School, Boston, MA, [3]Minimally Invasive Gynecologic Surgery, Brigham and Women's Hospital, Boston, MA

OBJECTIVES: To evaluate whether oxycodone use for postoperative pain control after hysterectomy for benign disease differs based on hysterectomy route.

MATERIALS AND METHODS: We conducted an IRB-approved prospective cohort study of women undergoing hysterectomy for benign indications with fellowship trained surgeons in the divisions of Urogynecology and Minimally Invasive Gynecologic Surgery (MIGS) at a tertiary care referral center. English-speaking women $\geq$ 18 years were included. Participants completed a pain survey at baseline and again daily for 2 weeks after surgery. Additionally, they recorded the number of oxycodone tablets and other pain medications taken daily for these 2 weeks. At 2 weeks postoperative, participants also completed the Patient Global Impression of Change (PGIC) and a question about adequacy of pain control. Demographic data, clinical characteristics, and perioperative details were collected from medical record review. The primary outcome was the number of 5 mg oxycodone tablets consumed by women undergoing laparoscopic (LH) versus vaginal hysterectomy (VH) at 2 weeks postoperative. Based on previous data, we estimated 81 women would be needed per group to show a statistically significant difference (α=0.05, β=0.2).

RESULTS: 189 women were enrolled in the study of which 163 (86.2%) completed study questionnaires. Of these 163, 82 underwent LH and 81 VH. Women who underwent VH were older (mean age 64.2±10.3 vs. 47.5 ±7.7), more parous (2 IQR 2,3 vs. 2 IQR 1,2), and less likely to be sexually active (51.9% vs. 79.3%) compared with those in the LH group (p<0.02 for all). Women in the VH group also had significantly lower baseline pain levels (1.2 ±1.8 vs. 2.0 ±2.4, p=0.001). All women in the VH group had surgery for prolapse while only 12.2% of those in the LH group had surgery for this indication (p<0.001). The majority in the LH group had surgery for fibroids (61%) or pelvic pain (11%). Those in the VH group underwent more additional procedures, mainly apical suspension and anterior/posterior repairs, and had a longer mean length of surgery (202 ±62.1 minutes vs. 140.6 ±69.4, p<0.001). There was no difference in the quantity of intraoperative opioids administered between groups. Women in the VH group consumed significantly less oxycodone tablets (median 2 IQR 0,5 vs. 6 IQR 1,17, p<0.001) and took oxycodone for less days (median 1 IQR 0,3 vs. 3 IQR 1,6, p<0.001) than those in the LH group. On multivariate analysis using Poisson regression, women in the VH group were less likely to use oxycodone after adjusting for age, parity, baseline pain levels, and surgical length (rate ratio [RR] 0.71 95% CI 0.59-0.84, p<0.001).

CONCLUSION: Women who undergo VH consume less oxycodone than those who undergo LH. This difference may reflect a difference in the patient populations who undergo these surgeries.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jeannine M. Miranne: Attn: Grace, Advisor, Stocks; Talar Abdalian: Nothing to disclose; Iwona Gabriel: Nothing to disclose; Sarah Cohen: Boston Scientific, Advisor, Honorarium; Mobolaji Ajao: Nothing to disclose; Jon Einarsson: Arthrex, Advisor, Honorarium; Hologic, Advisor, Honorarium; Vatche Minassian: Nothing to disclose.

45 The first injection: Rates of urinary retention in women with urgency incontinence treated with intravesical onabotulinumtoxinA (Botox) injection

N. A. Squires[1], M. G. Mueller[2], C. Lewicky-Gaupp[2], S. A. Collins[2], K. Kenton[2], J. Geynisman-Tan[2]
[1]Feinberg School of Medicine, Northwestern University, Chicago, IL, [2]Obstetrics and Gynecology, Northwestern University, Chicago, IL

OBJECTIVES: To describe rate and risks for symptomatic and asymptomatic urinary retention requiring catheterization in women undergoing initial intravesical onabotulinumtoxinA (Botox) injection for urgency urinary incontinence (UUI).

MATERIALS AND METHODS: This was a retrospective chart review of women receiving their first 100 unit Botox injection for idiopathic UUI over 5-years. All patients had straight-catheterized post-void residual (PVR) done 2-weeks after injection. Based on symptoms and PVR patients were divided into "retention" and "non-retention" groups. The "retention" group was further divided into *asymptomatic* patients with a PVR greater than 300 mL or *symptomatic* patients with a PVR greater than 150 mL. Symptoms of retention included a sensation of incomplete bladder emptying, worsened urgency or frequency, difficulty/inability to void, or suprapubic pain. Continuous variables were compared using student t tests and categorical variables using χ^2 tests.

RESULTS: 187 patients with mean age of 65 ± 12 years and BMI of 29.7 ± 7.5kg/m^2 were included. Majority was postmenopausal (89%) and white (82%). 69 underwent urodynamic testing (UDS) with 50% demonstrating DO. Mean baseline PVR was 27±30 ml. 163 patients (87%) followed up at 2-weeks. 17 (10%) had retention requiring catheterization: 4 were asymptomatic (PVR >300 mL) and 13 were symptomatic (9 with PVR >150 and <300ml and 4 with PVR >300 ml. Most (13 patients) elected to manage retention with intermittent straight catheterization and 1 with Foley. Three declined to have any catheterization. 20% had a symptomatic, culture-proven UTI in the first month after injection: 35% with and 19% without retention (p=0.09). There were no differences in maximum cystometric capacity (359±150 ml vs 321±105 ml, p=0.64, baseline PVR (25±27ml vs 46±52 ml, p=0.12) or presence of

DO (57% vs 29%, p = 0.16) in women with and without retention. Age (p=0.58), menopausal status (p=1.0), diabetes (p=1.0), and smoking (p=0.16) were not associated with retention. However, women who had previous anti-SUI procedures were more likely to experience retention (53% vs 18%, p = 0.002) even though they did not have higher baseline PVRs (32 vs 26ml, p=0.3).

CONCLUSION: One in 10 women experienced clinically significant urinary retention within 2-weeks of initial Botox for UUI. Nearly all (98%) were symptomatic suggesting that routine PVR follow-up is unnecessary.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Natalie A. Squires: Nothing to disclose; Margaret G. Mueller: Nothing to disclose; Christina Lewicky-Gaupp: Nothing to disclose; Sarah A. Collins: Ethicon, Expert Witness, Compensation; Kimberly Kenton: Ethicon, Expert Witness, Compensation; Boston Scientific, PI, Funding; Julia Geynisman-Tan: Nothing to disclose.

46 Impact of reported allergies in treatment of women with recurrent urinary tract infection

A. Guanzon[1], M. Heit[1], L. Dbeibo[2], A. Desai[3]
[1]OB/GYN, Indiana University School of Medicine, Indianapolis, IN, [2]Infectious Diseases, Indiana University School of Medicine, Indianapolis, IN, [3]Pharmacy, Indiana University Health, Indianapolis, IN

OBJECTIVES: Recurrent UTI (rUTI) is a common, costly condition often requiring Female Pelvic Medicine and Reconstructive Surgery care. Identifying appropriate treatment begins with knowledge of patients' reported allergies, which may be inaccurate. This is problematic as inappropriate antibiotic use is linked to multi-drug resistant organisms, a public health threat affecting quality of life and healthcare cost. This study aims to evaluate the impact of reported antibiotic allergies on antibiotic selection and cost in treatment of rUTI.

MATERIALS AND METHODS: We queried our institution's electronic medical record to identify female patients aged 25-85 with a documented allergy history from 2007 to 2017. Patients were grouped into allergy profiles, sorted by prevalence. Eight rUTI scenarios were developed using the most prevalent organisms and sensitivities from our institution's 2018 antibiogram. Treatment of a patient in each allergy profile was driven by AUGS Best Practice guidelines for each rUTI scenarios. Differential costs of rUTI treatment for an individual in each allergy profile were computed by adding the price of 3 courses of acute treatment and 6 months of prophylaxis compared to an individual with no reported antibiotic allergies. Differential total costs of treatment for all reported antibiotic allergies were computed by summating the cost differences in treating individuals, multiplied by 19% (rUTI prevalence) across all rUTI scenarios.

RESULTS: 969,679 patients were identified and sorted into 11 allergy profile categories. 75.04% of patients reported allergy to no antibiotics, 10.3% to β-Lactams, 4.18% to sulfa, and 3.24% to β-Lactams and sulfa. A first-line treatment and prophylactic therapy for each rUTI scenario was available regardless of reported allergy. Fosfomycin, the most expensive at $97.74 per packet, was the only first-line option for rUTI with *P. mirabilis* resistant to sulfa. Otherwise fosfomycin was only necessary for acute infection if the allergy profile included sulfa or nitrofurantoin. For 6 months of prophylaxis, nitrofurantoin and fosfomycin were the most expensive at $208.01 and $1,632.00, respectively. These were the only options available for patients with reported allergies to both β-Lactams and sulfa for any rUTI scenario. Allergy to β-Lactams and sulfa incurred a $1.1-11.3 million cost difference compared to a population without antibiotic allergies in all scenarios except an ESBL *E. coli* UTI resistant to trimethoprim/sulfamethoxazole (Table 1). Total differential cost for all reported antibiotic allergies ranged from $1.9-48.2 million.

CONCLUSION: Accurate allergy reporting is crucial to fighting the antibiotic resistance crisis. Treatment costs for rUTI are negatively impacted by reported allergies to β-Lactams, sulfa, and nitrofurantoin. Efforts to de-label inaccurate reported allergies should be considered to help prevent multi-drug resistance and reduce healthcare costs.

TABLE 1. Differential Costs for rUTI Treatment Based on Reported Antibiotic Allergy

	β-Lactams	Sulfa	β-Lactams, Sulfa	β-Lactams, Quinolone	Quinolone	Sulfa, Quinolone
rUTI #1	$0	$278,273.26	$1,342,588.64	$0	$0	$82,340.27
rUTI #2	$0	$1,733,258.08	$1,342,588.64	$0	$0	$512,866.16
rUTI #3	$3,586,456.35	$0	$1,127,037.06	$715,402.17	$0	$0
rUTI #4	$0	$0	$0	$0	$0	$0
rUTI #5	$0	$2,169,961.48	$11,286,419.10	$0	$0	$642,085.46
rUTI #6	$0	$2,169,961.48	$11,286,419.10	$0	$0	$642,085.46
rUTI #7	$0	$2,169,961.48	$11,286,419.10	$0	$0	$642,085.46
rUTI #8	$30,566,799.20	$0	$9,605,558.30	$6,097,259.35	$0	$0

	β-Lactams, Nitrofurantoin	Nitrofurantoin	Sulfa, Nitrofurantoin	Quinolone, Nitrofurantoin	Total Differential Cost
rUTI #1	$0	$0	$220,602.42	$0	$1,923,804.59
rUTI #2	$0	$0	$1,481,271.57	$0	$5,069,984.45
rUTI #3	$2,265,760.86	$228,662.91	$192,312.63	$188,628.48	$8,304,260.46
rUTI #4	$2,035,101.75	$1,551,744.25	$1,305,065.25	$1,280,064.00	$6,171,975.25
rUTI #5	$0	$0	$220,602.42	$0	$14,319,068.46
rUTI #6	$0	$0	$220,602.42	$0	$14,319,068.46
rUTI #7	$0	$0	$220,602.42	$0	$14,319,068.46
rUTI #8	$1,965,871.05	$0	$0	$0	$48,235,487.90

Calculated by determining cost to an individual in each allergy profile, multiplied by 19% (rUTI prevalence), and subtracting cost to treat an equivalent number of patients with no reported antibiotic allergy. Total differential cost represents sum of differences for each rUTI clinical scenario, i.e. total added cost of any allergy profile

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Anna Guanzon: Nothing to disclose; Michael Heit: Nothing to disclose; Lana Dbeibo: Nothing to disclose; Armisha Desai: Nothing to disclose.

47 Sex-based differences in gynecologic surgeon imposter syndrome and leadership and promotion in an academic hospital

C. K. Kisby[1], K. C. Mara[3], S. Laughlin[2], J. A. Occhino[1], I. Green[2]
[1]Urogynecology, Mayo Clinic, Rochester, MN, [2]Minimally Invasive Gynecologic Surgery, Mayo Clinic, Rochester, MN, [3]Division of Statistics & Bioinformatics, Mayo Clinic, Rochester, MN

OBJECTIVES: The failure to internalize success, in the form of imposter syndrome, may be one contributor to the sex-based discrepancies in academic advancement in gynecologic surgeons. Our goal was to explore sex-based differences in imposter syndrome and associations with academic promotion and leadership attainment.

MATERIALS AND METHODS: Gynecologic surgeons at one academic institution were surveyed. The survey consisted of the Clance Imposter Phenomenon Scale (CIPS; higher score indicates higher imposter tendencies), and institutional culture questions using a 5-point Likert scale. Respondents disclosed academic rank and

leadership positions (reported as leadership-years). Descriptive statistics are reported as frequencies and percentages or medians and interquartile ranges. The CIPS score, leadership-years, and Likert-type questions were compared between sexes using Wilcoxon rank sum tests. Other categorical variables were compared using Fisher's exact tests.

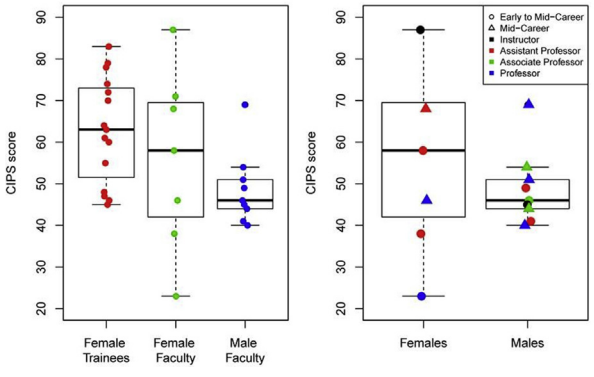
RESULTS: The response rate was 60% (23/35 female, 9/18 male). Median CIPS scores were not statistically different (female 61 [46-72], male 46 [44-51]; p=0.07); however, for 7/20 questions, women had statistically higher imposter tendencies. There was a wide range of female scores regardless of career stage (Figure 1). Men did not score higher in imposter tendencies for any questions. Females exhibited higher imposter tendencies pertaining to fear of living up to future expectations following praise (p=0.03) or success (p=0.01). Women tended to agree with statements such as "I dread others evaluating me" (p=0.01) and "I'm afraid I may fail, even though I generally do well at what I attempt" (p=0.004). Males reported more growth in confidence since their training (p=0.02) and more strongly disagreed with the statement "I hesitate prior to declaring a procedure complete" (male 100% vs female 62%, p=0.003). Male faculty outranked female faculty (p<0.001); however, leadership-years were not statistically different between sexes (females 4 [2-5], males 11 [7-22]; Table 1).

CONCLUSION: Overall CIPS scores were not statistically different between sexes; certain imposter tendencies were higher in females. Focusing on overall CIPS scores could miss areas of disparity and targets for intervention and education in regard to academic advancement.

Table 1

	Female (N=23)	Male (N=9)	p value
Academic rank			<0.001
Instructor	1	1	
Assistant Professor	3	2	
Associate Professor	0	3	
Professor	2	3	
Missing	2	0	
Leadership years			0.08
N	7	9	
Mean (SD)	7.8 (12.1)	14.2 (10.0)	
Median [IQR]	4 [2.0, 5.3]	11.0 [7.0, 22.0]	

Figure 1. Clance Imposter Phenomenon Scale (CIPS) Scores. Left: raw scores amongst female trainees (red), female faculty (green), and male faculty (blue). Right: raw scores between female faculty and male faculty by career level (early to mid vs. mid to late career) and academic rank.



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Cassandra K. Kisby: Nothing to disclose; Kristin C. Mara: Nothing to disclose; Shannon Laughlin: Nothing to disclose; John A. Occhino: Nothing to disclose; Isabel Green: Nothing to disclose.

48 Association of Hispanic ethnicity with complications after benign hysterectomy

R. M. Summey, C. Salazar
Department of Women's Health, University of Texas at Austin Dell Medical School, Austin, TX

OBJECTIVES: Hispanic patients have previously been shown to have a below-average complication rate following hysterectomy, but little is known about specific risks for this group.[1] Our primary objective was to identify differences in rates of specific complications experienced by Hispanic patients following hysterectomy for benign indications as compared to non-Hispanic white patients. Our secondary objective was to compare route of hysterectomy and length of stay (LOS) between these groups.

MATERIALS AND METHODS: We performed a cohort study using National Surgical Quality Improvement Program (NSQIP) data. Our primary exposure was Hispanic race, with non-Hispanic white patients as the control. The NSQIP database contains prospectively-gathered, patient-level perioperative data from inpatient hospitals throughout the United States. Patients with gynecologic cancer diagnoses or who underwent staging procedures were excluded. Demographic data, postoperative complication rates, route of hysterectomy and LOS were compared between groups. Postoperative complication data were stratified by surgical route. Proportions were analyzed using two-sample tests, Student t-tests and contingency tables.

RESULTS: 102,050 women were included. 15.0% were Hispanic and 85.0% were non-Hispanic white. Hispanic patients were more likely to have class 1 or 2 obesity (59.7 vs 49.8%), diabetes (10.9 vs 6.7%), and anemia (hematocrit <33: 14.1 vs 6.5%); p<0.01 for all. Hispanic patients were more likely to undergo abdominal hysterectomy (30.0 vs 19.1%, p<0.01) and to remain inpatient for 2-6 days (38.8 vs 24.0%, p<0.01). Hispanic patients were more likely to require blood transfusion following all routes of hysterectomy including abdominal hysterectomy (8.3 vs 5.9%, p= <0.01), laparoscopic hysterectomy (1.9 vs 0.6%, p= <0.01), vaginal hysterectomy (2.9 vs 1.4%, p= <0.01) and laparoscopic-assisted vaginal hysterectomy (2.4 vs 1.3%, p= <0.01). This difference remained significant only in patients without preoperative anemia when stratified by hematocrit. Hispanic patients had a decreased or equal rate of surgical site infection, pneumonia, pulmonary embolism, stroke, urinary tract infection, cardiac arrest, myocardial infarction, deep venous thrombosis, septic shock, death, unplanned reoperation, or readmission as compared with non-Hispanic white patients.

CONCLUSION: Hispanic women were more likely to undergo open hysterectomy, had an increased length of stay, were more likely to have preoperative anemia and had a higher transfusion rate. Despite a higher rate of open surgery, Hispanic patients had a decreased or equivalent rate of major postoperative complications.

1. Jacoby, V, Fujimoto, VY, Giudice, LC, Kupperman, M and Washington, AE. Racial and Ethnic Disparities in Benign Gynecologic Conditions and Associated Surgeries. *Am J Obstet Gynecol.* 2010 June; 202(6): 514-521.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rebekah M. Summey: Nothing to disclose; Christina Salazar: Nothing to disclose.

49 Incidence and risk factors for transient ureteral obstruction at the time of uterosacral ligament vault suspension

O. H. Chang[1], S. Tewari[2], J. Sun[3], C. A. Ferrando[1]
[1]Female Pelvic Medicine and Reconstructive Surgery, Cleveland Clinic, Cleveland, OH, [2]Cleveland Clinic Lerner College of Medicine, Cleveland, OH, [3]Colorectal Surgery, Cleveland Clinic, Cleveland, OH

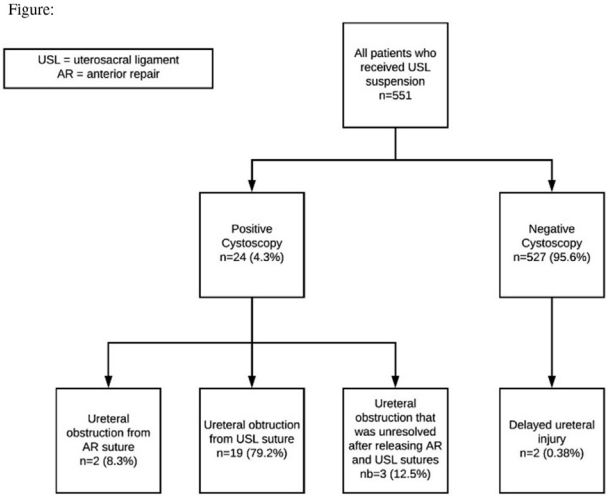
OBJECTIVES: The objective of this study is to determine risk factors for transient ureteral obstruction at the time of transvaginal uterosacral ligament vault suspension.

MATERIALS AND METHODS: This was a retrospective chart review with a nested case-control analysis. Patients were included if they underwent transvaginal uterosacral ligament vault suspension (*CPT* code 57283) at the time of hysterectomy for uterovaginal prolapse. One of 5 FPMRS surgeons performed all of the procedures between December 2007 and December 2012. Once patients were identified, perioperative data were collected. For the retrospective cohort study, the incidence of intraoperative and delayed ureteral injury for all patients was described. Delayed ureteral injury was defined as those with a negative cystoscopy (presence of bilateral ureteral efflux) at the time of surgery who then developed postoperative pyelonephritis, hydronephrosis, and/or acute renal failure immediately after the index surgery. For the nested case-control analysis, cases were defined as patients with transient ureteral obstruction at the time of surgery. Controls were defined as those who did not have a transient ureteral obstruction. Cases and controls were matched 1:4 by date of surgery.

RESULTS: During the study period, 551 patients underwent uterosacral ligament vault suspension. Of these patients, 527 (95.6%) had a negative cystoscopy, with 2 (0.38% [95% CI 0.09-1.31]) patients experiencing a delayed ureteral injury. Twenty-four (4.4% [95% CI 2.94-6.40]) patients had a ureteral obstruction on cystoscopy. Obstruction was determined to be a result of the uterosacral vault suspension in 19 (79.2%) cases and the anterior repair in 2 (8.3%) of cases, while the etiology of obstruction was unclear in 3 (12.5%) cases. Resuspension of the vaginal vault once obstruction was resolved was performed in 12 (54.6%) cases. The 24 cases of transient ureteral obstruction were matched to 96 controls. Cases were significantly older (65 vs 58 years, p=0.008), and had lower BMI (26.2 vs 28.9 kg/m^2, p=0.03) when compared to controls. The right ureter was more commonly obstructed than the left (47.8% vs. 39.1%). There were otherwise no other differences between the groups. On logistic regression, increased age remained associated with a transient ureteral obstruction (adj OR 1.06, 95% CI 1.02-1.11, p=0.004) and a higher BMI had lower odds of ureteral obstruction (adj OR 0.89, 95% CI 0.79-0.98, p=0.015).

CONCLUSION: In this retrospective study, the incidence of transient ureteral obstruction after uterosacral ligament vault suspension was 4.4%. The incidence of delayed ureteral injury was 0.38%. Older age was associated with higher odds of obstruction while a higher BMI was protective.

Figure:



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Olivia H. Chang: Nothing to disclose; Surabhi Tewari: Nothing to disclose; Jinger Sun: Nothing to disclose; Cecile A. Ferrando: Nothing to disclose.

50 The influence of patients' goals on surgical satisfaction

A. W. Gillingham, K. Kenton, J. Geynisman, M. G. Mueller, C. Lewicky-Gaupp, S. A. Collins
Female Pelvic Medicine and Reconstructive Surgery, Northwestern University, Chicago, IL

OBJECTIVES: Our objective was to compare 3-month post-operative satisfaction following pelvic organ prolapse (POP) surgery using patient-reported outcome (PRO) measures in patients who achieved their preoperative goals versus those who did not.

MATERIALS AND METHODS: This was a prospective cohort study of women undergoing POP surgery at a single institution between March 2018 and February 2019. Per clinical protocol, all patients completed the PFDI and listed their personal goals for treatment. Discrete goals were categorized based on theme. Satisfaction was elicited using the Satisfaction with Decision Scale (SDS) and Decision Regret Scale (DRS), PRO measures that have been validated for use in treatment of pelvic floor disorders. 3 months following surgery, women completed the PFDI, SDS, and DRS, and they were reminded of their previously reported treatment goals. A single dichotomous question was asked: "Did you achieve these goals by having surgery?" and patients were grouped based on their response as "goal achievers" (GAs) and "goal non-achievers" (GNAs). Data were analyzed in SPSS.

RESULTS: 101 women underwent POP surgery and returned for the 3-month visit. Of these, 68 answered the study question and were included for analysis. Patients had mean ± SD age of 63 ± 10 years, and majority were white (90%). POP surgery was as follows: 63% laparoscopic sacrocolpopexy, 19% colpocleisis, and 18% vaginal native tissue repair. Patients reported a median of 3 goals with categories related to symptoms, treatment, lifestyle, emotional issues, and information-seeking. Mean baseline PFDI scores were 115±54 for the whole cohort and did not differ between GAs and GNAs

(p=0.3). Overall satisfaction was high (median, [IQR]) (5, [4-5]) and regret was low (1, [1-1.8]). At 3 months, 56 (82%) patients stated that they had met their preoperative goals; only 12 (18%) reported they had not. GAs had lower postoperative POP-Q stage compared to GNAs (0, [0-1] vs 1, [1-2] p=0.004). When controlling for POP-Q stage, GAs had higher SDS scores (5, [4.7-5] vs 3.6, [2.8-4.5], p=0.012), lower DRS scores (1, [1-1.6] vs 2.7, [1.85-3.5], p=0.005), as well as lower postoperative PFDI (52.7 vs 92.7, p=0.02), POPDI (14.3 vs 28.1, p=0.02), and UDI (19.8 vs 38.7, p=0.01) scores. Preoperatively, GNAs were more likely to report abdominal/genital pain (p=0.036), and postoperatively were more likely to report pelvic heaviness (p=0.04), splinting to defecate (P<0.001), straining with bowel movements (p=0.04), urinary urgency incontinence (p=0.03), stress urinary incontinence (p=0.01), and small volume urine leakage (p=0.03).

CONCLUSION: Irrespective of anatomic outcome, patients who achieve their preoperative goals after POP surgery have higher satisfaction and lower decisional regret than those who do not meet their goals. Preoperative patient-reported goals may help clinicians better understand their patients' treatment expectations and whether this can be achieved with surgery alone.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Akira W. Gillingham: Nothing to disclose; Kimberly Kenton: Boston Scientific, Consultant, Research grant; Ethicon, Expert Witness, Salary; Julia Geynisman: Nothing to disclose; Margaret G. Mueller: Nothing to disclose; Christina Lewicky-Gaupp: Nothing to disclose; Sarah A. Collins: Ethicon, Expert Witness, Salary; MCG, Expert Reviewer, Salary.

51 Pre- and postoperative MRI comparison of anatomical findings at 11 years following native tissue prolapse repair: A preliminary analysis

P. Schmidt[1], L. Chen[1,2], J. O. DeLancey[1], C. W. Swenson[1]
[1]OB/GYN - Urogynecology, University of Michigan, Ann Arbor, MI, [2]Biomedical Engineering, University of Michigan, Ann Arbor, MI

OBJECTIVES: To compare pre- and postoperative MRI-based anatomical findings following native tissue prolapse repair.

MATERIALS AND METHODS: This was a follow up study of ten women who had 3D MRIs for research prior to undergoing primary native tissue prolapse repairs at our institution from December 2002-November 2010. Women were recruited back for clinic exam and MRI. Surgical failure was based on either clinic POPQ (Ba or Bp > 0, or C ≥ -4) or if a patient underwent repeat surgery, pessary use, or pelvic floor physical therapy. MRI measurements (Figure 1) were made in the mid-sagittal plane during maximal Valsalva. MRI apex location was defined by the anterior fornix or vaginal cuff relative to a horizontal reference line (PICS line). Pre- and postoperative MRI measurements were then compared to normal ranges, which were based on parous controls from prior studies (Sammarco 2017, Chen 2016).

RESULTS: Mean follow up time was 11.4 ± 1.4 years from prolapse surgery. Four women (40%) had surgical failure. Table 1 shows demographic, POP-Q and surgical data. On MRI, surgical intervention returned to normal range 2/7 women with an abnormal UGH, 3/6 with an abnormal apex location, and 1/6 with an abnormal mid-sagittal levator area. 3/9 women with a normal preoperative LH had a postoperative LH outside of normal. One woman with an abnormal preoperative LH remained so postoperatively. Levator area was 10% larger over the follow up time of 11 years, which is identical to the average age-related increase in levator area per decade seen in nulliparous women without prolapse.

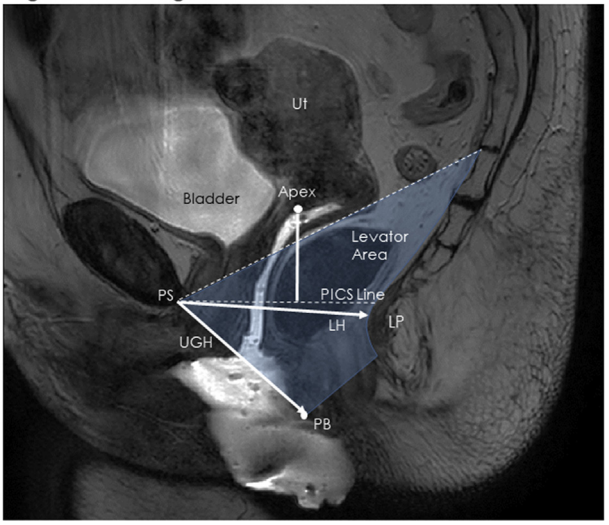
CONCLUSION: In this preliminary analysis, native tissue prolapse repairs appear to be more effective at restoring apical support to normal than urogenital hiatus size. Surgical intervention has little effect on levator area. Over time, the levator area continues to increase at an average rate consistent with age-related changes.

Table 1: Demographics and Clinic Data At the Time of Initial Preoperative Evaluation and Long-Term Follow Up Postoperatively

	At Primary Prolapse Surgery (N=10)	At Study Visit (N=10)
Age, years	57.1 ± 6.7	68.9 ± 6.5
Body Mass Index, kg/m2	27.6 ± 4.3	28.9 ± 4.3
Parity	2 (2-4)	N/A
POP-Q Ba	2.0 (-1.0, 9.0)	0 (-2.0, 1.0)
Bp	0 (-2, 5)	-1.5 (-3.0, 0)
Cervix (apex)	-3.5 (-7, 9)	-6.5 (-9.5, -5.5)
Genital Hiatus	6.0 (3.5, 8.5)	3.0 (1.5, 4.5)
Perineal Body	3.0 (1.5, 5.5)	3.25 (2.0, 5.5)
Total Vaginal Length	10.0 (9.0, 11.0)	9.0 (8.0, 9.5)
Maximal Prolapse Size	3.0 (1.0, 9.0)	0 (-2.0, 1.0)
Vaginal hysterectomy	5 (50)	--
Anterior repair	6 (60)	--
Posterior repair	7 (70)	--
Apical suspension	6 (60)	--
Incontinence procedure	5 (50)	--

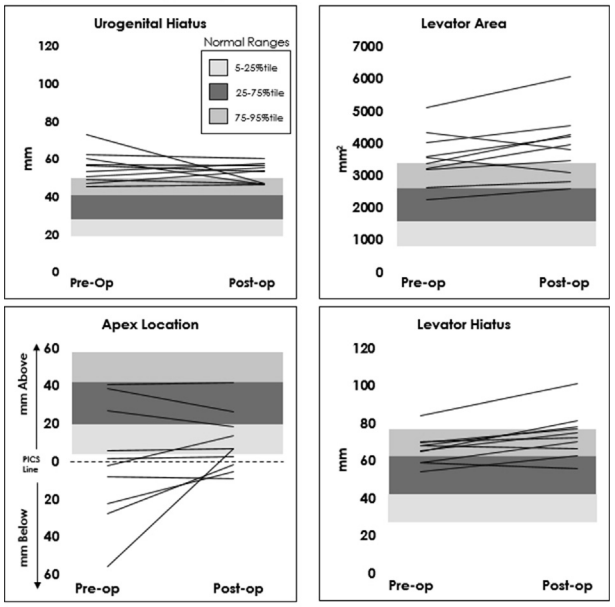
Data presented as mean ± standard deviation, median (total range) or N (%).

Figure 1. Mid-Sagittal MRI Measurements



PS: pubic symphysis, UGH: urogenital hiatus, PB: perineal body, LP: levator plate, LH: levator hiatus, Ut: Uterus, PICS line: horizontal reference line. Levator area (blue shading).

Figure 2. MRI Measurements At Maximum Valsalva Preoperatively and Long-Term Follow Up Postoperatively



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Payton Schmidt: Nothing to disclose; Luyun Chen: Nothing to disclose; John O. DeLancey: Nothing to disclose; Carolyn W. Swenson: Nothing to disclose.

52 Major adverse cardiovascular and cerebrovascular events associated with female pelvic reconstructive surgery

K. Roberts[1,2], G. Chapman[1,2], E. Slopnick[1,2], A. Dao[2], D. Sheyn[2]
[1]Urology, University Hospitals, Columbus, OH, [2]Female Pelvic Medicine and Reconstructive Surgery, MetroHealth Hospitals, Cleveland, OH

OBJECTIVES: To evaluate national trends in major adverse cardiovascular and cerebrovascular events (MACCE) in women undergoing pelvic reconstructive surgery (PRS).

MATERIALS AND METHODS: Data from the Healthcare Cost and Utilization Project National Inpatient Sample was used to identify women undergoing PRS between 2012 to 2016. Patient- and hospital-level demographic, procedural, and comorbidity data were collected. Patients were stratified into those with and those without MACCE. MACCE was defined as all-cause mortality (ACM), cardiac arrest (CA), acute myocardial infarction (AMI) and acute ischemic stroke (AIS). Descriptive statistics are expressed as medians and interquartile ranges (IQR). Pairwise analysis was performed between groups using Wilcoxon rank-sum or Fisher's exact test as appropriate. Multivariable logistic regression was used to identify independent risk factors for MACCE.

RESULTS: During the study period 53,540 patients underwent PRS. The rate of MACCE was 4.8 per 1,000 surgeries. The most common form of MACCE was AMI (3.7 per 1,000), followed by AIS (0.6 per 1,000), CA (0.4 per 1,000), and ACM (0.3 per 1,000). Patients experiencing MACCE were older (median 69 years, IQR: 58-76 vs 58, 46-68, p<0.001), more likely to have a household income in the 1st quartile (28.5% vs 22.9%, p=0.03), and more likely to have Medicare as their primary insurer (60.9% vs 33.6%, p<0.001). Patients experiencing MACCE were a more likely to have major pre-existing cardiovascular comorbidities, coagulopathy, neurologic disease (ND), and diabetes (Table 1). Additionally, patients experiencing MACCE were more likely to undergo robotic colpopexy (20.7% vs 9.6%, p<0.001), vaginal colpopexy (32.0% vs 28.5%, p=0.04), bilateral salpingo-oophorectomy (25.8% vs 19.6%, p=0.03) and to receive a blood transfusion (8.2% vs 2.5%, p<0.001); and less likely to undergo hysterectomy (39.5% vs 48.8%, p=0.01) and bilateral salpingectomy (3.5% vs 6.8%, p=0.03). On logistic regression, pre-existing coagulopathy was the strongest predictor of MACCE, (aOR=5.53, 95% CI: 2.39-12.78), followed by blood transfusion (aOR=4.84, 95% CI: 1.89-12.45), congestive heart failure (CHF) (aOR=3.61, 95% CI: 1.56-8.37), ND (aOR=3.14, 95% CI: 1.23-8.06), and electrolyte abnormalities (aOR=1.99, 95% CI: 1.05-3.99).

CONCLUSION: MACCE after PRS is a rare event with AMI being the most common manifestation. Pre-existing ND, CHF, coagulopathy, electrolyte disturbances, and perioperative transfusions are strongly associated with MACCE.

Table:

	MACCE (N=256)	No MACCE (N=53,284)	P
Cardiovascular Disorders	--	--	
Hypertension	152(59.4)	18,983 (35.6)	<0.001
Peripheral Vascular Disease	10(3.9)	660(1.2)	<0.001
Valvular Disease	22(8.6)	1,130(2.1)	<0.001
Congestive Heart Failure	36(14.1)	875(1.6)	<0.001
Neurologic Disorders	33(12.9)	3,325(6.2)	<0.001
Renal Failure	15(5.9)	1,393(2.6)	0.005
Pulmonary Disorders	--	--	
Chronic Lung Disease	36(14.1)	4,663(8.8)	0.004
Pulmonary Circulatory Disorders	8(3.1)	262(0.5)	<0.001
Hematologic Disorders	--	--	
Anemia	35(13.7)	4,218(7.9)	0.001
Coagulapathy	18(7.0)	724(1.4)	<0.001
Diabetes Mellitus	55(21.5)	5,918(11.1)	<0.001
Obesity	36(14.1)	4,854(9.1)	0.006
Other	--	--	
Arthritis	9(3.5)	1,085(2.0)	0.09
Psychiatric Disorders	29(11.3)	5,796(10.9)	0.84
Hypothyroidism	53(20.7)	6,820(12.8)	0.002
Drug abuse/Alcohol Abuse	6(2.3)	826(1.6)	0.67
Neoplasm	9(3.5)	1,297(2.4)	0.59
Electrolyte Abnormalities	67(26.2)	2,784(5.2)	<.001
Paralysis	10(3.9)	242(0.5)	<0.001
Chronic Liver Disease	0(0.0)	401(0.8)	0.18

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kasey Roberts: Nothing to disclose; Graham Chapman: Nothing to disclose; Emily Slopnick: Nothing to disclose; Angela Dao: Nothing to disclose; David Sheyn: Nothing to disclose.

53 Effect of preoperative depression on length of stay and disposition following pelvic reconstructive surgery

K. Roberts[1,2], E. Slopnick[1,2], G. Chapman[1,2], R. Darvish[2], D. Sheyn[2], S. T. Mahajan[1]
[1]Urology, University Hospitals, Columbus, OH, [2]Female Pelvic Medicine and Reconstructive Surgery, MetroHealth Hospitals, Cleveland, OH

OBJECTIVES: To evaluate the effect of preoperative depression on length of stay and disposition following pelvic reconstructive surgery (PRS).

MATERIALS AND METHODS: Data from the Healthcare Cost and Utilization Project National Inpatient Sample was used to identify

women undergoing PRS between 2012 to 2016. Patient- and hospital-level demographic, procedural, and comorbidity data were collected. Patients were stratified into those with and those without pre-existing depression. Descriptive statistics are expressed as medians and interquartile ranges (IQR). Pairwise analysis was performed between groups using Wilcoxon rank-sum or Fisher's exact test. Multivariable logistic regression was used to identify independent risk factors for non-home dispositions and for length of stay greater than the median for the cohort. Non-home disposition was defined as transfer to a different acute care facility, non-hospital care facility, skilled nursing facility or discharge with home health.

RESULTS: During the study period 52,541 patients underwent PRS and 9.1% had depression. Patients with depression were younger median age (57 (IQR: 47-67) vs 58 (46-68), p <0.003), less likely to be white (14.0% vs 23.4%, p<0.001), and more likely to live in areas with more than 1 million people (22.5% vs 28.0%, p<0.001). They were also more likely to have higher Elixhauser comorbidity index (4 IQR: 4-12 vs 0 (IQR: -1 to 5, p<0.001). There were no differences between type of surgery, except that patients with depression were more likely to undergo an anterior or posterior repair (91.4% vs 87.6%, p=0.03). On pairwise analysis, patients with depression were more likely to be discharged to a non-home destination (6.5% vs 4.5%, p<0.001) and have a longer length of stay (2 days IQR: 1-3 vs 1-day IQR: 1-2, p=0.01). The median length of stay for the entire cohort was 1 day (IQR: 1-2). After logistic regression, depression was not found to be an independent predictor of non-home discharge. Colpocleisis was the strongest predictor, (aOR=2.72, 95% CI: 1.80-4.11), followed by transfusion (aOR=2.05, 95% CI: 1.29 − 3.23), having Medicare as primary payor (aOR=1.83, 95% CI: 1.32-2.54), an increasing Elixhauser index (aOR=1.05 per point, 95% CI: 1.03 − 1.06), and increasing age (aOR=1.04 per year, 95% CI: 1.02-1.06). Higher median household incomes were associated with a lower likelihood of non-home discharge (aOR=0.81, 95% CI: 0.73-0.90). Depression was not independently associated with a hospitalization greater than 1 day. Blood transfusion (aOR=4.47, 95% CI: 2.71-7.36), increasing age (aOR=1.06 per year 95% CI: 1.05-1.07), increasing Elixhauser index (aOR=1.04, 95% CI: 1.03-1.05), Medicare as primary payor (aOR=1.81, 95% CI: 1.52-2.14), and vaginal colpopexy (aOR: 1.21, 95% CI: 1.04-1.43) were associated prolonged stay.

CONCLUSION: Pre-existing depression is not independently associated with non-home discharge or prolonged length of stay after PRS.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kasey Roberts: Nothing to disclose; Emily Slopnick: Nothing to disclose; Graham Chapman: Nothing to disclose; Ryan Darvish: Nothing to disclose; David Sheyn: Nothing to disclose; Sangeeta T. Mahajan: Nothing to disclose.

54 Is hysterectomy a risk factor for urinary retention? A retrospective matched case control study

M. Misal, J. Yang, S. Behbehani, M. Wasson
Department of Gynecologic surgery, Mayo Clinic Arizona, Phoenix, AZ

OBJECTIVES: Urinary retention has been reported in up to 20% of outpatient minimally invasive hysterectomies. Studying the independent effect of hysterectomy on urinary retention is difficult because of the presence of multiple risk factors, which include menopause, perioperative opioid administration, and operative time.

MATERIALS AND METHODS: This is a retrospective chart review comparing patients who underwent minimally invasive hysterectomy to those who underwent non-hysterectomy minimally invasive gynecologic surgery between January 2013 and December 2018 at a single institution. The primary outcome was rate of urinary retention. A total of 200 hysterectomy cases were matched by operative time to non-hysterectomy gynecologic surgery controls in a 1:1 ratio.

RESULTS: Differences in baseline and operative characteristics between the two groups (Table 1) included age (years, 48.6 vs. 45.7, p = 0.04), perioperative opioid administration (morphine mg equivalents, 11.6 vs. 7.6, p = 0.01) and estimated blood loss (EBL, mL, 64.1 vs. 31.8, p=0.001); menopausal status and body mass index (BMI) did not differ. Rate of urinary retention in the hysterectomy group was double that of the non-hysterectomy group (26.5% vs. 13%, p = 0.01). Overall, a 10.1% rate of urinary tract infection was observed in patients discharged home with indwelling catheter. Urinary retention was not associated with age (years, 47 vs. 47.2, p = 0.92), menopausal status (26.6% vs. 33.1%, p = 0.284), BMI (kg/m^2, 26.8 vs. 27.8, p = 0.23), perioperative opioid administration (morphine milligram equivalent, 11.8 vs. 9, p = 0.53), or EBL (mL, 56 vs. 46, p = 0.42). Operative time was longer in the retention group (minutes, 104 vs 93.7, p = 0.01).

CONCLUSION: Hysterectomy appears to be an independent and major factor contributing to postoperative urinary retention. When compared to non-hysterectomy gynecologic surgeries with similar operative times, the rate of urinary retention in hysterectomy patients was doubled. These results may be helpful to the gynecologic surgeon when selecting appropriate candidates for postoperative void trial.

Table 1: Demographics and operative characteristics

Variable	Hysterectomy (n = 200)	Non-hysterectomy (n = 200)	
Age, mean (SD) [range], years	48.6 (10.1) [28 - 74]	45.7 (16.3) [19 – 85]	p = 0.04
BMI, mean (SD) [range], kg/m2	28.1 (6.7) [17 – 51]	27.1 (6.4) [17 – 49]	p = 0.15
Menopausal status, n, %	60 (30%)	67 (33.5%)	p = 0.52
Menopausal use of HRT, n, %	27 (45%)	12 (17.9%)	p = 0.001
Perioperative opioids, mean (SD), morphine mg equivalent	11.6 (11.3)	7.6 (10.9)	p = 0.01
Operative time, mean (SD) [range], minutes	95.3 (32.1)	96.2 (33.7)	p = 0.75
Estimated blood loss, mean (SD) mL	64.1 (128)	31.8 (39.5)	p = 0.001

Table 2: Characteristics stratified by void trial status

Variable	Failed void trial (n = 79)	Passed void trial (n = 321)	
Age, mean, years	47	47.2	p = 0.92
BMI, mean, kg/m2	26.8	27.8	p = 0.23
Menopausal status, n, %	21 (26.6%)	106 (33.1%)	p = 0.28
Perioperative opioids, mean (SD), morphine mg equivalent	11.8 (12.6)	9 (10.9)	p = 0.53
Operative time, mean (SD) minutes	104.1 (39.2)	93.7 (30.8)	p = 0.01
Estimated blood loss, mean (SD) mL	56 (62.6)	46 (101)	p = 0.42

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Meenal Misal: Nothing to disclose; Jie Yang: Nothing to disclose; Sadikah Behbehani: Nothing to disclose; Megan Wasson: Nothing to disclose.

55 Cost-effectiveness analysis of surgical repair for apical prolapse

R. Wang[1], M. R. Hacker[2], M. Richardson[2]
[1]Hartford Hospital, Hartford, CT, [2]Beth Israel Deaconess Medical Center, Boston, MA

OBJECTIVES: To evaluate the cost effectiveness of three routes of surgical repair for apical prolapse.

MATERIALS AND METHODS: We constructed a decision tree model to assess the cost effectiveness of apical suspension procedures, including vaginal sacrospinous and uterosacral ligament suspension, laparoscopic sacrocolpopexy, and robotic sacrocolpopexy, compared to expectant management. We modeled time horizons of 1 and 10 years, accounting for differing morbidities and recurrence rates. Outcomes included up to two separate surgical repairs for apical prolapse, effectiveness of prolapse repair, risk of re-operation, and complications. We calculated costs from the healthcare system's perspective for the vaginal ($17,265), laparoscopic ($18,485) and robotic ($22,053) procedures, as well as an office visit ($379), lab tests ($184), imaging ($947) and antibiotics ($9). We estimated health utilities for no prolapse/cure at 1.0, symptomatic prolapse at 0.71, vaginal surgery at 0.96, laparoscopic and robotic surgeries at 0.90, and re-operation at 0.60. We discounted future costs and utilities at a rate of 3% annually.

RESULTS: The base case analysis showed that, over a 1-year period, initial vaginal surgery followed by repeat vaginal surgery for recurrence, is the most cost-effective option. The incremental cost-effectiveness ratio (ICER) for this option is $150,756/QALY, whereas the ICER for initial laparoscopic surgery followed by repeat laparoscopic surgery if needed is $170,350/QALY, and the ICER for initial robotic surgery followed by repeat robotic surgery if needed is $201,282/QALY. However, over a 10-year period, initial laparoscopic surgery followed by repeat laparoscopic surgery for recurrence is the most cost-effective option (ICER $9,990/QALY). Whereas the ICER for initial vaginal surgery followed by repeat vaginal surgery for recurrence is $11,207/QALY, and the ICER for initial robotic surgery followed by repeat robotic surgery if needed for recurrence is $11,804/QALY. Sensitivity analyses showed that for patients with increased morbidity associated with laparoscopic surgery, initial vaginal surgery was the more cost-effective option when the QALY for laparoscopic surgery decreased below 0.68. Initial robotic surgery was more cost-effective than initial vaginal surgery when the cost of robotic surgery decreased by at least $1,175 per surgery.

CONCLUSION: These results suggest that vaginal apical suspension is more cost-effective if the relevant time horizon is short-term or if there is increased morbidity with a laparoscopic approach. However, laparoscopic sacrocolpopexy is most cost-effective if the relevant time horizon is long-term. Further sensitivity analyses and Monte Carlo simulation is planned in our future analyses.

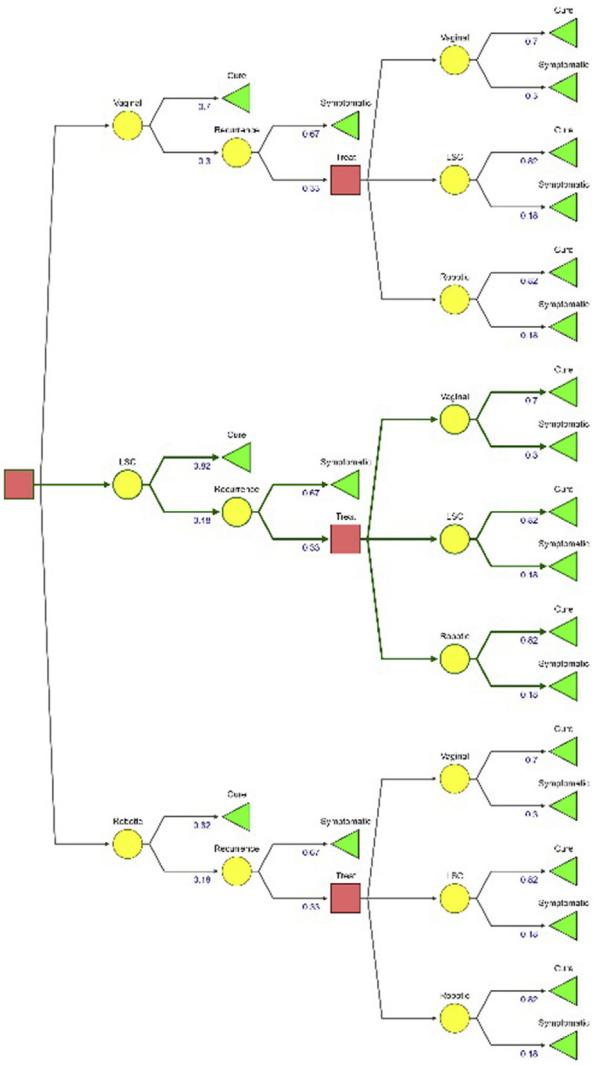


Figure 1. Decision tree including probabilities

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rui Wang: Nothing to disclose; Michele R. Hacker: Nothing to disclose; Monica Richardson: Nothing to disclose.

56 Evaluating risk factors associated with need for blood transfusions after urogenital fistula repair in Uganda

T. Potluri[1], L. M. Holt[1], J. P. Tanner[2], L. Wasingya[3], S. Duffy[4,5], K. A. Greene[6,4]
[1]Morsani College of Medicine, University of South Florida, Tampa, FL, [2]College of Public Health, University of South Florida, Tampa, FL, [3]Department of Medicine, Kitovu Hospital, Masaka, Uganda, [4]Kitovu Hospital Fistula Unit, Masaka, Uganda, [5]Chelsea and Westminster Hospital, London, United Kingdom, [6]Department of Female Pelvic Medicine and Reconstructive Surgery, University of South Florida, Tampa, FL

OBJECTIVES: Urogenital fistulae are a devastating condition prevalent in countries where women do not readily have access to emergency obstetric services. In this study, our primary objective was to determine the incidence of and risk factors for perioperative blood transfusions after urogenital fistulae repair in Uganda.

MATERIALS AND METHODS: An IRB approved retrospective cohort study was conducted to identify the incidence of and risk factors for

blood transfusions after urogenital fistula repair. Inclusion criteria included women who underwent repair of urogenital fistula at Kitovu Hospital in Masaka, Uganda between 2013 and 2018. All types of urogenital fistula were included (vesicovaginal, urethrovaginal, vesicouterine, and those with ureteral involvement). Descriptive statistics were calculated for demographic and clinical covariates. Logistic regression was used to calculate the crude odds ratios (ORs) and 95% confidence intervals (CIs) for each risk factor of interest. A final model was constructed using stepwise multivariable logistic regression in which risk factors with a significance level <0.05 remained in the model. All statistical tests were two-sided and declared significant at $p < 0.05$.

RESULTS: A total of 546 patients treated for urogenital fistulae were identified. The median age was 31.3 ± 13.2. Median duration of labor was 48 hours (interquartile range: 36-72 hours). Median parity was 3 (interquartile range: 1-6). Approximately 94% of fistulae were caused by obstetric means, while 4% were related to gynecologic surgery. Less than a third of patients had previous fistula repairs (25.5%). Most VVF patients delivered via Cesarean section (58.6%), and 23.8% delivered via spontaneous vaginal delivery. The most common location of fistulae were juxta-cervical or vault fistulas (20.7%). A vaginal surgical approach was used in the majority of patients (84.6%) compared to abdominal (11.7%) or combined approaches (3.5%). Complications occurred in 3.5% of surgical repairs, and the incidence of blood transfusions was 6.2%. Multivariable analyses identified time with fistula, surgical approach, and delivery outcomes as statistically significant risk factors of a need for blood transfusions. Patients who delivered stillbirths were 3.84 (95% CI: 1.23−11.97) times more likely to require postoperative blood transfusions than live births, while surgical fistula repairs approached abdominally (non-vaginally) were 8.10 (95% CI: 3.53−18.60) times more likely to require transfusions than vaginal operations. Furthermore, patients who had been living with the condition for less than three months had a higher risk of a blood transfusion.

CONCLUSION: This study identified an incidence of blood transfusions among urogenital fistula repairs in our population of approximately 6%. Time with fistula, delivery outcomes and surgical approach were significant risk factors for the need for blood transfusions.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Thrisha Potluri: Nothing to disclose; Lauren M. Holt: Nothing to disclose; Jean P. Tanner: Nothing to disclose; Lucien Wasingya: Nothing to disclose; Shane Duffy: Nothing to disclose; Kristie A. Greene: Nothing to disclose.

57 Age is just a number: in older patients, risk of postoperative admission, readmission and complications after sling procedures for stress incontinence is low

A. Jaresova[1,2], W. D. Winkelman[1,2,3], A. Modest[1,2], M. Richardson[1,2]

[1]Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Boston, MA, [2]Obstetrics, Gynecology and Reproductive Biology, Harvard Medical School, Boston, MA, [3]Boston Urogynecology Associates, Mount Auburn Hospital, Cambridge, MA

OBJECTIVES: To determine preoperative factors associated with postoperative hospital admission, readmissions, and complications amongst older patients undergoing sling procedures for stress urinary incontinence (SUI).

MATERIALS AND METHODS: This is a retrospective cohort study of surgical cases from The American College of Surgeons National Surgical Quality Improvement Program which is a nationally validated, multicenter database that contains preoperative, intraoperative and 30-day postoperative data from over 700 hospitals within the United States. We conducted a secondary analysis of surgical cases from 2012 through 2017. Patients were included if they were 65 years of age or greater. Patients undergoing concurrent procedures were excluded from this study. Comorbidities included obesity, diabetes, hypertension, bleeding disorder, steroid use, severe chronic obstructive pulmonary disease, congestive heart failure, ascites, ventilator dependence, dialysis, or acute renal failure.

RESULTS: We identified 2692 eligible patients who underwent a sling procedure for SUI. Patients were more likely to be 65-74 years old (71.4%), white (68.4%) and non-Hispanic (66.3%). Comorbidities were common and included obesity (47.7%), hypertension (61.6%), and diabetes (18.1%). There were 454 (16.9%) postoperative admissions, and 48 (1.8%) readmissions. There was no association between the three age groups studied (ages 65-74, 75-84, 85 and over) with overnight admission or readmission. An ASA classification of III or IV was associated with an increased risk of overnight admission (risk ratio (RR) 1.4, 95% confidence interval (CI) 1.2-1.7) and readmission (RR 2.1, 95% CI 1.2-3.6). There appears to be an increased risk in admission and readmission in patients with multiple comorbidities, although our sample size is small. These findings are reflected in Table 1. There were 155 complications (5%), including 65 serious complications (2.4%) such as death, cardiac complication, stroke, renal failure, pulmonary embolism, ventilator use, reintubation, return to the operating room, readmission, or sepsis. There was an association between the number of comorbidities and the overall incidence of complications, serious complications, cardiac arrest and death ($p<0.001$ for all) as well as incidence of postoperative urinary tract infections ($p<0.03$).

CONCLUSION: Overall, the risk of inpatient hospitalization and readmission is low in older patients, but patients with multiple comorbidities may be at higher risk. Serious complications are rare, although more likely to present in patients with multiple comorbidities. Older patients with few medical comorbidities who are undergoing a sling procedure for stress urinary incontinence may be reassured that they are not more likely to need postoperative hospitalization nor readmission.

Table 1. Association between rates of overnight admission, readmission and ASA functional class, comorbidity status in older female patients undergoing sling procedures for stress urinary incontinence

	Inpatient admissions			Readmissions		
	Overnight admission	No admission	Crude RR (95%CI)	Readmission	No readmission	Crude RR (95%CI)
Comorbidities	n=454	n=2237		n=48	n=2633	
None	94 (20.7)	490 (21.9)	Reference	8 (16.7)	575 (21.8)	Reference
1 comorbidity	156 (34.4)	779 (34.8)	1.04 (0.82-1.3)	13 (27.1)	918 (34.9)	1.02 (0.42-2.4)
2 comorbidities	127 (28.0)	673 (30.1)	0.99 (0.77-1.3)	10 (20.8)	786 (29.9)	0.92 (0.36-2.3)
3 comorbidities	72 (15.9)	258 (11.5)	1.4 (1.03-1.8)	9 (18.8)	321 (12.2)	2.0 (0.77-5.1)
4 comorbidities	4 (0.9)	31 (1.4)	0.71 (0.28-1.8)	8 (16.7)	26 (1.0)	17.1 (6.9-42.9)
5 comorbidities	1 (0.2)	6 (0.3)	0.89 (0.14-5.5)	0 (0.0)	7 (0.3)	-
ASA Class*	n=451	n=2233		n=48	n=2626	
I and II	223 (49.4)	1337 (59.9)	Reference	19 (39.6)	1535 (58.5)	Reference
III and IV	228 (50.6)	896 (40.1)	1.4 (1.2-1.7)	29 (60.4)	1091 (41.5)	2.1 (1.2-3.6)

Data presented as n (%) or risk ratio (RR) and 95% confidence interval (CI)
* Some records missing information on ASA Class

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Andrea Jaresova: Nothing to disclose; William D. Winkelman: Nothing to disclose; Anna Modest: Nothing to disclose; Monica Richardson: Nothing to disclose.

58 Mind the gap – Changes in levator dimensions following sacrocolpopexy

J. Geynisman-Tan, K. Kenton, O. Brown, A. W. Gillingham, C. Lewicky-Gaupp, M. G. Mueller, S. A. Collins
Obstetrics and Gynecology, Northwestern University, Chicago, IL

OBJECTIVES: Prior studies demonstrated that genital hiatus (GH) decreases following surgical correction of the vaginal apex. We hypothesized that the underlying levator hiatus (LH) and levator area (LA) would decrease following apical suspension in women with preoperative prolapse (POP) beyond the hymen. Our objective was to compare LH and LA on transvaginal 3D ultrasound (US) and the GH, as measured by POP-Q exam, before surgery and at 14 weeks following sacrocolpopexy without posterior repair or perineorrhaphy.

MATERIALS AND METHODS: This was a prospective cohort study of women undergoing minimally-invasive sacrocolpopexy +/- hysterectomy without posterior repair or perineorrhaphy for stage II or greater POP beyond the hymen. At baseline and 14-weeks after surgery, patients underwent POPQ exam and US performed at rest. US was performed using multi-frequency 360° rotational probe with a 3D automatic acquisition system (Type 20R3 BK Medical, Herlev, Denmark). Data from each study were de-identified and analyzed by two urogynecologists, blinded to image sequence. The LH was measured from the junction of the superior pubic rami to the posterior margin of the external anal sphincter in the axial plane with urethra, puborectalis muscle, and anal canal visible simultaneously. Based on prior studies of POPQ GH change, we calculated that 32 women were needed to find a 1cm change in GH with 80% power and an alpha of 0.05. Measurements and scores were compared in SPSS Version 25 using paired t-tests for continuous variables. Correlations of non-parametric data are reported as Spearman's *rho*.

RESULTS: 43 patients were enrolled in the study; 35 completed all preoperative and postoperative ultrasounds and are included in the analysis. Patients had a mean age ± SD of 55 ± 11. Most were white (89%), parous (94%), postmenopausal (66%), sexually active (63%) and had stage III POP (86%). The majority (89%) had concomitant total hysterectomy, and 60% had a midurethral sling. At baseline, mean PFDI scores were 98±50 and mean POPDI subscale scores were 42±22. Median (IQR) POP stage decreased after surgery from 3 (3-3) to 0 (0-1) ($p<0.001$) and mean PFDI scores decreased to 55±42 ($p=0.002$). At baseline, mean GH was 3.5 ± 0.7cm and mean perineal body (PB) was 2.4 ± 0.6. While the GH decreased by 0.5cm following surgery, PB was unchanged (Table 1). LH increased by 1mm at 14 weeks postoperatively while LA remained unchanged (Table 1). At 14 weeks, the change in LH was not correlated with the change in GH (ρ= -0.2, $p=0.2$) or POP stage (ρ= -0.2, $p=0.9$) as measured on POPQ exam.

CONCLUSION: Repositioning the apex with sacrocolpopexy significantly reduces GH size on clinical exam; however, restoration of the apex does not impact the size of the underlying levator hiatus or levator area suggesting that size of the levator gap does not impact sacrocolpopexy outcomes.

Table 1. Pre- and Post-Operative Measurements and Scores

	Preoperative [Mean ± SD]	14 weeks Postoperative [Mean ± SD]	p-value
Genital Hiatus (cm) by POPQ	3.5 ± 0.7	3.0 ± 0.7	0.01*
Perineal Body (cm) by POPQ	2.4 ± 0.6	2.6 ± 0.6	0.09
Levator Hiatus (mm) by US	53 ± 4	54 ± 4	<0.001*
Levator Area (cm^2) by US	16 ± 2	16 ± 2	0.06
PFDI score	98 ± 50	55 ± 42	0.002*

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Julia Geynisman-Tan: Nothing to disclose; Kimberly Kenton: Ethicon, Expert Witness, Honorarium; Boston Scientific, PI, Grant; Oluwateniola Brown: Nothing to disclose; Akira W. Gillingham: Nothing to disclose; Christina Lewicky-Gaupp: Nothing to disclose; Margaret G. Mueller: Nothing to disclose; Sarah A. Collins: Ethicon, Expert Witness, Honorarium.

59 Management and gynecologic sequelae of vulvovaginal involvement in Stevens-Johnson syndrome

L. A. Jackson[1], J. Shields[1], N. Gaddam[1], S. Meinhardt[1], G. Hanco[3], M. Mauskar[2], M. E. Florian-Rodriguez[1]
[1]Obstetrics and Gynecology, University of Texas Southwestern Medical Center, Dallas, TX, [2]Dermatology, University of Texas Southwestern Medical Center, Dallas, TX, [3]University of Texas Southwestern Medical School, Dallas, TX

OBJECTIVES: The purpose of this study is to determine the prevalence of vulvovaginal involvement (VVI) in women admitted to the hospital with Stevens Johnson Syndrome (SJS) or Toxic Epidermal Necrolysis (TEN) and describe the presentation, treatment, and gynecologic long-term sequelae.

MATERIALS AND METHODS: A retrospective cohort study was conducted at two tertiary-care hospitals using ICD9/10 codes to identify females admitted with SJS and TEN from 1/1/2007 to 12/31/2017. Patients without VVI were excluded from data collection. Information gathered on eligible patients included demographics, hospital admission data, discharge follow up and medical histories. Identified patients were then contacted by phone to review questionnaires on sexual and urinary function as well as provide information regarding long-term complications or treatment as a result of their VVI of SJS/TEN.

RESULTS: In the study period a total of 101 women were admitted with SJS/TEN, of those 64.4% were identified as having VVI and 64.6% had a documented gynecology consult (Figure 1). The median age of patients with VVI was 45 (range 14-98) years. The most common implicated agent was sulfamethoxazole/trimethoprim and most common vulvovaginal specific treatment was topical steroids. Seven patients were treated with vaginal dilators. Mortality at the time of admission for patients with VVI was 21%. A total of 18 patients were reached by phone; 15 agreed to participate and were consented for interview. The mean time from hospital admission to phone interview was 3.5 ± 2.1 years, 80% reported a gynecology visit since discharge and one patient reported surgery for vulvovaginal involvement. Eighty percent of participants reported sexual activity since hospital discharge, and 67% were sexually active in the last 4 weeks prior to phone call. The median Urogenital Distress Inventory, Short Form (UDI-6) score was 21 (range 0-63), median Female Sexual Functioning Index (FSFI) lubrication subcategory was 14 (range 0-20), median FSFI satisfaction subcategory was 11 (range 2-15), and median FSFI pain subcategory was 6.5 (range 0-15) with 43% of patients having moderate to severe pain.

CONCLUSION: Vulvovaginal involvement is present in approximately 65% of women admitted for SJS/TEN and may be a risk factor for mortality as in our cohort the mortality rate was 21% which is higher than the 13.7% previously reported. In this sample the most prevalent bothersome symptoms were urinary urgency and pain with intercourse, with nearly half of all subjects rating their pain level as moderate to high. Early recognition and treatment are key in order to prevent long-term complications. Further studies

comparing results to a general gynecologic population will provide greater insight into the long-term effects of this condition.

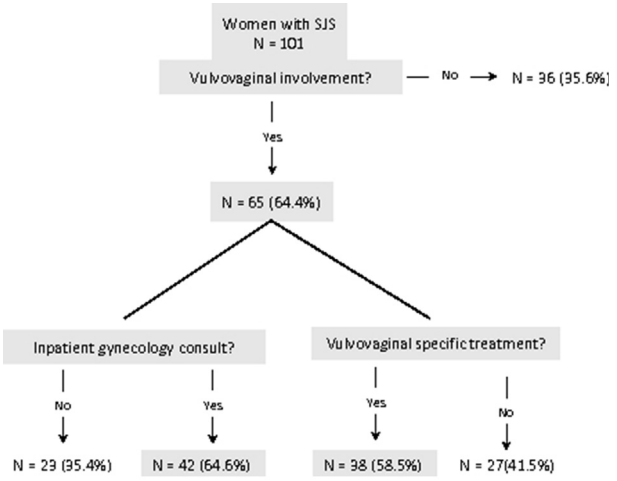


Figure1: Distribution of female paitents admitted with Stevens-Johnson Syndrome/Toxic Epidermal Necrolysis according to vulvovaginal involvement and subsequent management.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lindsey A. Jackson: Nothing to disclose; Jessica Shields: Nothing to disclose; Neha Gaddam: Nothing to disclose; Summer Meinhardt: Nothing to disclose; Gabriela Hanco: Nothing to disclose; Melissa Mauskar: Nothing to disclose; Maria E. Florian-Rodriguez: Nothing to disclose.

60 An update to left upper quadrant anatomy in non-obese and obese women

K. Chaves, J. Johnson, A. Yunker
Obstetrics & Gynecology, Vanderbilt University Medical Center, Nashville, TN

OBJECTIVES: We aim to compare distances from a left upper quadrant (LUQ) entry point to key anatomy, including the pelvis, between non-obese and obese women.

MATERIALS AND METHODS: Using ICD 9/10 and CPT codes, we identified women who underwent a CT scan over a one-month period in 2018 at an academic medical institution. Exclusion criteria included hepatomegaly, splenomegaly, ascites, masses > 15 cm or surgical absence of organs relevant to this study. After an instruction session with a radiologist, a gynecologist obtained the following measurements: distance from the skin to peritoneum (abdominal wall thickness) at the umbilicus and at the LUQ insertion site (Palmer's point), distance to the pelvis (LUQ to posterior cul-de-sac), and distance from LUQ to aorta, vena cava, spleen, stomach, pancreas, liver, and left kidney.

RESULTS: A total of 30 patients were identified. The mean age of the sample was 59 and the mean BMI 31.5. Abdominal wall thickness at the LUQ and umbilicus were greater in the obese than non-obese population, although the thickness at the umbilicus was less than at the LUQ in the obese group (p=0.05). Distances between the LUQ and important structures to avoid (aorta, vena cava, spleen, stomach, pancreas, liver, left kidney) were significantly farther in obese patients (Table 1). The distance to the pelvis was also significantly greater in the obese women, with a mean of 34.9 cm, compared to 31.1 cm in the non-obese women. There was an overall significant trend for increasing abdominal wall thickness at the LUQ and at the umbilicus and increasing distance to the pelvis as body mass index increased (Figures 1-3).

CONCLUSION: Obesity can pose a challenge to safe and successful trocar insertion in laparoscopic surgery. Some prefer cannula insertion in the LUQ due to distorted anatomy at the umbilicus and reported lower abdominal wall thickness in the left upper quadrant. Indeed, we show that this is a safe approach in that distances from the LUQ to vital organs are increased in obese as compared to non-obese patients. However, in contrast to earlier studies, perhaps due to differences in measurement techniques, we found increased abdominal wall thickness in the left upper quadrant. Additionally, the distance to the operative field in the pelvis is significantly farther, which may lead to difficultly in completing a pelvic surgery or require the use of bariatric instruments.

Table: CT measurements* in obese and non-obese women

Variable		Entire Cohort (n=30)	BMI<30 (n=16)	BMI≥30 (n=14)	p-value**
Abdominal wall thickness	at LUQ	3.6 (1.4)	2.8 (1.1)	4.5 (1.2)	<0.001
	at umbilicus	3.3 (1.3)	2.7 (1.3)	3.9 (1.2)	0.02
Distance from LUQ	to pelvis	32.9 (3.3)	31.1 (2.7)	34.9 (2.9)	<0.001
	to aorta	13.8 (3.5)	12.0 (2.6)	15.9 (3.1)	<0.001
	to vena cava	13.9 (3.3)	12.2 (2.7)	15.8 (3.0)	0.002
	to spleen	12.2 (2.4)	11.0 (1.8)	13.6 (2.3)	0.002
	to stomach	5.5 (1.7)	4.7 (1.2)	6.8 (1.7)	<0.001
	to pancreas	11.1 (2.2)	10.1 (1.9)	12.3 (1.9)	0.005
	to liver	6.9 (2.3)	6.0 (2.0)	7.9 (2.4)	0.02
	to left kidney	12.9 (2.5)	11.9 (2.3)	14.2 (2.2)	0.009

*Mean in cm (SD) **as determined by Student's t-test

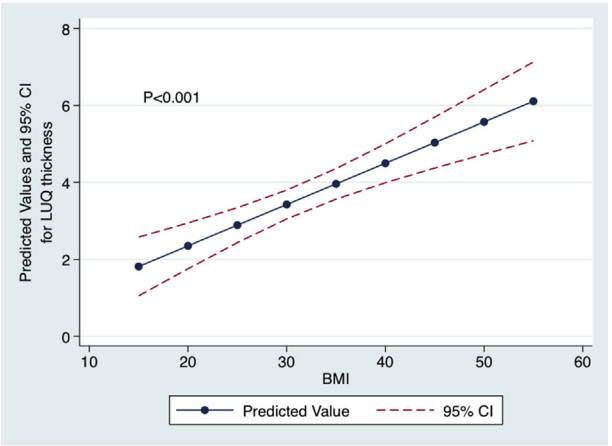


Figure 1: Predicted abdominal wall thickness at the LUQ as a function of BMI.

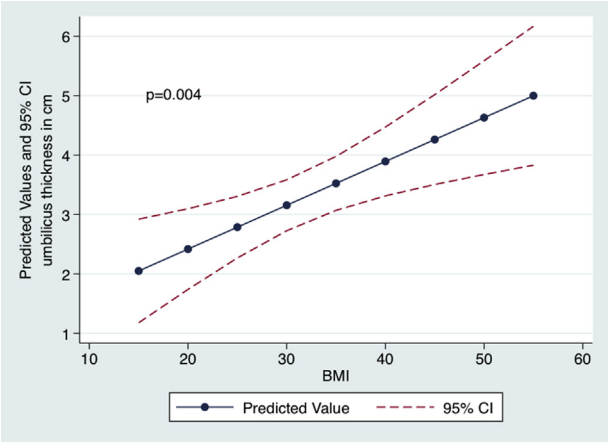


Figure 2: Predicted abdominal wall thickness as the umbilicus as a function of BMI.

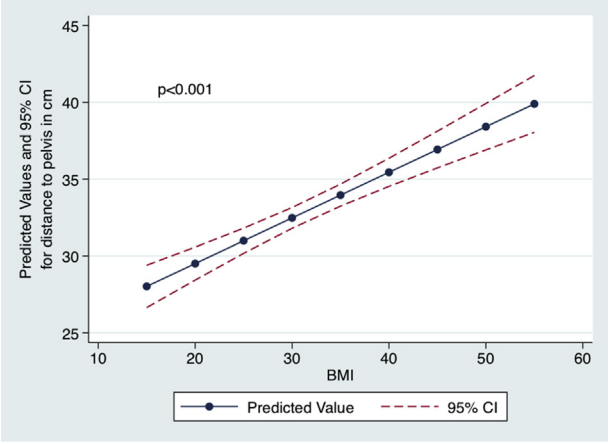


Figure 3: Predicted distance to the pelvis as a function of BMI.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kate Chaves: Nothing to disclose; Julia Johnson: Nothing to disclose; Amanda Yunker: Olympus, consultant, consulting fee.

61 Patient predictors of compliance rates after implementation of an enhanced recovery protocol

S. Carlson[1,2], R. Taylor[2], L. Griebel[1,2], S. Batra[1,2], S. A. El-Nashar[1], M. Billow[1]
[1]OB/GYN, University Hospitals Cleveland Medical Center, Cleveland, OH, [2]Case Western Reserve School of Medicine, Cleveland, OH

OBJECTIVES: The Enhanced Recovery after Surgery (ERAS) pathway has been shown to improve patient outcomes. Compliances rates and patient predictors of compliance to the pathways are not well delineated within the literature. Our objective was to evaluate percent compliance with a newly instated Enhanced Recovery Pathway (ERP) for our institution and to identify patient predictors of ERP compliance.

MATERIALS AND METHODS: A retrospective observational study of women undergoing minimally invasive hysterectomy for benign indications in an academic medical center between January 1, 2018, and June 30, 2018, was completed. Our primary outcome was compliance, measured as percent utilization, of the ERP and of its preoperative and postoperative components. Preoperative components included pain medications and oral fluid intake prior to surgery. Postoperative components included pain medications, activity and diet. Secondary outcomes included patient predictors of compliance with ERP that were analyzed using multivariate logistic regression modeling.

RESULTS: A total of 154 women were included in the study. The mean age was 46 and mean BMI was 34. 58.4% were African American, 40.3% white, 1.3% Asian. Out of 154, 103 (66.9%) utilized any part of the preoperative ERP protocol. Within the preoperative components, 71 (46.1%) participants had fluid intake up to 7 hours prior to surgery and greater than 58.4% of participants received at least one of three preoperative pain medications (Celecoxib, Acetaminophen or Gabapentin). For the postoperative ERP protocol, compliance was 120 (77.9%). For postoperative pain control, greater than 89.6% had scheduled Acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs) and Oxycodone as needed. Zero participants required a patient controlled analgesic pump (PCA). 138 (85.1%) had a regular diet ordered by postoperative day 0. By postoperative day 1, 131 (85.1%) were out of bed and 73 (47.4%) had at least 800 ml oral intake. Compliance of the ERP was consistent from 74.2% in January 2018 to 69.2% in June 2018 with increased compliance of the postoperative part of the order set at 83.9% in January 2018 which remained stable at 84.6% in June 2018. In multivariate regression model, the following characteristics were independent predictors of the overall compliance of the protocol: age older than 50 years old with an adjusted OR of 7.19 (95% CI 2.98, 18.53, P<0.001) and white race with adjusted OR of 6.02 (95% CI 2.77, 13.76, P<0.001).

CONCLUSION: The overall compliance to our newly instated ERP was consistently 70-75% in the six month period we evaluated. Interestingly, we found several patient predictors of increased compliance with the ERP. Further studies are needed to evaluate barriers to implementation and how to further increase compliance with ERP.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sonia Carlson: Nothing to disclose; Rachel Taylor: Nothing to disclose; Lauren Griebel: Nothing to disclose; Sadhvi Batra: Nothing to disclose; Sherif A. El-Nashar: Nothing to disclose; Megan Billow: AbbVie, Consultant, Monetary.

62 Quantifying anxiety in women at the initial gynecology visit

A. Rugova[1], L. C. Yang[2], L. Westbay[2], T. T. Pham[2]
[1]Loyola University Stritch School of Medicine, Maywood, IL, [2]Obstetrics and Gynecology, Loyola University Medical Center, Maywood, IL

OBJECTIVES: Anxiety can be measured in various ways. State anxiety is temporary and is sensitive to change. Our study aims to characterize the reasons for anxiety among women presenting for their initial gynecology visit, to measure the change in state anxiety after the visit, and to correlate anxiety improvement with visit satisfaction.

MATERIALS AND METHODS: New patients presenting to our tertiary Benign Gynecology clinic were invited to participate. Participants were asked to list their pre-visit anxieties and completed pre- and post-visit questionnaires. Pre-visit questionnaires included the Generalized Anxiety Disorder-7 (GAD-7), the Spielberg State Trait Anxiety Inventory (STAI-Y6), the Pain Catastrophizing Scale (PCS), Pain Disability Index (PDI) and Visual Analogue Scale (VAS). Post-visit questionnaires included the STAI-Y6, Patient Global Impression of Improvement (PGI-I) of participant anxiety, visit satisfaction, and the participant's perception of how their anxiety was addressed. Providers were blinded to responses on the pre- and post-visit questionnaires. Anxieties listed by participants were reviewed and categorized independently by 2 of the authors (AR and TP).

RESULTS: 40 women, primarily white (45%), with a median age of 43 years (SD 14.82) were enrolled. Those who were seen for a problem visit (55%) were older than those seen for a preventative visit (37 years vs. 47 years; p=.02). 60% of participants had not seen a gynecologist before and only 1 participant had a known anxiety diagnosis. The average pre-visit STAI score was 40.42 (SD = 14.93), with similar scores observed between those seen for a preventative visit and those seen for a problem visit. Pre-visit STAI scores increased with increasing GAD (Pearson r = 0.57, p<.001), PDI (Pearson r=0.43, p= .005) and PCS scores (Pearson r=0.53, p<.001). Pre-visit STAI score decreased by 9.83 points after the visit (Figure 1). The most reported causes for visit-related anxiety were related to: diagnosis, treatment and personal issues. Post-visit improvement in state anxiety was associated with improvement in PGI-I as those who reported the largest improvement in PGI-I scores had the largest improvement in STAI scores (p = .03). Changes in state anxiety were not associated with visit satisfaction, participant's perception that anxiety was addressed during visit, visit diagnosis, GAD, PCS, PDI, or VAS scores.

CONCLUSION: Women experience high level of state anxiety prior to their initial gynecology visit, especially those with generalized anxiety (GAD) or high PCS scores. All participants had significant improvement in state anxiety after the visit, regardless of visit satisfaction, participant's perception of how anxiety was addressed, or measures of generalized anxiety or pain.

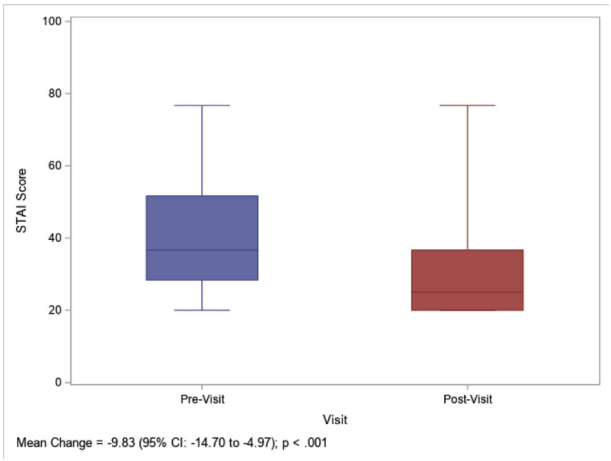


Figure 1. Change in STAI

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Amela Rugova: Nothing to disclose; Linda C. Yang: KLAAS, LLC, owner, ownership interest; Lauren Westbay: Nothing to disclose; Thythy T. Pham: Nothing to disclose.

63 Risk factors for failed surgical repair of urogenital fistulas

L. M. Holt[1], T. Potluri[1], J. P. Tanner[4], S. Duffy[3,2], L. Wasingya[3], K. A. Greene[1,3]
[1]Department of Female Pelvic Medicine and Reconstructive Surgery, University of South Florida, Tampa, FL, [2]FRCOG New Futures Group, Chelsea and Westminster Hospital, London, United Kingdom, [3]Fistula Unit, Kitovu Hospital, Masaka, Uganda, [4]College of Public Health, University of South Florida, Tampa, FL

OBJECTIVES: In Sub-Saharan Africa, obstetric fistulas are a health crisis of extensive proportions. Successful closure is possible in the majority of cases though failures do occur. Although risk factors for failure are described, little exists regarding differences in risk factors for early and late recurrences. Our objective was to identify early and late failures and to identify risk factors for each.

MATERIALS AND METHODS: An IRB approved retrospective cohort study was conducted to evaluate risk factors for fistula recurrence amongst patients undergoing surgical correction of urogenital fistula in Uganda. Inclusion criteria included women who underwent repair of urogenital fistula at a Fistula Hospital in Uganda between 2013 and 2018. Those who had concomitant rectovaginal fistulas were included so long as they underwent repair of the urogenital fistula. Our primary objective was to determine the incidence of both early and late surgical failures and to identify and compare risk factors for each. Early surgical failure was defined as women who failed their dye test upon removal of their catheter prior to being discharged from the hospital. Late surgical failures were defined as those who had initially passed the dye test prior to discharge but experienced a recurrence of the fistula at follow up. Logistic regression was used to calculate crude odds ratios (ORs) and 95% confidence intervals (CIs) representing the association between each risk factors for early and late failures. A final model for each outcome was constructed using stepwise multivariable logistic regression in which risk factors with a significance level <0.05 remained in the model. All statistical tests were two-sided and declared significant at $p < 0.05$.

RESULTS: A total of 546 patients treated for urogenital fistulas were included. A vaginal surgical approach was used in the majority of patients (84.6%) compared to an abdominal approach (11.7%). The incidence of early failure was 11%. Risk factors for early failure included delivery outcome; women who had a stillbirth were approximately 4 times more likely to experience an early surgical failure (95% CI: 1.5 – 10.2) than those with livebirths. Women who underwent concomitant flap were also 2.8 times more likely to have an early surgical failure (95% CI: 1.18 – 6.53), as well as those with longer duration of catheter use (OR=1.13, 95% CI: 1.03-1.24). Having had a stillbirth was also a risk factor for late failure (OR= 4.64, 95% CI: 1.05 – 20.44). Women with previous fistula repairs were 4.3 times more likely to have late failures (95% CI: 1.84 – 10.19).

CONCLUSION: Surgery to repair fistulae is not always successful. Risk factors for early surgical failure include previous stillbirth, duration of catheter use, and use of a flap. Risk factors for late surgical failure include history of previous fistula repair.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lauren M. Holt: Nothing to disclose; Thrisha Potluri: Nothing to disclose; Jean P. Tanner: Nothing to disclose; Shane Duffy: Nothing to disclose; Lucien Wasingya: Nothing to disclose; Kristie A. Greene: Nothing to disclose.

64 Stepwise approach to the medical and surgical management of endometriosis related pain: A cost-effectiveness analysis

J. A. Bohn, K. A. Bullard, M. I. Rodriguez, A. M. Ecker
OB/GYN, Oregon Health & Science University, Portland, OR

OBJECTIVES: Endometriosis is a prevalent disease associated with significant cost; over $49 billion in medical costs is spent annually in the United States (US) alone. Limited data exist on the cost-effectiveness of various clinical regimens to guide management. We sought to determine which sequence of therapies would be most cost-effective for the treatment of endometriosis-related pain.

MATERIALS AND METHODS: We built a cost-effectiveness model using TreeAge Pro software to compare four distinct, stepwise strategies in the management of endometriosis-related pain (Figure 1). We compared: (Strategy 1) nonsteroidal anti-inflammatory drugs (NSAIDs) followed by surgery; (Strategy 2) NSAIDs, then short acting reversible contraceptives (SARCs) or long acting reversible contraceptives (LARCs) followed by surgery; (Strategy 3) NSAIDs, then SARCs/LARCs, then gonadotropin releasing hormone (GnRH) agonists or GnRH antagonists followed by surgery; (Strategy 4) proceeding directly to surgery. Probabilities, utilities, and costs were derived from the literature. We adopted the societal perspective and modeled outcomes over three years. Our primary outcome was the incremental cost-effectiveness ratio (ICER). Secondary outcomes included costs and quality-adjusted-life-years (QALYs). Cohort size was based on the approximate number of women aged 18-45 with dysmenorrhea and/or cyclic pelvic pain in the US. Univariate sensitivity analysis was performed on all model inputs. A tornado diagram was made to identify which variables had the greatest influence on the model.

RESULTS: Among a theoretical cohort of 10,018,400 women, all four strategies were cost-effective at a standard willingness to pay threshold of 100,000 per QALY gained (Table 1). Strategy 2 was

associated with the lowest cost per QALY gained (ICER of $803). If all women received a trial of GnRH agonist after failing hormonal contraception (strategy 3 versus 2), the total cost would be $10 billion with a gain of 554,575 QALYs. For a routine trial of GnRH agonists to be the preferred strategy after failing hormonal contraception, rather than surgery, the cost of GnRH agonists would have to be less than 80% of their current cost. Our tornado diagram identified the probability of improvement with surgery as a key input. The probability of cure with surgery would need to exceed 82% for it to be the preferred first line treatment method.

CONCLUSION: While care must be individualized, our findings suggest that stepwise treatment with more than one medical modality prior to surgery is a cost-effective approach to endometriosis management.

Table 1: Results for Individual Women by Strategy

Strategy	Costs (2019 Dollars)	QALYs	ICER
1: NSAIDs, Surgery	2,328	2.18	1067.91
2: NSAIDs, SARCs/LARCs, Surgery	1,831	2.28	803.27
3: NSAIDs, SARCs/LARCs, GnRH agonist/GnRH antagonist, Surgery	2,842	2.34	1216.66
4: Surgery	3,980	1.96	2027.34

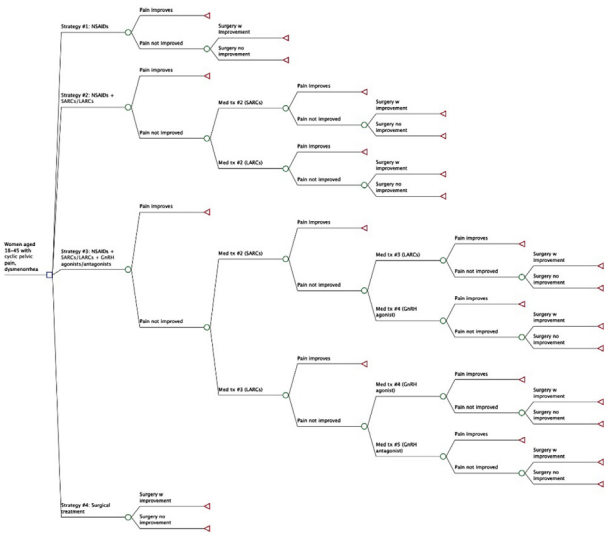


Figure 1: Cost-Effectiveness Model

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jacqueline A. Bohn: Nothing to disclose; Kimberley A. Bullard: Nothing to disclose; Maria I. Rodriguez: Nothing to disclose; Amanda M. Ecker: Nothing to disclose.

65 Wait times in female pelvic medicine and reconstructive surgery: A mystery caller study

S. Rabice[1], T. Muffly[2]
[1]Obstetrics and Gynecology, Saint Joseph Hospital, Denver, CO, [2]Female Pelvic Medicine and Reconstructive Surgery, Denver Health, Denver, CO

OBJECTIVES: In the field of Obstetrics and Gynecology, mystery caller studies have found significant gaps in appropriate counseling regarding topics such as emergency contraception and access to family planning resources. No mystery caller studies have been published in the field of Female Pelvic Medicine and Reconstructive Surgery (FPMRS). We describe wait times for a new post-menopausal patient describing symptomatic uterovaginal prolapse.

MATERIALS AND METHODS: The American Urogynecologic Society (AUGS) "Find a Provider" tool was used to generate a list of offices across the United States. Each of the 417 unique offices was called once. The caller asked for the soonest appointment available for her mother, who was recently diagnosed with uterine prolapse. Data collected included date of soonest appointment, FPMRS physician demographics, and telephone staff demographics. Using R (version 3.6.1), the number of business days until the next available appointment was calculated for each office. No appointments were scheduled.

RESULTS: The median wait time for a new post-menopausal patient was 17 days (range 0-96 days). Female FPMRS providers have a five day longer wait time compared to males (25.4 vs 20.2 business days, $p<0.03$). Day of the week called for appointment, ACOG district, rurality of provider, or gender of the person answering the phone did not make a significant difference in wait time. Fifty-four FPMRS physicians had an incorrect number listed – either their personal cell phone or another unspecified number.

CONCLUSION: Typically, a woman with uterine prolapse can expect to wait two to three weeks for an initial appointment with an FPMRS board certified physician. Continued improvement in wait times is essential in improving access to health care for women with prolapse, and mystery caller studies offer an effective and efficient approach to monitor progress.

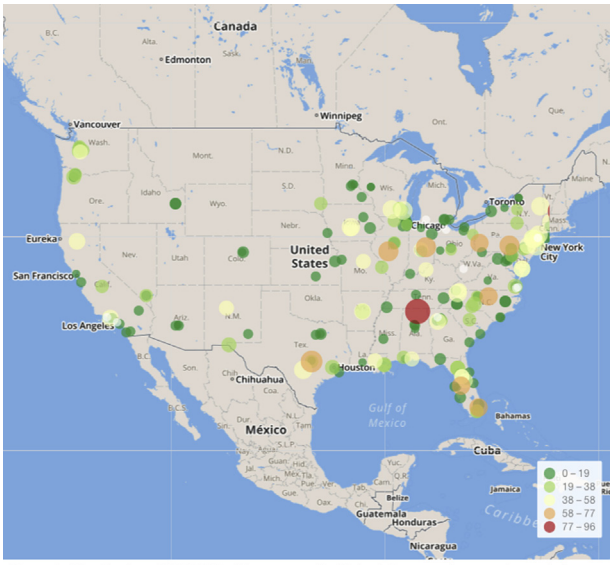


Figure 1: Distribution of FPMRS offices across the United States, and respective wait times in business days.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sarah Rabice: Nothing to disclose; Tyler Muffly: Nothing to disclose.

66 Predictors of delayed diagnosis of postoperative urinary retention after female pelvic reconstructive surgery

E. Sappenfield[1], T. Scutari[1], D. M. O'Sullivan[2], P. Tulikangas[1]
[1]Female Pelvic Medicine & Reconstructive Surgery, Hartford Hospital, Hartford, CT, [2]Research Program, Hartford Healthcare, Hartford, CT

OBJECTIVES: To identify preoperative predictors for passing the postoperative voiding trial and then having an acute visit for urinary retention following female pelvic reconstructive surgery.

MATERIALS AND METHODS: A retrospective case-control study was performed including all female pelvic reconstructive surgeries necessitating a voiding trial from September 1, 2016 to April 1, 2019. All patients passed their voiding trial in the hospital or clinic. Cases subsequently had an acute visit for urinary retention. Controls did not have any postoperative voiding dysfunction requiring evaluation. Cases and controls were stratified based on procedure. Demographics, medical/surgical histories, voiding symptoms, urodynamic evaluation, and intraoperative data were collected from the medical record. We excluded patients not eligible for attempted voiding trial after surgery: intraoperative injury, urethral or bladder reconstruction, suprapubic catheter insertion, or performed self-catheterization prior to surgery. Cases were matched consecutively to controls in a 1:3 ratio. Mann-Whitney and chi square tests were used for univariate analyses; logistic regression was used to determine predictors of delayed diagnosis of postoperative urinary retention (DPOUR).

RESULTS: 1,220 patients underwent pelvic reconstructive surgery that met inclusion criteria. There were 52 cases of DPOUR (4.3%), 322 cases of immediately diagnosed postoperative urinary retention (IPOUR) (26.4%), and 846 cases without urinary retention (69.3%). The analyses comprised 204 records (41.2% had only prolapse surgery, 10.3% had only incontinence surgery, and 48.5% had both). Prolapse surgeries performed included vaginal apical repairs (63.4%), minimally invasive apical repair with vaginal repair (15.3%), minimally invasive apical repair alone (2.2%), anterior vaginal colporrhaphy (7.1%), posterior vaginal colporrhaphy (5.5%), and anterior and posterior colporrhaphy (6.6%). Incontinence surgeries performed included retropubic midurethral sling (72.5%), transobturator midurethral sling (24.2%), and pubovaginal sling (3.3%). There were no differences between cases and controls in age, race, history of prior prolapse or incontinence surgery, Charlson Comorbidity Index, tobacco use, prolapse stage $\geq$3, voiding symptoms, concomitant hysterectomy, anesthesia type, and change in genital hiatus. Mean bladder capacity, uroflowmetry maximum flow rate, voiding pattern, and pressure flow voiding type were similar in cases and controls. Cases had a lower percent voided volume on their last voiding trial than controls (90.2$\pm$28.6 vs 110.7$\pm$39.5; p=0.001); however, clinically we consider a voided volume greater than 66.6% of the instilled volume to be a normal result.

CONCLUSION: DPOUR is an uncommon postoperative event. Demographic, medical and surgical history, and urodynamic findings were unable to predict patients at risk for DPOUR.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Elisabeth Sappenfield: Nothing to disclose; Taylor Scutari: Nothing to disclose; David M. O'Sullivan: Nothing to disclose; Paul Tulikangas: Nothing to disclose.

67 Rate of ureteral compromise and recurrent prolapse following laparoscopic uterosacral ligament suspension: A retrospective study

M. G. Gabra, V. Winget, I. Addis, K. Hatch, J. Heusinkveld
University of Arizona, Tucson, AZ

OBJECTIVES: Our primary objective was to evaluate the rate of ureteral compromise (ureteral injury, kinking, need for intraoperative suture release, or identification of ureteral compromise post-operatively) in our institutional experience with laparoscopic uterosacral ligament suspension (L-USLS). Our secondary objective was the rate of recurrent symptomatic prolapse after L-USLS.

MATERIALS AND METHODS: This was a retrospective chart review of 114 consecutive women who underwent L-USLS at one institution from 9/1/2016 to 8/7/2019.

RESULTS: Pre-operatively, 92% of patients had Grade 2 or greater prolapse and 10% of patients had a prior failed repair. Cystocele was present in 73% of patients, apical prolapse was present in 81% of patients, and rectocele was present in 24% of patients. L-USLS was performed bilaterally in all cases except one due to adhesions. Cystoscopy was performed in 110 cases. There were no cases of ureteral injury, kinking, or need for intraoperative suture release. There were no cases of ureteral injury identified post-operatively. There were four ureteral stents placed, three of which were placed prophylactically due to complex surgical history, and one was placed due to bleeding from a pedicle during hysterectomy to ensure there was no ureteral injury. There was one cystotomy which occurred during the hysterectomy portion of the procedure and was repaired intra-operatively, otherwise there were no other intra-operative complications including conversion to open or bowel injury. The average EBL was 150 mL, there was minimal blood loss (<100 mL) in 84 cases. Patients had a mean follow up of 98 days post-operatively (range 10 to 509 days). At an average of 150 day follow up, 14 patients (12%) had physical exam findings of recurrent prolapse; 10 were asymptomatic and 4 were symptomatic (3%). Nine patients had Grade 1 prolapse and 5 had Grade 2 prolapse. Of the symptomatic patients, 3 had predominately anterior Stage 2 prolapse and 1 had predominately posterior Grade 1 prolapse. The time period to onset of symptomatic recurrence ranged from 120 to 220 days. All four symptomatic patients elected for surgical treatment.

CONCLUSION: Our findings are consistent with prior studies that have shown a 0% rate of ureteral compromise with L-USLS. This compares favorably with reported rates of ureteral obstruction with the vaginal approach to USLS, which may be as high as 11%. Four ureteral stents were placed in our cohort; however, they were placed due to anticipated difficult surgery or to identify the ureter after bleeding from a pedicle during hysterectomy, not due to complications with L-USLS. In addition, the rate of recurrence is consistent with prior studies however the time to symptomatic prolapse was shorter in our study.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Martina G. Gabra: Nothing to disclose; Veronica Winget: Nothing to disclose; Ilana Addis: Nothing to disclose; Kenneth Hatch: Nothing to disclose; John Heusinkveld: Nothing to disclose.

68 Characteristics of randomized controlled trials in gynecological surgery registered on clinicaltrials.gov

R. Feroz[1], J. B. Long[1], M. Gupta[2], A. Kunselman[1], S. Wagner[2]
[1]Penn State Milton S. Hershey Medical Center, Hummelstown, PA,
[2]University of Texas Health Science Center at Houston, Houston, TX

OBJECTIVES: In gynecological focused Practice Bulletins published by ACOG, only 34.7% of recommendations are based on Level A evidence (randomized controlled trials). The primary objective of this review was to identify factors associated with the successful completion and subsequent publication of randomized controlled trials in surgical gynecology. A secondary analysis compared completion and publication rates of surgical and nonsurgical randomized controlled trials in gynecology.

MATERIALS AND METHODS: For this retrospective cohort study, data was obtained from the National Institute of Health's US National

Library of Medicine database on ClinicalTrials.gov. Self-reported descriptive data was collected on studies registered over five years between 2009 and 2013. Gynecological studies were identified with the use of the search terms under the National Institutes of Health recommended: "Search by Topics." Two authors examined all trials to ensure they met randomization and intervention criteria. All studies registered at Clinicaltrials.gov have their recruitment status defined. Based on this, trials with a "completed" status were identified. PubMed and Google Scholar were searched and all studies published in a peer-reviewed journal indexed to PubMed were considered "published." Categorical variables were compared using chi-square and continuous variables were compared using the Wilcoxon rank-sum test. P values < 0.05 were considered significant.

RESULTS: Between 2009 and 2013 there were 812 gynecological studies registered as randomized controlled trials. Of these, 123 (15.1%) were surgical and 689 (84.9%) were nonsurgical. Of the surgical cases, only 66 (53.7%) were "completed". Of the completed surgical RCTs, only 41 (62.1%) were "published." Between completed and published surgical RCTs, there were no differences noted in single site vs. multi-center trials or international vs. US studies (p=0.84). However, multiphasic surgical RCTs were more likely to be completed than single-phase RCTs (p=.004). Only 2 of the 66 surgical RCTs that achieved completion were federally funded. In comparing surgical and nonsurgical RCTs, there were no differences noted in enrollment patterns. Amongst published trials, the median enrollment in surgical and nonsurgical trials was 100 (Interquartile Range (IQR) 60-150) and 119 (IQR 55-287), respectively (p=0.23). There were also no differences noted in single site vs. multi-center trials (p=0.57), or international vs. US trials (p=0.35) when comparing publication rates of surgical versus nonsurgical published RCTs. Nonsurgical drug-related RCTs were the most likely to be published out of all of the intervention types (p<.001).

CONCLUSION: This study highlights the lack of surgical randomized controlled trials that are completed and published in gynecology. It also brings attention to the lack of federal funding towards gynecological RCTs.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rehan Feroz: Nothing to disclose; Jaime B. Long: Nothing to disclose; Megha Gupta: Nothing to disclose; Allen Kunselman: Nothing to disclose; Stephen Wagner: Nothing to disclose.

69 Salpingectomy vs. tubal occlusion for permanent contraception during cesarean delivery: Outcomes and physician attitudes

D. Levy[1], S. Casey[2], G. Zemtsov[3], J. L. Whiteside[1]
[1]Obstetrics and Gynecology, University of Cincinnati, Cincinnati, OH, [2]Obstetrics and Gynecology, Advocate Aurora, Milwaukee, WI, [3]Obstetrics and Gynecology, Duke University, Durham, NC

OBJECTIVES: Compare clinical outcomes of tubal occlusion vs. salpingectomy during cesarean section and determine physician attitudes towards these practices.

MATERIALS AND METHODS: CPT procedure codes identified women ≥18 years at a single site who underwent permanent contraception during cesarean delivery with and without salpingectomy from January 2016 to December 2017. Demographics, operative details, and perioperative morbidity indicators were recorded. Based on a prior survey study assessing physician attitudes toward salpingectomy, an online survey was administered to study population physicians. Wilcoxon rank-sum and Fisher's exact test were used to compare variables. Logistic regression identified factors predictive of salpingectomy vs. tubal occlusion.

RESULTS: 363 women were included; 116 (32%) had salpingectomy and 247 (68%) had tubal occlusion. Cohorts showed no difference in patient demographics (Table 1). Salpingectomy increased mean operative time 6.5 minutes compared to tubal occlusion (p=0.0005). Compared to salpingectomy, tubal occlusion subjects had more postoperative symptomatic anemia (5.7% vs. 0.9%) and infection (2.4% vs. 1.7%). Physician identity was most predictive of salpingectomy (p<0.0001). 23 of 34 (67%) physicians completed the survey, but these physicians performed 80% of procedures. High (≥12) vs. low (<12) salpingectomy performers didn't differ by gender, age, years of practice, solo vs. group practice, or hospital-employed vs. private practice. Cancer risk reduction was the most common physician-identified salpingectomy benefit (17/23, 89%). 65% of surgeons believed salpingectomy posed additional risks, but 70% believed the benefits were equal to or greater than the risks. 20 of 23 (87%) believed it added no additional operative time and was cost neutral.

CONCLUSION: Relative to tubal ligation, salpingectomy during cesarean section increases operative time but not perioperative morbidity. While physicians do not appears biased against the practice, it is less commonly performed and physician identity most predicts salpingectomy in this context.

Table 1. Demographics (medians with interquartile ranges) across cohorts undergoing permanent contraception during cesarean section.

Demographic feature	Bilateral tubal occlusion (n=247)	Bilateral salpingectomy (n=116)	p-value
Age (years)	33 (30-37)	34 (31-36)	0.34
Preoperative Hemoglobin (g/dL)	11.8 (10.7-12.5)	11.7 (10.7-12.5)	0.89
BMI	33.4 (26-39.4)	33.4 (29.4-39.1)	0.89
Operative time following delivery (min)	44 (38-53)	50 (34.7-58.8)	0.0005
Marital status: single	79	26	0.06*
Marital status: married	167	90	
Race: African American	44	15	0.28**
Race: Asian	3	3	
Race: white	193	98	
Race: Other	3	0	
No Insurance	7	2	0.5**
Public Insurance	78	31	
Private Insurance	161	82	

Wilcoxon, Fisher's Exact (*), Pearson's (**) tests used to compare variables across cohorts.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Deborah Levy: Nothing to disclose; Sarah Casey: Nothing to disclose; Gregory Zemtsov: Nothing to disclose; James L. Whiteside: Nothing to disclose.

70 Dynamic magnetic resonance imaging of pelvic anatomy following vaginal reconstructive surgery: A prospective study

A. Shatkin-Margolis[1], E. Duke[3], V. C. Ghodsi[2], A. M. Hill[1], C. C. Crisp[1], J. Yeung[1], S. D. Kleeman[1], R. N. Pauls[1]
[1]Female Pelvic Medicine & Reconstructive Surgery, TriHealth Good Samaritan, Cincinnati, OH, [2]Female Pelvic Medicine & Reconstructive Surgery, Hatton Research Institute, Cincinnati, OH, [3]Radiology, TriHealth Good Samaritan, Cincinnati, OH

OBJECTIVES: To describe the impact of native tissue vaginal reconstruction, including vaginal vault suspension, on pelvic anatomy using dynamic magnetic resonance imaging (MRI).

MATERIALS AND METHODS: This IRB approved prospective cohort study investigated women undergoing intraperitoneal vaginal vault suspension for symptomatic pelvic organ prolapse (POP) with native tissue reconstruction. Enrolled participants underwent dynamic pelvic MRI preoperatively and 3 months postoperatively. Radiographic and anatomic measurements were compared. The H-line (or levator hiatus) was defined as the distance from the pubic symphysis to the posterior anal canal and the M-line (or muscular pelvic floor relaxation) was defined as the decent of the levator plate from the pubococcygeal line (PCL). The PCL represented the level of the pelvic floor and was measured from the inferior border of the pubic symphysis to the last coccygeal joint. Our primary outcome was to compare preoperative MRI measurements to those following surgical treatment. Secondary outcomes were evaluated via validated patient questionnaires pre- and post-operatively.

RESULTS: A total of 17 participants were enrolled, 14 completed the study and were included in our analysis. The mean age was 62 years; all participants were white. The majority of participants had Stage III POP, as defined by the Pelvic Organ Prolapse Quantification (POP-Q) scale. Twelve participants (85.7%) underwent a concomitant hysterectomy and 5 participants (35.7%) received a concomitant midurethral sling procedure. There was a significant improvement in several radiographic measurements with straining and/or defecation following vaginal reconstruction, including the H-line, M-line, anorectal angle, and the extent of apical and anterior compartment prolapse. There was no difference regarding pubococcygeal line (PCL), anorectal decent, extent of enterocele, or posterior compartment prolapse. POP-Q measurements improved significantly in all compartments with the exception of perineal body and total vaginal length. Regarding validated questionnaires, PFDI-20 scores improved significantly (102 preop vs. 30 postop, $p<0.001$) following surgery. While PFIQ-7 scores also improved, this finding did not achieve significance (55 preop vs 24 postop, $p=0.164$).

CONCLUSION: Native tissue reconstruction with intraperitoneal vaginal vault suspension for symptomatic pelvic organ prolapse not only improves pelvic anatomy and function as defined by POP-Q measurements and PFDI scores, but is also associated with significantly improved measurements on dynamic MRI at 3 months postoperatively.

Table:

	Preop	Postop	P value
H-line, cm	7.2 (1.4)	6.6 (1.3)	.015
M-line, cm	4.0 (1.1)	3.0 (1.1)	<.001
Anorectal angle, degree	126.5 (24.2)	112.8 (24.5)	.008
Cystocele, cm	5.6 (2.7)	0.7 (0.6)	<.001
Vaginal prolapse, cm	3.0 (3.0)	0.0 (0.0)	.003

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Abigail Shatkin-Margolis: Nothing to disclose; Eugene Duke: Nothing to disclose; Vivan C. Ghodsi: Nothing to disclose; Austin M. Hill: Nothing to disclose; Catrina C. Crisp: Nothing to disclose; Jennifer Yeung: Nothing to disclose; Steven D. Kleeman: Nothing to disclose; Rachel N. Pauls: Nothing to disclose.

71 Effect of pudendal blockade on bladder emptying after midurethral sling: A randomized controlled trial

D. Maheshwari[1,2], T. Sierra[1,2], C. Hall[1,2], K. Leung[1], M. K. Flynn[1,2]
[1]University of Massachusetts Medical School, Worcester, MA, [2]UMass Memorial Medical Center, Worcester, MA

OBJECTIVES: To evaluate the effect of bilateral pudendal nerve blockade on immediate postoperative bladder emptying following midurethral sling.

MATERIALS AND METHODS: We performed a double-blinded, randomized, placebo-controlled trial of women undergoing a midurethral sling procedure between October 2017 and February of 2019. Women > age of 18 were eligible if they were undergoing a midurethral sling with no concomitant procedures and had no preoperative urinary retention. Subject demographics and medical conditions that may impact bladder emptying were recorded preoperatively. Participants were randomized to a bilateral pudendal block of either 20 cc of 0.25% bupivacaine or 20 cc of normal saline. Randomization was performed using a 1:1 ratio and a block randomization scheme. The study medications were prepared in standard 10 cc syringes with blinding of both the participant and surgeon maintained throughout the study. After induction of anesthesia, a pudendal block was administered by a urogynecology attending or fellow prior to any incisions. No other local anesthesia was used. The primary outcome was the rate of passing a standardized void trial. Secondary outcomes included perioperative pain scores, analgesia use and complications.

RESULTS: Ninety-one subjects were enrolled in the study. One patient had a delayed void trial on postoperative day one, leaving 90 subjects for the final analysis. Demographic and perioperative characteristics were similar between the groups. Adjusted logistic regression showed the administration of bupivacaine pudendal block worsened postoperative bladder emptying (OR=0.32, p=0.02 adjusted for age, BMI, and comorbidities). Postoperative pain scores and analgesia use were similar between the groups. Postoperative complications including UTI, mesh exposure, pelvic hematoma or urinary retention within 6 weeks were similar between the groups.

CONCLUSION: Our prospective trial demonstrates that a bilateral pudendal blockade prior to midurethral sling procedure worsens postoperative bladder emptying.

Table: Primary and secondary outcomes

	Normal Saline (N=44)	Bupivicaine (N=46)	p-value
Passed VT			
No	9 (20%)	20 (43%)	0.019
Yes	35(80%)	26 (57%)	
Any complication*			0.198
None	41 (93%)	38 (83%)	
Yes	3 (7%)	8 (17%)	
Pain score 2-3 hours post-op	2.0 (0.0-5.0)	2.0 (0.0-5.0)	0.741
PACU Hydrocodone Equivalents	7.5 (0.0-26.8)	0.0 (0.0-22.5)	0.225

*Complications included urinary tract infection, mesh exposure, pelvic hematoma, and urinary retention within 6 weeks after surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Deepali Maheshwari: Nothing to disclose; Tania Sierra: Nothing to disclose; Cynthia Hall: Nothing to disclose; Katherine Leung: Nothing to disclose; Michael K. Flynn: Regenxbio, stockholder, Stock; Misonix, stockholder, Stock.

72 Antimicrobial stewardship in patients with penicillin allergy undergoing hysterectomy

L. M. Miceli[1], O. Chang[1], S. Zhang[2], M. Yao[3], K. Propst[1]
[1]OBGYN, Cleveland Clinic Foundation, Cleveland, OH, [2]Case Western Reserve University School of Medicine, Cleveland, OH, [3]Department of Statistics, Cleveland Clinic Foundation, Cleveland, OH

OBJECTIVES: To evaluate the rate and predictors of appropriate prophylactic antibiotic administration prior to hysterectomy performed for benign indications in patients with penicillin allergy.

MATERIALS AND METHODS: A retrospective cohort study was performed for patients with self-reported penicillin allergy who underwent a hysterectomy for benign indications at an academic tertiary institute in 2018. All surgical modalities including vaginal, laparoscopic, robotic-assisted and open surgery were included. The primary outcome was appropriate pre-operative antibiotics based on the American College of Obstetrician and Gynecologists guidelines. Secondary outcomes included post-operative surgical site infection. We collected data on the patients' self-reported penicillin allergy, list of allergies, medical comorbidities and perioperative data. Standard analysis for descriptive data was performed, and a multivariable logistic regression was fit to determine predictors for receiving appropriate preoperative antibiotics.

RESULTS: In 2018, a total of 230 patients with penicillin allergy underwent a hysterectomy for benign indications. The most common self-reported allergic reaction to penicillin was hives (n=68, 29.6%) followed by rash (n=66, 28.7%) and unspecified (n=42, 18.3%). Appropriate antibiotics were administered in 42.2% (n=97) of patients versus inappropriate antibiotics in 57.8% (n=133) of patients (Table 1). For patients who did not receive appropriate antibiotics, they most commonly received Ciprofloxacin and Metronidazole (n=66) followed by non-standard regimens (n=45). In this cohort, 2.6% (n=6) of patients had a post-operative surgical site infection. One patient (1.0%) in the appropriate antibiotic group developed surgical site infection; in contrast, four patients (3.0%) in the inappropriate antibiotic group developed surgical site infection (p=0.40). Age, race, BMI, and ASA class had no impact on appropriate antibiotic administration. On multivariable logistic regression, the odds of having appropriate antibiotics were 0.16 times lower among MRSA carriers (CI 0.03-0.91; p=0.04), 2.50 times higher among those with three or more antibiotic allergies (CI 1.15-5.42; p=0.02), 1.97 times higher among those with at least one comorbidity (CI 1.06-3.67; p=0.03), 8.94 times higher if anaphylaxis was the reported allergy (CI 3.53-22.63; p=<0.001), and 6.24 times higher if the reported allergy was hives (CI 3.17-12.29; p=<0.001).

CONCLUSION: Over half of patients with penicillin allergy undergoing hysterectomy received inappropriate prophylactic antibiotics. Patients with more medical comorbidities, greater number of antibiotic allergies, and IgE-mediated hypersensitivity reactions to penicillin (anaphylaxis and hives) had higher odds of receiving appropriate prophylaxis.

Table 1. Comparison of prophylactic antibiotic therapy administered for each listed penicillin allergy at the time of hysterectomy

Allergy	Total (N=230)	Inappropriate antibiotics (N=133)	Appropriate antibiotics (N=97)	p-value
IgE Mediated				
Anaphylaxis/Wheezing/ Respiratory Distress	31 (13.5)	8 (6.0)	23 (23.7)	*<0.001*
Hives	68 (29.6)	23 (17.3)	45 (46.4)	*<0.001*
Non-IgE Mediated				
GI upset	9 (3.9)	5 (3.8)	4 (4.1)	*0.99*
Rash	66 (28.7)	46 (34.6)	20 (20.6)	*0.02*
Other	26 (11.3)	19 (14.3)	7 (7.2)	*0.10*
Unspecified	42 (18.3)	35 (26.3)	7 (7.2)	*<0.001*

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lia M. Miceli: Nothing to disclose; Olivia Chang: Nothing to disclose; Salina Zhang: Nothing to disclose; Meng Yao: Nothing to disclose; Katie Propst: Nothing to disclose.

73 Endometriosis of the rectus muscle: A single center experience

C. E. Foley, A. Melnyk, T. T. Lee
Minimally Invasive Gynecologic Surgery, Magee-Womens Hospital of UPMC, Pittsburgh, PA

OBJECTIVES: There is limited data to inform physician's counseling for endometriosis infiltrating the rectus muscle. The objective of this study was to review patient characteristics, preoperative and intraoperative findings for excised cases of rectus muscle endometriosis.

MATERIALS AND METHODS: In this IRB approved retrospective case series, we identified all women undergoing surgical resection of endometriosis with confirmed rectus muscle endometriosis on pathology report at a single academic hospital between January 2009 and January 2019. Subjects were excluded if pathologic specimens did not include the muscle or endometriosis was not present histologically. Demographics and perioperative data were extracted from the electronic medical record. Descriptive statistics were performed.

RESULTS: Twenty-two patients were included in the analysis. The women were predominantly white, with a median age of 34 years (25 – 42 years) and median BMI of 31.28 kg/m^2, (17.79 – 48.65 kg/m^2). Twenty-one (95%) patients had at least one prior cesarean section and 5 (22%) had a prior excision of abdominal wall endometriosis. The chief complaint for all patients was pelvic or abdominal pain, and 75% reported cyclic pain. Only one quarter complained of a mass or lump however 54% had a palpable nodule on exam. Forty percent of women attempted medical therapy prior to surgery and all but one had preoperative imaging, the majority (81%) of which were MRI. Fourteen (64%) patients had a laparoscopic procedure and in 71% of those, the endometriosis was removed laparoscopically with 4 (21%) patients having a combined laparoscopic and abdominal procedure. Concurrent pelvic endometriosis was present in 10 (71%) patients who underwent laparoscopy, with the most common location being the bladder (60%). All cases of laparoscopic excision of rectus endometriosis were performed by a minimally invasive gynecologic surgeon (MIGS). Endometriosis nodules excised were on average 4.62 cm and 6 patients required mesh placement, 4 placed open by general surgery and the other 2 were placed laparoscopically by MIGS surgeons. There were no intraoperative complications. Eighteen (82%) of patients were discharged on the day of surgery including all 10

(100%) who had a laparoscopic excision of rectus endometriosis. Three patients in the laparotomy group had 30-day wound complications, with two requiring hospital admission for IV antibiotics. There was one hernia which was repaired 18 months following laparoscopic resection of rectus endometriosis. 94% of patients experienced complete pain relief at their postoperative visit.

CONCLUSION: This case series describes the preoperative and intraoperative characteristics of rectus muscle endometriosis. Both abdominal and laparoscopic resection are effective in eliminating patients' pain. Even when open excision is planned, laparoscopic evaluation of the pelvis should be considered due to the high incidence of concurrent pelvic endometriosis.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Christine E. Foley: Nothing to disclose; Alexandra Melnyk: Nothing to disclose; Ted T. Lee: Nothing to disclose.

74 A performance improvement study to maximize multidisciplinary communication using a joint gynecology team phone

B. Ha[1], A. H. Freeman[2], L. W. Knayzeh[1], M. Morrill[1]
[1]Obstetrics and Gynecology, Kaiser Permanente San Francisco, San Francisco, CA, [2]Gynecologic Oncology, Kaiser Permanente San Francisco, San Francisco, CA

OBJECTIVES: Performance improvement (PI) represents a method for improving the quality and safety of patient care by measuring an output of a process and then modifying the process to increase efficiency and effectiveness. This PI study aimed to evaluate the effects of three simple multidisciplinary interventions to decrease the day shift call burden to the inpatient gynecologic service by anticipating floor and staff needs and communicating resident availability for non-urgent matters.

MATERIALS AND METHODS: This is an IRB exempt study conducted at Kaiser Permanente San Francisco. The gynecology team phone is held by the junior resident on the benign gynecology (BG) team. When the resident is scrubbed, calls are answered and messages taken by the circulating nurse or a medical student. Calls received are regarding patients on the BG or gynecologic oncology (GO) services and for Emergency Department (ED) consultations. Baseline data were collected regarding the distribution of incoming calls over a two-week period. Three interventions were implemented over the following eight weeks: (1) "closing the loop" with bedside nursing staff about the plan for the day and a verbal request to hold all non-urgent questions until PM rounds, (2) warm handoff by resident physician to post-anesthesia care unit (PACU) nurse for admission vs same-day discharge, and (3) inclusion of a "disposition" section in the AM progress note to aid the patient care coordinator (PCC) in disposition planning. Post-intervention data was collected over a three-week period and included brief interviews with nurses and residents. We hypothesized that there would be fewer incoming calls, specifically from the floor nurses and PCCs.

RESULTS: At baseline, a total of 49 calls were received. Four were wrong numbers. The division by service was 30% GO patients and 61% BG. The sources of the calls were 16% ED, 24% Ambulatory Surgical Unit (ASU) or PACU, 22% floor nurses, 9% PCCs and 29% other services including dieticians and radiology. Post intervention, a total of 30 calls were received, 3 of which were to the wrong number. The division by service was 40% GO patients and 50% BG. The sources of the post-intervention calls were 11% ED, 26% ASU/PACU, 37% floor nurses, 11% PCCs and 15% other services. Residents and nurses reported that the work burden of the interventions was low.

CONCLUSION: Overall, our study demonstrated a 36% reduction in incoming calls following a multidisciplinary intervention effort. This PI study shows that simple interventions to address likely floor and staff needs and communicating resident availability might improve use of resident time and decrease distractions in the OR on a busy inpatient service with the overall result of expediting patient care.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Barbara Ha: Nothing to disclose; Alexandra H. Freeman: Nothing to disclose; Lisa W. Knayzeh: Nothing to disclose; Michelle Morrill: Nothing to disclose.

75 Self-assessment of nursing preparedness and knowledge in the care of patients with complex obstetrical lacerations

M. Melanson, A. Conner, E. R. Trowbridge
OBGYN, University of Virginia, Charlottesville, VA

OBJECTIVES: Perineal injury is the most common complication of a vaginal delivery, with up to 80% of women sustaining injury to the perineum and 5% of deliveries resulting in complex obstetrical lacerations (COL) (third and fourth degree). Labor and delivery (L&D) nurses are fundamental in managing and educating women following perineal trauma. The objective of this study was to assess prior experience, current knowledge, and self-perception on preparedness of L&D nurses in caring for women with COL.

MATERIALS AND METHODS: This was a cross-sectional survey quality improvement project. Labor and Delivery nurses at University of Virginia were invited to participate in a self-assessment questionnaire asking about prior experience/training/education and current clinical practice for caring for patients with COL. Additionally, nurses completed a 10-item knowledge-based questionnaire about COL (pre-test) based on American College of Obstetrics and Gynecology clinical care guidelines. After the initial self-assessment, nurses completed an online computer-based learning (CBL) module. At the completion of the online learning module, participants completed 10-item knowledge-based questionnaire (post-test). Demographic information on age, years of total nursing experience and total L&D nursing experience was collected. Nurses were also surveyed about most beneficial teaching tools. Scores of COL knowledge pre- and post-online learning module were compared.

RESULTS: Eighty-one L&D nurses were eligible for study participation, 41 completed surveys and 43 completed the CBL module (51% & 53% response rate). Eighty-eight percent of nurses were less than 40 years of age and 78% of respondents had 2 years or greater of nursing experience. A third of the nurses had 5-10 years of L&D experience. In caring for women with COL's nurses reported, 22% were "very comfortable," 46% "comfortable," 22% "neutral," and 7% "uncomfortable". The majority of nurses (53%) reported having no prior training in complex obstetrical lacerations and 37% reported no training while at work. 83% of nurses responded that they had cared for a patient with a 3rd or 4th degree lacerations. Most nurses (73%) reported having a limited understanding of COL complications. The average pre-test score was 63.9% and after completing the CBL module, the average post-test score was 93%. Nurses reported that online modules (32%) and videos/workshops (29%) were most beneficial for learning about COL's.

CONCLUSION: In our self-assessment survey of L&D nurses, the majority of nurses reported having limited or no formal nursing

education in complex obstetrical lacerations despite 83% having cared for women with these injuries and repairs. The majority L&D nurses reported being comfortable in caring for these patients despite limited education. The online learning module improved knowledge of COL's and was reported to be the most beneficial teaching tool.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Michelle Melanson: Nothing to disclose; Alexander Conner: Nothing to disclose; Elisa R. Trowbridge: Nothing to disclose.

76 Effect of concomitant pelvic floor procedures on prolonged catheterization after sling surgery

A. T. Gray, L. Siff, E. Springel, A. Carroll
OBGYN, VCU Health, Richmond, VA

OBJECTIVES: To determine whether concomitant pelvic floor surgery increases need for prolonged catheterization as compared to sling alone.

MATERIALS AND METHODS: A retrospective cohort study was conducted comparing women who underwent midurethral or retropubic sling placement alone or sling with concomitant pelvic floor surgery from 2010 to 2017 in an academic hospital. Patients who had intraoperative findings requiring planned prolonged catheterization were excluded. Postoperatively, patients underwent a voiding trial involving retrograde fill of the bladder, removal of Foley catheter and attempt to spontaneously void. Varying definitions of voiding trial success ranging from 100 to 200 mL on postoperative PVR were used and therefore failure was defined as the need for prolonged catheterization after voiding trial completion. Descriptive statistics and univariate analyses were used to compare groups. We created a multivariable logistic regression model to adjust for significant baseline differences between groups.

RESULTS: There were 336 patients analyzed, 95 with sling placement alone and 241 with sling placement plus concomitant pelvic floor procedures. A total of 52 patients failed the voiding trial and were discharged home with prolonged catheterization. Baseline differences in BMI, age, parity, preoperative post-void residual, and presence of mixed urinary incontinence existed between groups. There were no differences in sling type, recurrent SUI, or prior urogynecologic surgery between groups (Table 1). On univariate analysis, patients with concomitant procedures were more likely to be discharged home with catheterization compared with sling placement alone (46/241 (19.1%) vs. 6/95 (6.3%); OR 3.50 (95% CI 1.55-9.41, p 0.006). When adjusting for baseline differences between groups, concomitant procedures remained associated with increased rates of discharge home with catheterization (adjusted OR 3.32 (95% CI 1.13-12.2, p=0.04).

CONCLUSION: Concomitant pelvic floor procedures at the time of sling placement were more likely to be associated with failed voiding trials necessitating discharge home with catheterization than sling alone.

Table 1: Baseline Characteristics

Variable	Sling Only (N = 95)	Sling plus Concomitant Procedure (N = 241)	p value
BMI (kg/m^2), Mean (SD)	30.3 (6)	28.3 (5.2)	0.008
Age (years), Mean (SD)	52 (9.8)	57 (11.6)	<0.001
Parity, Mean (SD)	2.0 (1.37)	2.5 (1.34)	0.009
Race/Ethnicity, n/N (%)			0.674
White	74/95 (78%)	201/241 (83.4%)	
Black	1/95 (1.1%)	3/241 (1.2%)	
Hispanic	16/95 (16.8%)	30/241 (12.5%)	
Other	4/95 (4.2%)	7/241 (3.3%)	
Sling Type, n/N (%)			
Midurethral	91/95 (96%)	231/241 (95.9%)	0.980
Retropubic	4/95 (4.2%)	10/241 (4.2%)	
Concomitant Procedure Type, n/N (%)	-		
Hysterectomy		106/241 (44%)	
Anterior Repair		80/241 (33.2%)	
Posterior Repair		34/241 (14.1%)	
Colpocleisis		1/241 (0.3%)	<0.001
Sacrocolpopexy		78/241 (32.3%)	
Uterosacral Ligament Suspension		27/241 (11.2%)	
Sacrospinous Ligament Fixation		52/241 (21.6%)	
Perineoplasty		26/241 (10.8%)	
Other		31/241 (9.2%)	
Prior Sling, n/N (%)			
Yes	7/95 (7.4%)	21/241 (8.7%)	0.685
No	88/95 (92.6%)	220/241 (91%)	
Prior Urogyn Surgery, n/N (%)			
Yes	12/95 (87.4%)	50/241 (20.7%)	0.075
No	83/95 (28.3%)	191/241 (79.3%)	
Prior Abdominal Surgery, n/N (%)			
Yes	72/95 (78%)	163/241 (67.6%)	0.137
No	23/95 (24%)	78/241 (32.4%)	
Comorbidities, n/N (%)			
Diabetes	10/95 (10.5%)	18/241 (7.5%)	0.371
Chronic Hypertension	35/95 (36.8%)	83/241 (34.4%)	0.679
Tobacco Use	20/95 (21.1%)	30/241 (12.5%)	0.052
Anticholinergic Medication	10/95 (10.5%)	16/241 (6.6%)	0.243
Time Under Anesthesia (min), Mean (SD)	89.3 (21.9)	208.1 (76.4)	<0.001
Procedure Time (min), Mean (SD)	42 (13.2)	146.7 (65.3)	<0.001
Preoperative PVR (mL), Mean (SD)	11.9 (12.6)	45.5 (79.5)	<0.001
Mixed Urinary Incontinence, n/N (%)			
Yes	16/95 (16.8%)	14/241 (5.8%)	0.002
No	79/95 (83.2%)	227/241 (94.2%)	

Table 2: Primary Outcomes

	Failed Voiding Trial (n)	Passed Voiding Trial (n)	% Failure
Sling + Concomitant Procedures (N=241)	46	195	19.1
Sling Alone (N=95)	6	89	6.3

OR 3.50 (95% CI 1.55-9.41, p 0.006).

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Allison T. Gray: Nothing to disclose; Lauren Siff: Nothing to disclose; Edward Springel: Nothing to disclose; Ashley Carroll: Nothing to disclose.

77 Are we colorblind? A review of racial and/or ethnic representation within the Pelvic Organ Prolapse practice bulletin

C. Brandon[1], C. Escobar[1], C. Oh[2], B. Brucker[1]
[1]Urology/OBGYN, New York University, New York, NY, [2]Population Health, New York University, New York, NY

OBJECTIVES: The American Urogynecologic Society (AUGS) and the American College of Obstetricians and Gynecologists (ACOG) joint practice bulletin on Pelvic Organ Prolapse (POP) is an evidence-based summary of current information related to clinical practice, helping to shape and reform the care of all women with POP. Among women with POP, other work has shown that racial and/or ethnic differences exist with respect to prevalence, symptom bother, care-seeking behavior, and knowledge of condition. Furthermore, studies have indicated differences in surgical approaches among various

ethnic and racial groups. It would seem important that our professional guidelines reflect the racial and/or ethnic diversity among our patient populations. The objective was to evaluate the racial/ethnic representation within the AUGS/ACOG guideline on POP.

MATERIALS AND METHODS: This is a descriptive study reviewing the population demographics of 109 literary references included in the AUGS/ACOG practice bulletin No. 185 on POP. Studies were excluded if they lacked a primary subject cohort, including all literature or systematic reviews, professional organization guideline documents, as well as Food and Drug Agency (FDA) statements. Studies that reported person-years rather than an absolute population were also excluded. Analysis was also conducted to assess studies with level one evidence separately. United States census data in 2018 was used as a benchmark for racial/ethnic population diversity.

RESULTS: Of the 109 original references, 40 were excluded due to lack of primary cohort. Sixty-nine studies were further scrutinized, with only 30 studies mentioning race/ethnicity. Among the 30 studies that addressed race/ethnicity, 21 recognized at least one racial/ethnic group other than white, and only 3 papers highlighted Hispanics as its own ethnic population. On average, whites represented 84% (SD=13%) of study populations, while African Americans and Hispanics represented 6.6% (SD=6.7%) and 3.5% (SD=7.5%) of study populations, respectively. Of level I evidence papers, 12/19 (63%) included race and/or ethnicity as a component of their demographic description. whites, Blacks, Hispanics, and Asians comprised, on average, 89%(SD=7%), 5%(SD=5%), 2%(SD=4%), and 1%(SD=1%) of the study population respectively, differing significantly from the diversity noted within the American population, according to 2018 census data ($p<0.0001$).

CONCLUSION: At present, the current AUGS/ACOG Bulletin for POP draws from data that drastically underrepresents minorities. With this in mind, it remains important that future studies make concerted efforts to better represent the American racial/ethnic landscape.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Caroline Brandon: Nothing to disclose; Christina Escobar: Nothing to disclose; Cheongeun Oh: Nothing to disclose; Benjamin Brucker: Nothing to disclose.

78 Effect of time of year on surgical outcomes in patients undergoing minimally invasive sacral colpopexy or uterosacral ligament suspension

K. Renkosiak[1], A. Dubinskaya[1], M. S. Bradley[2], J. P. Shepherd[1]
[1]Trinity Health of New England, Hartford, CT, [2]University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVES: We sought to evaluate if the month of the year relative to fellow/resident promotions in July effects operating room (OR) time, complication rates, and prolapse recurrence for women undergoing minimally invasive sacral colpopexy (MISC) or uterosacral ligament suspension (USLS).

MATERIALS AND METHODS: This was a retrospective study evaluating all MISC and USLS performed at a large academic institution between Jan 2009 and Aug 2015. Patient demographics, clinical, and surgical data were compared between months with July defined as month 1 and June defined as month 12, mirroring the academic calendar year. Linear regression assessed OR time (skin incision to closure) by month adjusting for confounders. Similarly, logistic regression assessed prolapse recurrence (a composite of any POP-Q point beyond the hymen, use of pessary, or reoperation) and complications (a composite of transfusion, infection, readmission/return to OR, small bowel obstruction/ileus, mesh complication, conversion to laparotomy, or bowel/bladder/ureteral injury).

RESULTS: A total of 1007 subjects were included from 7 surgeons. Mean age was 59.9±9.4, BMI was 27.6±4.2, with gravity 3.0±1.5 and parity 2.6±1.1. The majority had POP-Q stage III (67.7%) or stage II prolapse (25.6%). MISC represented 81.0% of surgeries (58.8% laparoscopic, 41.2% robotic-assisted). Most USLS were performed vaginally (68.1%) vs. laparoscopic/robotic. Median follow-up was 34 weeks (IQR=11−82). Mean OR time was 199.8±66.4 minutes with no impact from month in year after adjusting for confounders (β=-0.6 min, p=0.26). MISC (vs. USLS, β=36.4 min), conversion to laparotomy (β=112.9 min), and concomitant hysterectomy (β=33.4 min) all increased OR time (all $p<0.001$ on multivariable linear regression). Composite complications ranged from 7.9% (January) to 23.8% (March) with average 17.1%. The most common complications were readmission/return to OR (4.5%) and infections (4.4%, excluding UTI). Complications were unaffected by month (OR=0.99, 95% CI=0.95-1.04) on multivariable logistic regression where USLS was more likely to have complications than MISC (OR=1.55, 95% CI=1.05-2.28). Notably, 3 of the 4 highest complication months occurred in the 2nd half of the year (Mar, May, and Jun) and 3 of the 5 lowest complication months occurred in the 1st half of the year (Sept, Nov, and Dec). Prolapse recurrence was identified in 9.4%. Month was not a significant predictor of recurrence on multivariable logistic regression (OR=0.95, 95% CI=0.88-1.02) where MISC had less recurrence than USLS (OR=0.33, 95% CI=0.18−0.60, $p<0.001$).

CONCLUSION: Month of year relative to resident/fellow promotion did not impact OR time, complications, or prolapse recurrence, debunking the myth of worse surgical outcomes earlier in the academic year.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kaitlin Renkosiak: Nothing to disclose; Alexandra Dubinskaya: Nothing to disclose; Megan S. Bradley: Nothing to disclose; Jonathan P. Shepherd: Nothing to disclose.

79 Liposomal bupivacaine in open gynecologic surgery at an urban safety-net hospital

M. Fowler[1], L. Mendez[1,5], S. M. Whitehead[2], B. Shah[2], K. A. Garel[3], N. Saravanan[4], P. Hendessi[1], M. Anand[1]
[1]Obstetrics and Gynecology, Boston Medical Center, Boston, MA, [2]Pharmacy, Boston Medical Center, Boston, MA, [3]Obstetrics and Gynecology, Santa Clara Valley Medical Center, San Jose, CA, [4]Boston University School of Medicine, Boston, MA, [5]Boston University School of Public Health, Boston, MA

OBJECTIVES: Patients undergoing open surgery have higher perioperative opioid use than those undergoing minimally-invasive surgery. Enhanced recovery pathways (ERP) decrease opioid use. Liposomal bupivacaine (LB) can further reduce postoperative opioids via transversus abdominis plane block or direct surgical site infiltration. Our goals were to add LB to our preexisting ERP and decrease postoperative opioid use for open cases.

MATERIALS AND METHODS: This was a retrospective analysis of an IRB-exempt quality improvement project. Patients were included if they underwent planned benign or oncologic open gynecologic surgery from 4/15/2018-12/31/2018. Patients were excluded for

unplanned case, reoperation during admission, unrelated ICU stay, or significant event other than transfusion. LB was infiltrated during incision closure. The main comparison cohort included patients on the original ERP from 2/1/2017-12/31/2017. A pre-ERP cohort from 6/1/2015-8/31/2015 was also used for select comparisons. Results were stratified by surgery type: benign hysterectomy, myomectomy, and oncology. Outcome measures included postoperative opioid use, pain scores, and length of stay. Balancing measures included wound complications, 30-day readmissions, and ED visits. Metrics were collected in REDCap. Statistical analyses consisted of T-tests and Wilcoxon rank-sum tests for continuous variables and Chi-square and Fisher exact tests for categorical variables. Multivariate linear regression was performed to control for age, BMI, ASA, surgeon experience, primary diagnosis, case length, and change in hemoglobin. Time to cessation of inpatient opioids was determined. Analyses were conducted using SAS Enterprise Guide v.5.1.

RESULTS: In the univariate analyses, median postoperative opioid use was decreased, though not statistically significantly, among LB (n=74) compared to ERP (n=88) for benign open hysterectomy (30 vs 47.5mg, *P*=0.44), open myomectomy (45 vs 66mg, *P*=0.56) and oncology (71.5 vs 111.8mg, *P*=0.18). In the regression analysis, oncology patients in the LB group had significantly decreased postoperative (166 vs 329mg, *P*=0.03) and total (337.7 vs 502.6mg, *P*=0.04) opioid use compared to ERP. There were no differences among groups in need for IV opioids, length of stay, nausea/vomiting, or other adverse events. Time to cessation of inpatient opioids was significantly lower for patients undergoing benign hysterectomy in LB and ERP (median 1 day) compared to pre-ERP (median 2 days) [*P*=0.04].

CONCLUSION: For gynecologic oncologic patients undergoing laparotomy, LB is an effective adjunct to ERP alone in decreasing postoperative opioids. Our pilot may have been underpowered to detect a difference in postoperative opioids among LB vs ERP in other case types. For benign hysterectomy, ERP alone or with LB significantly decreases time to cessation of inpatient opioids, compared to pre-ERP.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Mary Louise Fowler: Nothing to disclose; Lizette Mendez: Nothing to disclose; Shawn M. Whitehead: Nothing to disclose; Bhavesh Shah: Nothing to disclose; Keri-Lee A. Garel: Nothing to disclose; Nivetha Saravanan: Nothing to disclose; Paul Hendessi: Nothing to disclose; Mallika Anand: Nothing to disclose.

80 Effect of surgical case order on perioperative outcomes of total laparoscopic hysterectomy for benign indications

A. Davenport, D. Sheyn
Obstetrics & Gynecology, MetroHealth Medical Center, Parma Heights, OH

OBJECTIVES: To determine whether surgical case order affects complication rate (CR), estimated blood loss (EBL), and operating time (OT) at the time of total laparoscopic hysterectomy (TLH).

MATERIALS AND METHODS: This was a retrospective cohort study using single institution data that was collected using methods instituted by and submission to the National Surgical Quality Improvement Program Database (NSQIP). Women undergoing TLH for benign indications were included in this database. Procedures were stratified into either first cases, performed by a surgeon who had not performed any prior surgery on the day of that TLH; second cases were those preceded by a TLH performed by the same surgeon who was performing the second case. Cases which included concomitant procedures were included as long they were performed by the same surgeon who performed the TLH and the primary indications for surgery were related to uterine or adnexal pathology. Cases preceded by any operation other than a TLH were excluded. Pairwise analysis was performed between groups using the Wilcoxon rank-sum test or Fisher's exact test where appropriate. Multivariable regression was used to identify predictors of CR, EBL > 100 mL, and operating time longer than 150 minutes. CR included perioperative and postoperative complications including urinary and intestinal tract injury, emergency room visits, readmissions, and reoperations within 30 days of and directly related to TLH.

RESULTS: A total of 260 procedures were included, 130 in each group. Second order cases were more likely to include minority patients (67.9% vs 47.2%, p=0.007) and have a slightly lower starting hematocrit (38.6% vs 37.0%, p=0.009). EBL was higher in second order cases (50 mL vs 25 mL, p=0.03) and excision of endometriosis was performed more often in the first order cases (40.0% vs 27.7%, p=0.04). There were no differences in comorbidity rates, surgical indications, operating time, uterine weight or concomitant procedures. The CR was 19.6%, and did not differ between groups, p=0.92. After adjusting for confounders, second case order was only associated with an increased risk of EBL > 100 mL, aOR=2.57, 95% CI: 1.38-4.79; however, this did not result in higher transfusion rates in this group. Case order was not independently associated with higher CR or longer OT.

CONCLUSION: Total laparoscopic hysterectomy performed as the second case and preceded by TLH are associated with higher EBL. However, this increase is not likely to be clinically significant as it is well below the limit of blood loss that necessitates transfusion. Case order was not independently associated with increases in operating time or complication rates.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Abigail Davenport: Nothing to disclose; David Sheyn: Nothing to disclose.

81 Effect of morcellation site and route on minimally invasive hysterectomy outcomes in patients with class 3 obesity

J. Wong[1], J. Whitley[2], K. Voltzke[1], M. Louie[1]
[1]Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC, [2]Obstetrics and Gynecology, George Washington University Hospital, Washington, DC

OBJECTIVES: To assess the effects of site and route of morcellation on perioperative outcomes in patients with body mass index (BMI) ≥40 (WHO class 3 obesity).

MATERIALS AND METHODS: We performed a retrospective cohort study of women with BMI ≥40 who required tissue morcellation during laparoscopic hysterectomy at an academic tertiary care center between January 2006 and March 2018. Morcellation site was either vaginal or abdominal, with abdominal sites including suprapubic, umbilical, or lateral locations. Morcellation route was either manual or electromechanical. The primary outcome was perioperative complication, classified by Clavien-Dindo grade (minor complications grade I to II, major complications grade III to V). Secondary

outcomes included surgical time, surgical blood loss, and hospital length of stay. Chi-square, Fisher's exact, and Wilcoxon tests were used where appropriate. Multivariable logistic regression was used to estimate the association between site or route of morcellation and perioperative complications.

RESULTS: Of 96 identified patients, 57 (59.4%) underwent abdominal morcellation and 39 (40.6%) underwent vaginal morcellation. Abdominal morcellation included 38 (66.7%) umbilical, 11 (19.3%) suprapubic, and 8 (14.0%) lateral sites. The average BMI was 45.3 ± 6.8 kg/m^2. There were no differences in age, hysterectomy year, BMI, parity, prior abdominal surgery, or medical comorbidities between abdominal and vaginal morcellation sites. Mean specimen weight was significantly larger for patients who underwent abdominal (829.0 ± 755.6g) versus vaginal morcellation (467.3 ± 334.8g, p<0.01), without a difference in surgical time (267.4 vs 237.4 min, p=0.17), surgical blood loss (196.4 vs 133.3mL, p=0.74), and hospital length of stay (2.0 vs 2.4 days, p=0.12). There was a nonsignificant trend towards increased perioperative complications in the vaginal versus abdominal morcellation group (33.3% vs 21.1%, p=0.18), with associated differences in minor complications (28.2% vs 12.3%, p=0.05). There was no difference in major complications between vaginal and abdominal morcellation (7.0% vs 5.1%, p>0.99). No difference was found for perioperative complications between electromechanical and manual morcellation (37.8% vs 25.3%, p=0.16). After controlling for hysterectomy year, race, specimen weight, parity, and BMI, there was no difference in perioperative complications between abdominal versus vaginal sites (aOR 0.52, 95% CI 0.17-1.55) or manual versus electromechanical routes (aOR 0.55, 95% CI 0.18-1.71) of morcellation.

CONCLUSION: In women with class 3 obesity, abdominal morcellation was associated with a significantly larger specimen size without any increase in perioperative complications compared to vaginal morcellation. Manual versus electromechanical morcellation had no significant difference in perioperative outcomes.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jacqueline Wong: Nothing to disclose; Julia Whitley: Nothing to disclose; Kristin Voltzke: Nothing to disclose; Michelle Louie: Nothing to disclose.

82 Effectiveness of reduced site injection protocol of intra-detrusor onabotulinumtoxin A

E. Hoover, M. H. Vaughan, E. R. Trowbridge, K. Hullfish
Obstetrics and Gynecology, University of Virginia, Charlottesville, VA

OBJECTIVES: To examine the effectiveness and patient satisfaction associated with the use of a 5-site intra-detrusor injection protocol of onabotulinumtoxin A among women with urgency urinary incontinence.

MATERIALS AND METHODS: We performed a prospective cohort study of women undergoing intra-detrusor injection of onabotulinumtoxinA (Botox) for treatment of refractory urgency urinary incontinence (UUI) from 11/1/18 to 6/1/19. A 5-site injection protocol using 100 units (U) Botox was performed as opposed to the standard 10-20 injection site protocol. Women were included if they underwent the 5-site injection protocol and completed pre-treatment (baseline), 2-week post-treatment, and 3-month post-treatment voiding diaries and questionnaires. Demographic data, rates of post-procedure voiding dysfunction and urinary tract infection were collected. Three-day voiding diaries were collected at baseline, 2 weeks and 3 months post-procedure. The primary outcome was number of UUI episodes/day at 3 months. Each set of questionnaires consisted of the Incontinence Impact Questionnaire short version (IIQ-7) and Urogenital Distress Inventory short form (UDI-6) at baseline, 2 weeks post-procedure and 3 months post-procedure, as well as the Patient Global Impression of Improvement (PGI-I) at 2 weeks and 3 months. We compared baseline UUI episodes/day and questionnaire scores with matching parameters at 3 months using the Wilcoxon rank-sum test.

RESULTS: A total of 19 women met inclusion criteria during the study period. The median age was 68 years [interquartile range, IQR 57-72], median BMI was 33 kg/m^2 [IQR 28.3-36]. Sixteen (84.2%) patients identified as white, while 2 (10.5%) were black. Sixteen patients (84.2%) were menopausal, and 6 (31.6%) were diabetic. There was a statistically significant decrease in the median number of UUI episodes per day from baseline (median 4 [IQR 3-10.5]) to 3 months post-procedure (median 1 [IQR 0-2], p=0.007). There was also a statistically significant improvement in IIQ-7 scores from baseline (median 9 [IQR 7-15]) to 3 months post-procedure (median 3 [IQR 1-9], p=0.001). There was no difference in UDI-6 scores from baseline (median 7 [IQR 5-10]) to 3 months (median 5 [IQR 2-8], p=0.307). Five patients (26.3%) had post-procedure voiding dysfunction, while 2 (10.5%) had a post-procedure urinary tract infection. Fifteen patients (79%) reported symptoms were at least a little better based on the PGI-I at 2 weeks and at 3 months.

CONCLUSION: A 5-site injection protocol of intradetrusor Botox resulted in statistically significant improvements in UUI episodes/day and quality of life at 3 months compared to baseline. These findings suggest that 5 injections are comparable to 10-20 in terms of published outcomes and complications.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Elizabeth Hoover: Nothing to disclose; Monique H. Vaughan: Nothing to disclose; Elisa R. Trowbridge: Nothing to disclose; Kathie Hullfish: Nothing to disclose.

83 Vulvovaginal involvement in Stevens-Johnson syndrome and toxic epidermal necrolysis: Management and techniques used to reduce gynecologic sequelae

C. Crowder, C. Kraus, S. E. Jeney, F. L. Lane, N. Bernal
Obstetrics and Gynecology, UC Irvine, Orange, CA

OBJECTIVES: Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are a rare single spectrum of severe epidermolytic reactions that can involve the vulva, vagina, and cervix. Description of specific management techniques for vulvovaginal SJS/TEN in the literature is sparse. This is a retrospective review of women treated at a tertiary care burn center for SJS/TEN with vulvovaginal involvement.

MATERIALS AND METHODS: The electronic medical record was queried for cases of vulvovaginal SJS/TEN via CPT codes L51.1, L51.2, L51.3, 695.14, 695.15. Each chart was then reviewed for involvement of the genitalia, treatment regimen, and clinical outcomes, including possible long-term urogynecologic sequelae.

RESULTS: 130 cases of SJS/TEN in women were analyzed from 2009 – 2019; of these, 12 cases of SJS/TEN with vulvovaginal involvement were identified. 3 of 12 patients were pediatric (age 13-18). Median

age of all patients was 31 years (IQR 20, 67). One mortality from TEN occurred. Gynecology was consulted in 11/12 (92%) of cases with vulvovaginal involvement. Vulvar only involvement was present in 6/12 (50%) of cases, and 3/12 (25%) of cases had both intravaginal and vulvar involvement. Treatment regimens were initially highly variable, but, after 2017, trended toward standardized recommendations of vaginal steroid and estrogen (cream or ring), and menstrual suppression. Post-discharge gynecology follow-up occurred in 3/12 (25%) of cases with one complication (vaginal agglutination) seen at 6 months, with no further clinical follow-up.
CONCLUSION: In our study population, gynecologic involvement was recognized in 12/130 (9%) of women admitted with SJS/TEN. We offer a clinical review of treatment algorithm for this rare condition. Consultation including thorough vulvovaginal examination and treatment with a combination of topical steroids and estrogen may aid in reduction of short and long-term urogynecologic sequelae.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Carly Crowder: Nothing to disclose; Christina Kraus: Nothing to disclose; Sarah E. Jeney: Nothing to disclose; Felicia L. Lane: Nothing to disclose; Nicole Bernal: Nothing to disclose.

84 Knowledge of pelvic floor disorders within an underserved population

K. A. Volpe[1], B. Özel[2], R. S. Nelken[2], M. Stern[1], C. E. Dancz[2], L. Rodriguez[1]
[1]Urology, USC Keck School of Medicine, Los Angeles, CA, [2]OBGYN, USC Keck School of Medicine, Los Angeles, CA

OBJECTIVES: We sought to assess knowledge of urinary incontinence (UI) and pelvic organ prolapse (POP) in an urban, underserved population of mainly Latina Spanish-speaking women.
MATERIALS AND METHODS: All patients presenting to a general OBGYN clinic at our institution were asked to participate. A demographics survey and the Prolapse and Incontinence Knowledge Questionnaire (PIKQ) were administered. The PIKQ is comprised of two scales; one measures POP knowledge while the other measures UI knowledge. Prior studies using the PIKQ defined proficiency as 6/12 correct on the POP scale and 10/12 on the UI scale. We used a translation-back translation method to develop the Spanish language version. We computed descriptive statistics, Chi-Square and multivariate linear regression analysis.
RESULTS: Of the 283 participants, 87.0% identified themselves as Latina. Of those, 77% were primarily Spanish-speaking and took the questionnaire in Spanish. English-speaking Latinas were significantly younger (32.6, +/- 11.4 years old) than Spanish-speaking Latinas (43.5 +/- 10.5) or non-Latinas (44.5, +/-11.7). They were also more likely to have graduated high school (80.36% versus 49.0% and 77.8% respectively). Spanish-speaking Latinas scored an average of 42.5% (+/- 23.3%) on the POP scale and 50.0% (+/21.6%) on the UI scale. English-speaking Latinas scored an average of 39.2% (+/- 26.6%) on the POP scale and 63.3% (+/-23.3%) on the UI scale. English-speaking non-Latinas scored an average of 49.2% (+/- 22.5%) on the POP scale and 65.8% (+/- 24.2%) on the UI scale. There was no significant difference in proficiency on the POP scale between English-speaking Latinas (42.8%), Spanish-speaking Latinas (42.6%) and non-Latina women (56.8%) ($p = 0.27$). However, Spanish-speaking Latina women were significantly less likely to achieve proficiency on the UI scale than English-speaking or non-Latina women (8.4% versus 30.4 and 35.1% respectively, $p < .0001$). In the multivariate regression analysis both English language and high school graduation were independently associated with higher score on the UI scale. Older age and high school graduation were associated with a higher score on the POP scale (Tables). Country of birth, insurance status and parity were not associated with score on either scale.
CONCLUSION: Knowledge of UI and POP in our mainly Latina population is lower than other published multi-ethnic cohorts. Spanish-speaking patients scored significantly lower on the UI scale, even after adjustment for potential confounders.

Table 1: Predictors of UI scale score

Predictor	Estimate*	95% Confidence Interval	p
Spanish language	-1.33	-2.14, -0.51	0.001
High school graduation	0.81	0.10, 1.52	0.03

Table 2: Predictors of POP scale score

Predictor	Estimate*	95% Confidence Interval	p
Older age	0.96	0.13, 1.79	0.02
High school graduation	0.80	0.01, 1.59	0.05

*The estimate is the amount of the score (out of 12) attributable to the predictor.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Katherine A. Volpe: Nothing to disclose; Begüm Özel: Nothing to disclose; Rebecca S. Nelken: Nothing to disclose; Mariana Stern: Nothing to disclose; Christina E. Dancz: Nothing to disclose; Larissa Rodriguez: Nothing to disclose.

85 Retroperitoneal ligation of the uterine arteries during laparoscopic hysterectomy using polymer clips

S. Radtke, V. Galaviz, S. Mishaw
Obstetrics and Gynecology, Texas Tech University Health and Sciences Center, El Paso, TX

OBJECTIVES: Retroperitoneal ligation of the uterine arteries at their origin allows for added control of the vasculature during hysterectomy procedures. There are several methods available for this including desiccation, suture, and titanium or polymer clips. Large Weck® Hem-o-lok® polymer clips, can be particularly useful during robotic surgery, as the daVinci® Surgical System includes a compatible robotic clip applier. Utilizing these clips has the advantage of not requiring a skilled bedside assistant, decreased slippage, avoidance of char, amongst other benefits. Literature supporting their safety during laparoscopic hysterectomy is limited. Because of this, we sought to analyze postoperative outcomes including complications, readmissions, and reoperations up to a year after their use, and compare this to patients in which ligation was performed via desiccation.
MATERIALS AND METHODS: After approval from the institutional review board, a chart search was performed to extract every laparoscopic hysterectomy performed by two MIS fellowship trained surgeons over the course of one year, forming a retrospective cohort. Each operative report was reviewed and cases in which the uterine vessels were ligated bilaterally at their origin using either polymer clips or desiccation were selected. Exclusion criteria were intraoperative bowel or bladder injury, concomitant pelvic floor repair, or malignancy. Data points collected included age, BMI, number of cesareans, history of hypertension or diabetes, uterine weight, EBL, length of hospital stay, post-op complaints, ER visits, post-op office

visits, readmissions and reoperations. Subjects were separated into groups based on whether ligation was performed using desiccation or polymer clips, and data was compared using T-Student or Pearson Chi-Square when appropriate.

RESULTS: A total of 100 cases met inclusion criteria (no exclusions). There were no significant differences between the desiccation group (n=57) and polymer clip group (n=43) in terms of age (43.8 v 46.1 p=.06), BMI (34.2 v 32.2 p=.09), HTN (28.1% v 34.9% p=.46), DM (24.6% v 16.3% p=.31), cesarean deliveries (p=.94), uterine weight (251.2g v 313.4g p=.14) or EBL (105.3mL v 75.5mL p=.054). Postoperative complaints and complications were compiled for each group. Claiven-Dindo grade 2 or higher complications were greater in the desiccation group (8.8% v 0% p = .04). There were 2 re-operations (cuff dehiscence) and 3 readmissions in the desiccation group and none in the clip group (p=.21, p=.12). Rate of incursion to the ER was compared (19.3% v 7% p = 0.07), with pain being the most common complaint. Patients with more than 2 postoperative office visits related to surgery was also compared (42.1% v 11.6% p < 0.01).

CONCLUSION: Utilizing polymer clips for ligation of the uterine vessels at their origin during laparoscopic surgery is at least as safe as bipolar desiccation, with no long-term complications.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Steven Radtke: Nothing to disclose; Veronica Galaviz: Nothing to disclose; Stephanie Mishaw: Nothing to disclose.

86 Retrograde versus spontaneous void trial outcomes after vaginal surgery: A retrospective analysis

A. Werth, S. Shah, B. Vakili
OB/GYN, Christiana Care, Wilmington, DE

OBJECTIVES: We sought to evaluate and compare rates of Foley catheter retention after a retrograde void trial versus after a spontaneous void trial in patients undergoing vaginal surgery.

MATERIALS AND METHODS: We performed a retrospective cohort study including women who underwent vaginal surgery at our institution between January 1, 2014 and December 31, 2017. Retrograde void trials after vaginal surgery were implemented institutionally in January 2016. The retrograde void trial involves backfill of the bladder with 300cc of water, after which the Foley catheter is removed and the patient is allowed to void. Passing of this void trial is defined as voiding >50% of the backfill volume. Patients are typically given one hour to void after retrograde voiding trial, as compared to up to 6 hours in patients who undergo a spontaneous void trial. Our primary outcome was to compare rates of Foley catheter retention between retrograde and spontaneous void trials for vaginal surgery. We also evaluated length of stay (LOS) between the different void trials. Outcomes and demographic data were compared using the unpaired t-test and Chi square test.

RESULTS: Of the 339 women identified, 167 (49.3%) underwent retrograde voiding trial and 172 (50.7%) underwent spontaneous voiding trial. Median age was 62.5 years and 66.2 years respectively. Similar rates of hysterectomy were documented (32.9% vs 33.9%).

No significant difference was identified in rate of Foley catheter retention was identified between the spontaneous and retrograde voiding trials (30.8% vs 25.7%; p=0.30). LOS was increased with spontaneous void trial (29.0±3.6 vs 27.9±5.0 hours; p=0.02). Among the women undergoing hysterectomies, there was no significant difference in frequency of Foley re-insertion between spontaneous and retrograde voiding trials (32.1% vs 28.5%; p= 0.68). In the hysterectomy cohort, LOS was similar in the two trial types (29.3 ± 6.5 hours vs 29.0 ± 3.5 hours; p = 0.71).

CONCLUSION: Our findings showed no difference in the rate of Foley catheter re-insertion after spontaneous or retrograde voiding trials in women undergoing vaginal surgery. A modest increase in length of stay is identified among patients who underwent spontaneous void trial.

In women undergoing hysterectomy, there is no difference in the LOS or the rate of Foley catheter retention between the two types of void trials.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Adrienne Werth: Nothing to disclose; Shivani Shah: Nothing to disclose; Babak Vakili: Nothing to disclose.

87 Truth or myth: Intraabdominal pressure increases in the lithotomy position

K. Young, T. Mou, M. Tavathia, J. Geynisman-Tan, S. A. Collins, M. G. Mueller, C. Lewicky-Gaupp, K. Kenton
Northwestern Feinberg School of Medicine, Chicago, IL

OBJECTIVES: Placing patients in dorsal lithotomy prior to induction of anesthesia confers multiple benefits including ensuring patient comfort and decreasing lower extremity nerve injury. However, it is unknown whether lithotomy positioning during induction of anesthesia increases intraabdominal pressure (IAP), theoretically introducing more risk for aspiration or difficult ventilation. Our objective was to determine if there were differences in IAP in supine, low lithotomy and high lithotomy positions.

MATERIALS AND METHODS: This was a cross-sectional study of women undergoing urogynecologic surgery over a 3-month period. Women planning surgery for prolapse or stress incontinence were approached and consented at their preoperative appointment. Demographic data was abstracted from their medical chart. On the day of their surgery, IAP was measured in cmH_2O prior to induction of general or intravenous anesthesia using a T-doc air charged urodynamic catheter (Laborie Aquarius; Ontario, Canada) placed in the patient's vagina (for patients with incontinence) or rectum (for patients with prolapse). IAP was measured in three positions: supine (legs at 0 degrees), low lithotomy (legs in Yellowfin stirrups at 45 degrees), and high lithotomy (90 degrees). Three measurements were obtained at each position and averaged. Prior studies using urodynamics catheters report that resting abdominal pressures are 5−20 cmH_2O in the supine position and as high as 30−50 cmH_2O in the standing position. We calculated that in order to detect a 5 cmH_2O change in IAP with 80% power and an alpha of 0.05, 28 study participants were needed. Pressure comparisons were calculated in SPSS 25 (Chicago, IL) using the paired t-test.

RESULTS: We enrolled 29 women with a mean ± SD age of 59 ± 12 years and mean ± SD BMI of 28.9 ± 6.2. The majority (83%) was white. Most (20) surgeries were performed for incontinence and 9 surgeries were for prolapse. Of the surgeries for prolapse, 8 had stage III and 1 had stage IV prolapse. Mean ± SD IAP for the group in the supine position was 18.6 ± 7.6 cmH_2O, low lithotomy 17.7 ± 6.6 cmH_2O, and high lithotomy 17.1 ± 6.3 cmH_2O. In the same women, there was a significant decrease in IAP from supine to high lithotomy

positions, with mean difference of 1.4 cmH_2O ± 3.7, p=0.05. Likewise, there was a significant, though smaller, decrease in mean IAP when moving from supine to low lithotomy in the same woman (mean decrease of 0.9 cmH_2O ±1.5, p=0.004. Neither change is clinically significant.

CONCLUSION: Placing patients' legs in low or high lithotomy position does not result in a clinically significant increase in intra-abdominal pressure. Therefore, surgeons and anesthesiologists should position patients' lower extremities in stirrups while patients are awake to minimize discomfort and nerve injuries.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Karen Young: Nothing to disclose; Tsung Mou: Nothing to disclose; Meera Tavathia: Nothing to disclose; Julia Geynisman-Tan: Nothing to disclose; Sarah A. Collins: MCG (Hearst Health Network), Consultant, Honorarium; Margaret G. Mueller: Nothing to disclose; Christina Lewicky-Gaupp: Nothing to disclose; Kimberly Kenton: Ethicon, Expert Witness, Honorarium; Boston Scientific, Scientific Advisory Board, Honorarium.

88 Assessing the risk of concurrent endometrial cancer among women with endometrial hyperplasia

J. Lee[1], V. Maldonado[1], K. Eng[2], P. Lagiou[3]
[1]Obstetrics and Gynecology, Sisters of Charity hospital, University at Buffalo, Buffalo, NY, [2]Department of Biostatistics and Bioinformatics, Roswell Park Cancer Institute, Buffalo, NY, [3]Epidemiology, Harvard T.H. Chan school of Public Health, Boston, MA

OBJECTIVES: To identify the independent risk factors of concurrent endometrial cancer among women with endometrial hyperplasia and build the clinical prediction model incorporating the clinical and pathological markers.

MATERIALS AND METHODS: This cross-sectional retrospective observational study included data from 379 women who had a hysterectomy at the two institutes, Sisters of Charity Hospital and Roswell Park Cancer Institute, of Buffalo, New York from January 2005 to December 2016 following a diagnosis of endometrial hyperplasia with or without atypia. All women with a diagnosis of endometrial hyperplasia who subsequently received hysterectomy with or without staging operation were included in the study and analyzed. Women with a preoperative diagnosis of endometrial cancer prior to hysterectomy were excluded from the study. The variables chosen for the multivariable logistic regression analysis were 'endometrial hyperplasia (with atypia vs. without atypia), age (≤ 53 vs. > 53), BMI (≤ 35 vs. > 35), the length of endometrial cavity (< 7cm vs. ≥ 7cm), the progestin treatment before hysterectomy (yes vs. no), smoking, diabetes, hypertension, and hyperlipidemia. Then, a stepwise backward regression model to determine the predictors of endometrial cancer was performed. The performance of predictive models was assessed with receiver operating characteristic (ROC) curve and Hosmer-Lemeshow test.

RESULTS: Fifty-five (14.51%) of a total of 379 women with endometrial hyperplasia was diagnosed with endometrial cancer after hysterectomy. In bivariate regression analysis, the risk factors significantly associated with concurrent endometrial cancer were atypical endometrial hyperplasia, age ≥ 50, postmenopausal bleeding, the use of progestin, diabetes mellitus, hypertension, and hyperlipidemia. In adjusted multivariate logistic regression analysis, the presence of atypical endometrial hyperplasia was associated with a significant increase in the risk of being diagnosed with concurrent endometrial cancer in the final pathology of hysterectomy specimen (OR, 56.708, 95% CI 7.601-423.056). Using a stepwise backward multivariate regression (alpha set at 0.1) analysis, the model with atypical endometrial hyperplasia, hypertension, smoking, and postmenopausal bleeding was constructed. This model predicted the risk of being diagnosed as endometrial cancer better, in comparison to the model with atypical endometrial hyperplasia alone or the model controlling simultaneously for the variables selected in the bivariate analyses indicated above (stepwise backward regression model, AUC=0.8749; the model with atypical endometrial hyperplasia, AUC=0.7983; multivariate regression model, AUC=0.8696, p-value = 0.0001).

CONCLUSION: The addition of postmenopausal bleeding, hypertension, and smoking to atypical endometrial hyperplasia in the risk prediction model improves the risk assessment of concurrent endometrial cancer.

Table 1. Basic characteristics of total 379 patients with endometrial hyperplasia and their association with concurrent endometrial cancer.

Level *N=379 (100%)*	*Concurrent endometrial cancer* *No* *324 (85.49%)*	*Yes* *55(14.51%)*	*Crude Odds Ratio†* *(95% CI)*	*P value*
Endometrial hyperplasia				
without atypia	201 (99.50%)	1 (0.5%)	Reference	<0.001*
with atypia	123 (69.49%)	54 (30.51%)	88.24 (12.054-646.012)	
Age (years)				
≤ 53	154 (93.33%)	11 (6.67%)	Reference	<0.001*
> 53	170 (79.44%)	44 (20.56%)	3.624 (1.807-7.266)	
Race				
Caucasian	296 (85.30%)	51 (14.70%)	Reference	0.74
Other	28 (87.50%)	4 (12.50%)	0.829 (0.279-2.464)	
Gravida				
Nulligravida	46 (80.70%)	11 (19.30%)	Reference	0.123
Primigravida	42 (87.50%)	6 (12.50%)	0.597 (0.203-1.758)	
Multigravida	207 (88.09%)	28 (11.91%)	0.566 (0.263-1.218)	
Unknown	29 (74.36%)	10 (25.64%)		
Parity				
Nullipara	55 (83.33%)	11 (16.67%)	Reference	0.13
Primipara	50 (86.21%)	8 (13.79%)	0.80 (0.298-2.149)	
Multipara	191 (88.02%)	26 (11.98%)	0.681 (0.316-1.464)	
Unknown	28 (73.68%)	10 (26.32%)		
BMI				
Normal	54 (91.53%)	5 (8.47%)	Reference	0.345
Overweight	70 (87.50%)	10 (12.50%)	1.543 (0.498-4.779)	
Class I Obesity	59 (86.76%)	9 (13.24%)	1.647 (0.520-5.223)	
Class II Obesity	45 (78.95%)	12 (21.05%)	2.88 (0.944-8.789)	
Class III Obesity	96 (83.48%)	19 (16.52%)	2.138 (0.755-6.048)	
Type of Biopsy				
Aspiration needle	148 (86.55%)	23 (13.45%)	Reference	0.425
Dilation & Curettage	160 (83.77%)	31 (16.23%)	1.266 (0.710-2.258)	
Unknown	15 (93.75%)	1 (6.25%)		
The length of endometrial cavity				
Mean(cm)	9.179	8.802	0.877 (0.737-1.043)	0.139
Hormone treatment before Hysterectomy				
No	245 (83.33%)	49 (16.67%)	Reference	0.021*
Yes	77 (93.90%)	5 (6.10%)	0.325 (0.125-0.844)	
Unknown	2 (66.67%)	1 (33.33%)		
Abnormal Uterine Bleeding				
Premenopausal bleeding	178 (94.18%)	11 (5.82%)	Reference	<0.001*
Postmenopausal bleeding	137 (77.40%)	40 (22.60%)	4.725 (2.338-9.548)	
None	7 (77.78%)	2 (22.22%)		
Unknown	2 (50.00%)	2 (50.00%)		
Time interval between endometrial biopsy and hysterectomy				
Mean(days)	39	27	0.992 (0.980-1.004)	0.204
Smoking				
Non-smoker	293 (86.94%)	44 (13.06%)	Reference	0.069*
Current smoker	24 (75.00%)	8 (25.00%)	2.220 (0.939-5.249)	
Unknown	7 (70.00%)	3 (30.00%)		
Diabetes Mellitus				
No	257 (88.32%)	34 (11.68%)	Reference	0.017*
Yes	52 (76.47%)	16 (23.53%)	1.810 (1.165-2.811)	
Unknown	15 (75.00%)	5 (25.00%)		
Hypertension				
No	209 (92.48%)	17 (7.52%)	Reference	<0.001*
Yes	113 (75.84%)	36 (24.16%)	3.917 (2.106-7.285)	
Unknown	2 (50.00%)	2 (50.00%)		
Hyperlipidemia				
No	253 (89.08%)	31 (10.92%)	Reference	0.002*
Yes	68 (74.73%)	23 (25.27%)	2.760 (1.512-5.041)	
Unknown	2 (75.00%)	1 (25.00%)		

† Bivariate logistic regression analysis.
* Variables with p-value < 0.1 were included in the multivariate regression analysis.
BMI, body mass index(kg/m²)

Table 2| Results of logistic regression analysis in predicting concurrent endometrial cancer; bivariate, multivariate adjusted, and stepwise logistic regression analysis.

Risk factors	Multivariate logistic regression (n = 348)		Stepwise(backward) regression† (n = 342)	
	Odds Ratio(95% CI)	P value	Odds Ratio(95% CI)	P value
Endometrial hyperplasia with atypia	56.708(7.601-423.056)	< 0.001	55.063(7.425-08.359)	< 0.001
Age < 50 vs. ≥ 50	0.507(0.110-2.327)	0.382	-	-
History of AUB Pre- vs. Postmenopausal	3.624(0.848-15.496)	0.082	2.491(1.083-5.728)	0.032
Hormone treatment before hysterectomy	0.520(0.157-1.723)	0.285	-	-
Smoking	-	-	3.118(0.945-10.282)	0.062
Diabetes Mellitus	0.928(0.393-2.482)	0.875	-	-
Hyperlipidemia	1.194(0.599-3.453)	0.682	-	-
Hypertension	2.438(1.009-5.890)	0.048	2.135(1.006-4.532)	0.048

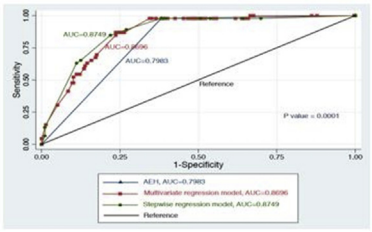
AUB, Abnormal Uterine Bleeding; p-value < 0.05, statistically significant; CI, 95% Confidence Interval.
† Multivariate logistic regression analysis using a backward stepwise approach (p-value < 0.1)

Table 3. The comparison of performance of the prediction model in predicting concurrent endometrial cancer

Models	AUC(%)	Std. Err.	95% CI
Model with Single risk factor			
Endometrial hyperplasia with atypia	79.83	0.0178	0.76329 - 0.83321
Model with combined risk factors			
Endometrial hyperplasia with atypia plus			
Hormone treatment before hysterectomy	80.86	0.0191	0.77118 - 0.84604
Diabetes mellitus	82.24	0.0232	0.77699 - 0.86784
Hyperlipidemia	82.74	0.0211	0.78608 - 0.86874
Age (≤ 53 vs. > 53)	82.40	0.0234	0.77805 - 0.86993
History of AUB, Pre- vs. Postmenopausal	84.03	0.0231	0.79501 - 0.88552
Hypertension	84.57	0.0234	0.79986 - 0.89146
History of AUB, Pre- vs. Postmenopausal *plus* Hypertension	85.94	0.0244	0.81165 - 0.90721
Multivariate regression model	86.96	0.0221	0.82630 - 0.91283
Final regression model – stepwise backward (4.008 * EHA + 0.913 * AUB + 0.758 * HTN + 1.137 * SMK – 7.964)	87.49	0.0241	0.82752 - 0.92219

*AUC, Area Under Curve.
AUB, Abnormal uterine bleeding; EHA, Endometrial Hyperplasia with atypia; HTN, Hypertension; SMK, Smoking; Std. Err, standard error; CI, Confidence interval.

Figure 1. Assessing the performance of prediction models by comparing the Receiver Operating Characteristic(ROC) curve of each risk prediction model.



DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Ji Young Lee: Nothing to disclose; Violet Maldonado: Nothing to disclose; Kevin Eng: Nothing to disclose; Pagona Lagiou: Nothing to disclose.

89 What is the holdup? Patient thoughts on progressing to 3rd line therapy for treatment of overactive bladder

C. Amegashie[1], V. deMartelly[2], S. Valaitis[2], J. Letko[2], D. Glass[2], L. Fetzer[2], S. Botros[3], K. Wroblewski[4], S. Iyer[2]
[1]Pritzker School of Medicine, The University of Chicago, Chicago, IL, [2]Obstetrics and Gynecology, The University of Chicago, Chicago, IL, [3]Urology, The University of Texas, San Antonio, San Antonio, TX, [4]Public Health Sciences, The University of Chicago, Chicago, IL

OBJECTIVES: We aimed to understand the reasons patients choose to and choose not to pursue third line overactive bladder (OAB) therapies (percutaneous tibial nerve stimulation, Onabotulism toxinA, and sacroneuromodulation).

MATERIALS AND METHODS: We present a prospective cohort study that used both structured interviews and survey data to compare patients who wanted to progress to third line therapy to those who did not. Eligible participants for this study were recruited from urogynecology clinics from October 2018 to August 2019, diagnosed based on clinical symptoms, tried behavioral modifications, 2 OAB medications, and were English speaking. After enrollment, patients were asked to complete four surveys: The Pelvic Floor Disability Index (PFDI-20), Overactive Bladder Questionnaire Short Form (OAB-q SF), Life Orientation Test - Revised (LOT-R), and patient confidence in the health care system. Patients participated in a structured interview that included 5 questions regarding patients' plans to pursue third line therapies. The interviews were transcribed and coded by 3 reviewers to identify major themes. We reached thematic saturation when no new themes were identified. Chi-square, Fisher's exact, Wilcoxon rank-sum, and t tests were used to compare survey responses between groups. Multivariable logistic regression models were used to examine predictors of who chose to proceed to third line OAB therapy.

RESULTS: Sixty-nine patients were consented, 4 withdrew, 60 completed interviews, and 51 completed survey data. Overall 55% of patients were white, 45% were African American, average age was 71, and patients had tried behavioral and medication therapy for a median of 11.4 months. 75% stated that they intended to pursue 3rd line OAB therapy and 31 (61%) patients expressed interest in a specific third line therapy (52% PTNS, 48% OnabotulismA, 0% sacroneuromodulation). There were no significant differences in demographics between those who wanted to pursue 3rd line therapy and those who didn't or were unsure. Symptom severity measured with PFDI and OAB-q SF scores, optimism measured by LOT-R score, and patient confidence in their health care were not predictive of patient interest in pursuing third line OAB therapy when using logistic regression models. Major interview themes leading patients towards third line OAB treatment included: a desire for a better quality of life, embarrassment of accidents and urinary frequency, and problems with medication treatment. Interview themes leading patients away from third line OAB treatment included: concern about invasiveness and side effects of treatments, restrictions to accessing care, and other life priorities.

CONCLUSION: A desire for a better quality of life, frustration with medication therapy, and concerns about invasiveness and side effects of third line therapy are major themes identified by patients considering further OAB therapy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Courtney Amegashie: Nothing to disclose; Victoria deMartelly: Nothing to disclose; Sandra Valaitis: Nothing to disclose; Juraj Letko: Nothing to disclose; Dianne Glass: Nothing to disclose; Laura Fetzer: Nothing to disclose; Sylvia Botros: Nothing to disclose; Kristen Wroblewski: Nothing to disclose; Shilpa Iyer: Nothing to disclose.

90 Assessing activity and recovery following benign gynecologic surgery using an activity monitor and validated tool sets: A pilot study

J. J. Kim[1], C. Young[2], R. Walters[1], T. Ryntz[1], L. A. Yurteri-Kaplan[1], C. Grimes[3], Y. Huang[1], A. Advincula[1]
[1]OB/GYN, Columbia University Medical Center, New York, NY, [2]OB/GYN, Icahn School of Medicine at Mt Sinai, New York, NY, [3]OB/GYN, Westchester Medical Center, Hawthorne, NY

OBJECTIVES: Assessment of recovery after surgery in women following benign gynecologic surgery remains highly subjective and elusive, as the majority of patient recovery is taking place at home and outside of the hospital. However, advances in wearable technology present an opportunity for clinicians to have an objective assessment of postoperative recovery. The aims of this pilot study are to 1) feasibility of the use of an activity monitor in a gynecologic surgical patient population, 2) use activity monitor data to characterize the recovery trajectory of physical activity for laparoscopic and open surgeries.

MATERIALS AND METHODS: Women aged 18-51 years old undergoing elective inpatient and outpatient surgical procedures at an academic tertiary medical center, specifically myomectomy and hysterectomy, were invited to participate. Physical activity was measured using an Actigraph GT3X wrist worn activity monitor. Participants wore the activity monitor a week before the surgery to assess preoperative baseline activity and they were asked to wear them for a minimum 6 weeks postop. The total number of steps was measured for each

patient per day, and the time (in days) to baseline recovery activity was measured.

RESULTS: Of the 15 patients enrolled, 13 patients completed the study procedures and were included in the analysis. 9 underwent a laparoscopic or robot-assisted laparoscopic procedure; 4 underwent a laparotomy. Of the 9 minimally invasive procedures, 7 were hysterectomies and 2 were myomectomies. Of the laparotomies, 2 were hysterectomies and 2 were myomectomies. The mean number of days the activity monitor was worn was 45 days (SD 27) for all procedures. For minimally invasive outpatient procedures, the total number of steps per day reached preoperative average levels on postoperative day (POD) 7.8 (SD 7.5). For laparotomies that required inpatient stay, the total number of steps per day reached preoperative average levels on POD 33.5 (SD 24.5). An adverse event in 1 patient was associated with a decline in activity.

CONCLUSION: This study demonstrates that objective monitoring of postoperative physical activity using activity monitors is feasible in the benign gynecologic surgical population. Recovery trajectories for inpatient laparotomies and outpatient minimally invasive procedures differ. Activity monitors present clinicians with a new potential tool for assessing and managing surgical recovery, and for determining if women are not recovering as expected.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jin Hee J. Kim: Abbvie, Consultant, Honorarium; Intuitive, Speaker, Honorarium; Constance Young: Nothing to disclose; Ryan Walters: Nothing to disclose; Timothy Ryntz: Nothing to disclose; Ladin A. Yurteri-Kaplan: Nothing to disclose; Cara Grimes: Nothing to disclose; Yongmei Huang: Nothing to disclose; Arnold Advincula: Cooper surgical, Consulting, Royalty, intellectual property rights; Intuitive, Consulting, Honorarium; ConMed, Consulting, Honorarium; Tital Medical, Consulting, Honorium; Abbvie, Consulting, Honorarium; Applied medical, Consulting, Honorarium.

91 The reluctance to use mesh for continence surgery and impact on outcomes of different treatment modalities between 2013 and 2019

P. Bhal[1], N. Bhal[2,1], C. Bisseling[3,1], J. Davies[1], J. Jones[1]

[1]Urogynaecology and Vaginal surgery, University Hospital of Wales, Cardiff, Wales, United Kingdom, [2]Urogynaecology, Royal Glamorgan Hospital, Llantrisant, Wales, United Kingdom, [3]Department of Urogynaecology, Princess of Wales Hospital, Bridgend, United Kingdom

OBJECTIVES: The use of the midurethral sling (MUS) using mesh became the 'gold standard for managing SUI. Concerns relating to mesh complications resulted in a sharp decline in its use due to a combination of factors since 2016. We describe how this has impacted in continence surgery treatment in our unit.

MATERIALS AND METHODS: The British Society of Urogynaecology (BSUG) audit database was used to collect data on patients undergoing surgery for SUI between 2013 and 2019. We examined annual trends in the proportion of procedures and the outcome for each procedure.

RESULTS: There were 278 procedures performed in the time frame studied [MUS=134; Fascial slings (FS)=6; Colposuspensions (CS)=52; Peri-urethral bulking (PUB) =86]. The annual trends depicted a downward trend in the number of MUS performed each year ranging from 96% of all procedures in 2013 to 0% in 2018. The rise in PUB was noted from 2016 and peaked at 79% of all SUI procedures in 2018. CS rose gradually, peaking in 2015 (33%) and then stabilizing around a quarter of procedures for SUI. FS were the least common of the procedures performed. Subjective improvement rates were 58%, 73%, 92% and 100% for PUB, MUS, CS and FS respectively.

CONCLUSION: The data shows a paradigm shift in the type of operation performed for stress urinary incontinence over the last 6 years. The reduction and now complete cessation of mesh for SUI due to the political intervention in the UK for SUI is stark. Patients were opting for a less invasive surgical management options when mesh use had dropped despite the lower success rates. The implication of the Montgomery ruling in the UK has led to an even more active participation by patients in the shared decision process before proceeding with SUI surgery. We postulate that the media attention focused on mesh related complications have resulted in patients being more willing to accept a lower morbidity procedure and settle for lower success rates for a quality of life symptom. This paradigm shift implications in training surgeons of the future in non-mesh surgery in order to be versatile enough to offer alternatives other than mesh for SUI or consider the option of referring patients on to centers that can offer the desired/required choice of surgery.

Table 1. Outcome rates of various surgical treatments for SUI between 2013-2019

N (%)	MUT (n=134)	Colposuspension (n=52)	Fascial sling (n=6)	Periurethral Bulking (n=86)
Bladder injury	5(3.7)	1(1.9)	0	0
Bleeding >500mls	2(1.4)	5(9.6)	1(16.7)	0
Catheterization >10 days	9(7)	7(13.4)	0	3(3.5)
Wound complication	1(0.7)	6(11.5)	0	0
Readmission	4(2.9)	1(1.9)	0	1(1.2)
Return to theatre < 28 days	1(0.7)	0	0	0
Mesh exposure	2(1.4)	0	2	0
Subjective improvement rates after minimum three months of follow up (cure/improvement)	98(73.1)	48(92.3)	6(100)	50(58.1)
Failed to attend follow up	22(16.4)	3(5.7)	0	4(4.6)

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Preetkiron Bhal: Contura, To attend meetings, Travel sponsorship; Nadia Bhal: Contura, to attend meetings, Travel sponsorship; Catharina Bisseling: Nothing to disclose; Joanna Davies: Nothing to disclose; Joanne Jones: Nothing to disclose.

92 Incidence of cystotomy with and without use of a rigid catheter guide during placement of retropubic midurethral slings

J. R. Johnson[2], S. Rozycki[2], A. Ordonez[3], D. Antosh[1], T. Muir[1]

[1]Female Pelvic Medicine and Reconstructive Surgery, Houston Methodist Hospital, Houston, TX, [2]OB/GYN, Houston Methodist Hospital, Houston, TX, [3]Center for Outcomes Research, Methodist Research Institute, Houston Methodist Hospital, Houston, TX

OBJECTIVES: Mid-urethral slings (MUS) are the gold standard treatment for stress urinary incontinence. The incidence of cystotomy, a common complication of placement, with and without the use of a rigid catheter guide has not been well-studied. This study aims to determine the relationship of rigid catheter guide use during MUS placement on the incidence of cystotomy and to determine characteristics associated with and postoperative complications from incidental trocar injury.

MATERIALS AND METHODS: This retrospective study was performed at a single teaching institution and involves women who underwent placement of a transvaginal tape (TVT) retropubic MUS with and without use of a rigid catheter guide from 2016-2018. Incidence of

cystotomy was determined for both groups through review of surgeon case logs. Associations between baseline characteristics and rigid catheter guide used to place TVT were analyzed using Chi-square test or Fisher's exact test as appropriate. Age, parity, history of prior incontinence procedure and performance of concomitant pelvic organ prolapse (POP) procedure were analyzed using a multivariate logistic regression to determine effect on cystotomy incidence. Incidence of de novo overactive bladder (OAB) symptoms was determined for both groups using questions 15 and 16 on the Pelvic Floor Distress Inventory pre- and postoperatively. The primary outcome was incidence of cystotomy during sling insertion with and without use of a rigid catheter guide. Of 356 patients, 320 met inclusion criteria and had complete data. Patients had a median age of 61, median parity of 2, and a median BMI of 28. Sixty-four percent were menopausal, 49% of patients underwent TVT placement with rigid catheter guide, 40% underwent POP surgery at the time of sling insertion, and 64% reported a history of prior pelvic surgery. Approximately 41% of patients reported OAB symptoms preoperatively.

RESULTS: Regarding our primary outcome, 9% versus 17% of patients undergoing TVT placement with the use of a rigid catheter guide had a bladder perforation from trocar during placement ($p=0.037$). No other variables considered in the multivariate logistic regression model were statistically significant risk factors to bladder perforation ($p>0.05$). The percentage of de novo OAB symptoms for patients with and without incidental bladder perforation was 5% and 0.7%, respectively, approaching statistical significance ($p=0.081$). Neither postoperative UTI nor postoperative urinary retention were related to incidental cystotomy ($p=0.43$ and 0.59, respectively).

CONCLUSION: The primary outcome results support the use of rigid catheter guide to prevent cystotomy. No other variables studied increased the likelihood of incidental bladder perforation during TVT placement. It is possible that bladder trocar injury may cause de novo OAB symptoms, but larger studies are needed to further evaluate this relationship.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Justine R. Johnson: Nothing to disclose; Sarah Rozycki: Nothing to disclose; Adriana Ordonez: Nothing to disclose; Danielle Antosh: Nothing to disclose; Tristi Muir: Nothing to disclose.

93 The impact of an urogynecologic-specific enhanced recovery after surgery (ERAS) pathway implementation in open prolapse surgery

A. Teles Abrao Trad, P. Tamhane, A. Weaver, M. V. Baker, S. Visscher, D. Borah, E. Kalogera, C. Klingele, J. Gebhart, E. Trabuco
Mayo Clinic, Rochester, MN

OBJECTIVES: Assess the impact of ERAS and ERAS plus liposomal bupivacaine (Exparel) implementation on narcotic use, hospital length of stay (LOS), costs and morbidity in women undergoing abdominal sacrocolpopexy.

MATERIALS AND METHODS: We conducted a retrospective cohort study of women who underwent abdominal sacrocolpopexy at a single institution between April 2009 and November 2017. We excluded women who had prior sacrocolpopexy, mesh kit for prolapse repair, or who had concurrent pouch of Douglas repair or rectopexy. Medical records were reviewed to ascertain baseline patient characteristics, medications and doses, and 30-day morbidity. Costs for all relevant healthcare services during the initial hospitalization were captured, inflation-adjusted, and standardized using a hybrid procedure – professional services were costed using Medicare reimbursement rates, while charges for inpatient services were costed using Medicare Cost Report's cost-to-charge ratio. Outcomes were compared between periods in multivariable regression models adjusted for age, BMI, ASA score, Charlson Index, concurrent hysterectomy, and concurrent posterior repair.

RESULTS: Patients were subdivided into 3 periods: (1) 128 pre-ERAS; (2) 83 Post-ERAS; and (3) 91 post-ERAS with addition of liposomal bupivacaine. Implementation of ERAS led to a substantial decrease in PCA use, from 83.6% to 8.4% on postoperative day 0 (POD-0) and 85.8% to 12.0% on POD-1. The addition of liposomal Bupivacaine did not lead to further significant decrease in PCA use (data not shown).

Opioid use dropped significantly from 72.2% to 61.4% to 38.5% in the PACU, from 89.1% to 72.3% to 52.7% on POD-0, and from 93.8% to 89.2% to 68.1% on POD-1, between groups 1, 2 and 3, respectively. Among the patients who received opioids on POD-1, the mean dosage decreased by 18.6 morphine equivalent units between periods 1 and 3 without any significant increase in the mean pain score. The proportion of patients with a LOS >1 day decreased from 98.4% to 91.6% to 51.6%. The above changes between periods 1 vs. 3 and periods 2 vs. 3 all attained significance ($p<0.05$) in the multivariable analyses. Hospital cost was reduced by an average of $869 (95% CI $471 - $1267) between the first two periods and further by average $584 (95% CI $236 -$933) after the addition of Exparel. Readmission (6.3%) and postoperative morbidity (6.6%) remained low and did not differ between periods.

CONCLUSION: The implementation of ERAS pathway in abdominal sacrocolpopexy led to significant decrease in opioid use, length of stay and cost with no change in postoperative morbidity. The supplementation of ERAS with liposomal bupivacaine further improves these measures.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Ayssa Teles Abrao Trad: Nothing to disclose; Prajakta Tamhane: Nothing to disclose; Amy Weaver: Nothing to disclose; Mary V. Baker: Nothing to disclose; Sue Visscher: Nothing to disclose; Dr. Bijan Borah: Nothing to disclose; Eleftheria Kalogera: Nothing to disclose; Christopher Klingele: Nothing to disclose; John Gebhart: Nothing to disclose; Emanuel Trabuco: Nothing to disclose.

94 Should we abandon the use of Doppler flow as part of the evaluation of the patient with suspected ovarian torsion? A retrospective study in a large academic center

C. Ibrahim[2], D. Timmons[1], S. Fertel[1], T. Beguiristain[1], J. Morano[1], J. Carugno[1]
[1]Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL, [2]University of Miami Miller School of Medicine, Miami, FL

OBJECTIVES: Ovarian torsion remains a gynecological emergency affecting all age groups. Within the setting of suspected ovarian torsion, pelvic ultrasound is the preferred imaging modality. Ultrasound Doppler interrogation of the ovarian vessel is frequently used to confirm the diagnosis of ovarian torsion. The objective of this study is to determine the value of Doppler flow ultrasound imaging in the preoperative evaluation of the patient with clinical suspicion of ovarian torsion.

MATERIALS AND METHODS: This is a retrospective study of all patients with the diagnosis of "suspected ovarian torsion" who were taken to

the operating room (OR) for surgical management from January 1st, 2014 to December 31st, 2018 in our academic hospital. Patients with diagnosis of suspected ovarian torsion who were managed medically and not taken to the OR were excluded from the analysis.

RESULTS: A total of 60 patients met the inclusion criteria, and of those, 58 had Doppler flow imaging for the evaluation of ovarian torsion. Eight patients (13.79%) showed absent flow while 50 patients (86.20%) showed the presence of flow to the ovary. When taken to the OR, 47 had a confirmed diagnosis of ovarian torsion. The results of the use of Doppler flow were as follows: sensitivity 17%, specificity 100%, positive predicted value 100%, and negative predicted value 22%.

CONCLUSION: In our cohort, Doppler flow ultrasound is highly specific but not sensitive for detecting torsion. The use of Doppler flow ultrasound, although with great sensitivity, has an extremely low specificity for the evaluation of the patient with suspected ovarian torsion and should be interpreted with caution.

Figure 1

Doppler flow	Torsion	
	Torsed	Not Torsed
Absent Flow	8	0
Present Flow	39	11

p= 0.164
Sensitivity: 17%
Specificity: 100%
PPV: 100%
NPV: 22%

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Catrine Ibrahim: Nothing to disclose; Douglas Timmons: Nothing to disclose; Simone Fertel: Nothing to disclose; Tiffany Beguiristain: Nothing to disclose; Julieta Morano: Nothing to disclose; Jose Carugno: Nothing to disclose.

95 Efficacy and safety of thoracic epidural vs. transversus abdominis plane block (TAP) in laparotomy for gynecologic surgery

J. Panza[1], C. M. Helou[1], A. Goulder[1], S. Dumas[2], L. Sorabella[2], L. Prescott[1], R. Adam[1]
[1]OBGYN, Vanderbilt University Medical Center, Nashville, TN, [2]Anesthesia, Vanderbilt University Medical Center, Nashville, TN

OBJECTIVES: Our objective was to evaluate the efficacy and safety of thoracic epidural vs. transversus abdominis plane block (TAP) in women undergoing laparotomy for benign and malignant gynecologic indications.

MATERIALS AND METHODS: We performed a retrospective cohort study of women who underwent laparotomy by a member of the Department of Obstetrics and Gynecology for benign or malignant indications between February 1, 2018 and May 31, 2019. Patients were categorized into two groups: those who received a thoracic epidural vs. those who received a TAP block. The primary outcome was postoperative day (POD) 1 pain scores. Secondary outcomes were POD 2 and 3 pain scores, postoperative complications, and length of stay (LOS). Median and interquartile range are presented. The primary outcome was analyzed using the Wilcoxon rank sum test.

RESULTS: We identified 154 women who met inclusion criteria for the study, 59 in the epidural group and 95 in the TAP group. Patients in the epidural group were older, had higher rates of preoperative narcotic use, longer surgical time, and a higher rate of malignancy. Patients in the TAP group had a higher rate of preoperative chronic kidney disease. There was no difference in BMI, other medical comorbidities, estimated blood loss, or hysterectomy as the primary procedure. Median pain scores were significantly lower in the epidural group on POD1 (2.5 [0,4] vs. 4 [2,6], P<0.01) and POD2 (2 [0,4] v. 3 [2,5], P<0.01). There was no difference by POD3 (3 [0.5, 5] v. 4 [0, 5], P=0.68). The TAP group was more likely to have a postop lidocaine drip (N=14 (23%) v. N=40 (41%), P = 0.02). The median LOS in days was longer in the epidural group (4 [3,5] v. 2 [2,3], P<0.01) as was the rate of postoperative complications (N=42 (70%) v. N=33 (34%), P<0.01). There were 12 (20%) anesthesia-associated complications in the epidural group that resolved with a lower dose or discontinuation of the epidural. These included hypotension, nausea/vomiting, urinary retention, and inability to ambulate. There were no anesthesia complications directly related to the TAP block. There was no difference in intraoperative complications, postoperative ileus, VTE, or surgical site infection between the two groups. The was no change in the results for the primary and secondary outcomes as above when benign and malignant cases were separated and compared within group.

CONCLUSION: This data suggests that epidural anesthesia is more effective in managing immediate postoperative pain, but is associated with longer LOS and more postoperative complications in patients undergoing gynecologic surgery for any indication via laparotomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Joseph Panza: Nothing to disclose; Christine M. Helou: Nothing to disclose; Alison Goulder: Nothing to disclose; Susan Dumas: Nothing to disclose; Laura Sorabella: Nothing to disclose; Lauren Prescott: Nothing to disclose; Rony Adam: Nothing to disclose.

96 Risk factors for perioperative blood transfusion in patients undergoing hysterectomy for benign disease

D. Timmons[1], M. M. Grady[2], M. Lederer[2], A. Wong[1], F. Andrade[1], J. Carugno[1]
[1]Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL, [2]University of Miami Miller School of Medicine, Miami, FL

OBJECTIVES: Hysterectomy is one of the most common gynecologic surgical procedure performed in the USA. Perioperative blood transfusion increases morbidity and increases significantly health care cost. Identifying risk factor for perioperative blood transfusion can help to minimize risks. Our objective was to identify risk factors for perioperative blood transfusion in patients undergoing hysterectomy for benign disease.

MATERIALS AND METHODS: We completed a retrospective chart review of patients who had undergone abdominal, laparoscopic, or vaginal hysterectomy between January 2015 and December 2015. Demographic data and need for blood transfusion were obtained. The following risk factors for blood transfusion were analyzed, 1. Route of Hysterectomy 2. Patient's BMI 3. Presence of adhesions 4. History of Cesarean Section 5. Uterine weight. Descriptive statistics, chi-square and independent samples t-tests were used to analyze the data. Significance was set to $p < 0.05$.

RESULTS: A total of 517 charts were reviewed. Forty-seven patients (9.09%) received perioperative blood transfusion. Regarding the route of hysterectomy, the need for blood transfusion was as follows:

TAH: 34/263 (12.92%), TLH: 5/119 (4.2%), LAVH: 3/35 (8.57%), and VH: 5/100 (5.0%). Having abdominal hysterectomy was a significant risk factor for need to receive blood transfusion (p=0.017). The patients who needed blood transfusion had larger BMI 33.01 vs 29.5 (p=0.002), larger mean uterine weight 933.4gm vs 542.5 gm (p=0.002). There was no association between the presence of pelvic adhesions (p=0.91) nor having personal history of cesarean section (p=0.89) with the need to receive blood transfusion. Interestingly, when analyzing only the patients who underwent TLH, the presence of pelvic adhesion was found as a risk factor for perioperative blood transfusion (p=0.024).

CONCLUSION: Blood transfusion is a frequent complication in patients undergoing hysterectomy for benign disease. Having a large uterus and obesity are risk factors for the need to receive blood transfusion. The presence of pelvic adhesion was risk factor for blood transfusion only in patients undergoing a laparoscopic approach.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Douglas Timmons: Nothing to disclose; Mary M. Grady: Nothing to disclose; Madeline Lederer: Nothing to disclose; Adriana Wong: Nothing to disclose; Fausto Andrade: Nothing to disclose; Jose Carugno: Nothing to disclose.

97 Preparing for FLS: A survey of residents in obstetrics & gynecology

A. Porter, C. Y. Stephanie, T. Fuller, K. A. Kho
ObGyn, UT Southwestern, Dallas, TX

OBJECTIVES: Fundamentals of Laparoscopic Surgery (FLS) is a validated curriculum that utilizes web-based educational modules and hands-on laparoscopic skills simulation to teach the fundamentals of laparoscopic surgery to trainees and practicing surgeons. The American Board of Obstetrics and Gynecology has made certification in FLS an eligibility requirement to take the qualifying board exam for all Ob/Gyn residents graduating after May 30, 2020. Residency programs are now determining how to best prepare their trainees to successfully obtain this certification. The objective of this study is to describe the resident work-load and experience preparing to meet this new requirement.

MATERIALS AND METHODS: This prospective observational study took place between September 2018 and September 2019. Residents in Obstetrics and Gynecology were invited to participate in the study if they had completed their FLS certification exam. Of 18 PGY-2 residents, 16 met eligibility criteria and all 16 agreed to participate. Of 18 PGY-3 residents, 17 met eligibility criteria and all 17 agreed to participate. Three residents had not yet taken their exam. Participating residents completed a two-page questionnaire about their preparation for the exam, including questions about practice time and repetitions for the five skills tasks as well as time spent watching the FLS provided training videos. Residents also gave permission to report test results in aggregate.

RESULTS: Thirty-three PGY-2 and PGY-3 residents completed the survey. Participants spent an average of 6.7 (SD 3.1) hours viewing online modules over an average of 3 (SD 2.1) days (not continuous). Utilizing the simulation skills lab at our institution, residents spent an average of 2.13 (SD 2.10) hours on each task to practice to proficiency. 22/31 residents rated the ligating loop the easiest skill to master and 13/31 residents rated the precision cut the most difficult. The pass rate for the practical skill session was 100%. The pass rate for the cognitive knowledge portion was 93% (31/33 residents).

CONCLUSION: Our data suggests that residents spent upwards of 10 hours practicing to proficiency on the simulation tasks, in addition to time spent viewing the FLS-provided training videos. In our program, residents are required to complete a technical skills curriculum prior to registering for FLS which requires them to meet stricter proficiency standards for each of the FLS skills tasks. The data presented here represent their preparation for the FLS exam after completion of our institutional curriculum. This 100% pass rate for the technical skills portion may reflect this training. Residents and programs will benefit from an understanding of the time and resources required to successfully obtain FLS certification.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Anne H. Porter: Nothing to disclose; Chang Y. Stephanie: Nothing to disclose; Tobi Fuller: Nothing to disclose; Kimberly A. Kho: Nothing to disclose.

98 Perioperative morbidity in patients with class III obesity undergoing hysterectomy for benign disease

M. Lederer[2], D. Timmons[1], M. M. Grady[2], S. Yazdani[1], A. Verna[1], F. Andrade[1], J. Carugno[1]
[1]Obstetrics, Gynecology and Reproductive Sciences, University of Miami, Miami, FL, [2]University of Miami Miller School of Medicine, Miami, FL

OBJECTIVES: Obesity is a serious health problem in the United States. It is associated with increased risk of diverse morbid conditions such as hypertension and diabetes. Adverse events after gynecologic surgery are also more prevalent in obese women. Gynecologic surgeons should have the knowledge to counsel the obese patients who will undergo hysterectomy. The objective of this study was to describe the perioperative morbidity of patients with class III morbid obesity undergoing hysterectomy form benign disease.

MATERIALS AND METHODS: We completed a retrospective chart review of patients who had undergone abdominal, laparoscopic, or vaginal hysterectomy between January 2015 and December 2015. Demographic data and need for blood transfusion were obtained. Class III Morbid obesity was defined as BMI =>40 as per the World Health Organization. Descriptive statistic was used to analyze the data.

RESULTS: A total of 517 charts were reviewed. Of those 501 had the BMI recorded in the chart and were included for the analysis. A total of 31 patient (6.18%) had a BMI >=40. Regardless of the route of the hysterectomy, Class III morbid obese patients had a greater mean estimated blood loss 442ml vs 232ml (p=0.000), need to receive a perioperative blood transfusion 25.8% vs 7.0% (p=0.001), having a surgical complication 35.48% vs 17.23% (p=0.01) and having larger mean uterine weight 866.2 g vs 566.4 g (p=0.048).

CONCLUSION: Class III morbid obesity has significant worse perioperative surgical morbidity when compared to non-obese patients. Gynecology surgeons should be aware of these risks to better counsel the obese patient undergoing hysterectomy for benign disease.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Madeline Lederer: Nothing to disclose; Douglas Timmons: Nothing to disclose; Mary M. Grady: Nothing to disclose; Sheeva Yazdani: Nothing to disclose; Ayita Verna: Nothing to disclose; Fausto Andrade: Nothing to disclose; Jose Carugno: Nothing to disclose.

99 Training, education for robotic performance with simulation (TERPS): Maintenance of certification for robotic surgeons

V. Dorismond[1], B. Bui[3], D. M. Roque[2], T. V. Sanses[1]
[1]Obsterics and Gynecology, Howard University College of Medicine, Washington DC, DC, [2]Obsterics and Gynecology, University of Maryland School of Medicine, Baltimore, MD, [3]Psychiatry, University of Maryland School of Medicine, Baltimore, MD

OBJECTIVES: To compare performance in core robotic skills among low-volume (< 2 robotic cases per month) and high volume (≥ 2 robotic cases per month) da Vinci credentialed surgeons using da Vinci (dVSS) simulation training program. We hypothesized that robotic surgeons with no extended gaps between procedures will have shorter task time in core robotic skills regardless of specialty.

MATERIALS AND METHODS: This was a cross-sectional study at an urban academic center with active COEMIG designation. Robotic Surgeons (Gynecology, Urogynecology, Gynecologic Oncology, General Surgery, Cardiothoracic Surgery) were evaluated between 2016-2018. Primary outcome was the task time necessary to complete needle driving and handling exercise among low- and high-volume da Vinci credentialed surgeons. All robotically credentialed robotic surgeons were invited to evaluate their robotic surgical skills in seven core robotic skills: 1) bimanual manipulation with wristed instruments; 2) maneuver camera for optimal view; 3) manage hand position with master controller clutching; 4) use of a third instrument arm; 5) use of energy sources; 6) depth or 3-dimensional perception; 7) atraumatic handling or awareness of applied instrument force. Descriptive statistics were used. Student two-sided t-test was used to compare the means between the groups at a significant level of 0.05.

RESULTS: Ten robotic surgeons completed exercises on dVSS. Five surgeons had less than 2 robotic cases per month (low-volume surgeons) and 5 had 2 or more robotic cases per month (high-volume surgeons). The mean age was 45.1±3.0 years (range 37-54 years old), and 50% were women. The task time to complete exercises did not differ between the groups (Table 1).

CONCLUSION: While the task time between the groups did not reach statistical significance in the setting of small sample size, robotic surgeons with case load ≥ 2 per month required less time in almost all core robotic surgical skills using dVSS. This warrants further research into maintenance of robotic surgical skills among robotic surgeons.

Table 1. Time to Perform Core Robotic Skills Exercises among Robotic Surgeons

Core Robotic Skills	Time, Mean (SD) sec Robotic surgeon (case load <2/mo)	Mean (SD) sec Robotic surgeon (case load ≥2/mo)	P-value
Camera Targeting 2 (Camera control)	211.3 (120.9)	184.8 (126.9)	0.76
Ring Walk 3 (Camera control)	273.8 (104.7)	219.8 (62.9)	0.38
Energy Switching 2 (Energy control)	183.8 (45.6)	134.4 (20.6)	0.065
Energy Dissection 2 (Energy control)	198.3 (83.2)	176.4 (94.1)	0.73
Peg Board 2 (EndoWrist manipulation 1)	152.7 (75.8)	99.4 (12.1)	0.16
Matchboard 3 (EndoWrist manipulation 2)	400 (N/A)	347.2 (115.1)	N/A
Dots and Needles 1 (Basic Needle Driving)	275.8 (84.9)	246.8 (46.8)	0.53
Dots and Needles 2	263.0 (71.0)	270.2 (74.2)	0.89
Suture Sponge 3 (Advance Needle Driving)	341.8 (142.2)	297.8 (54.2)	0.54
Tubes (Needle control)	267.0 (95.3)	256.6 (36.3)	0.83

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Vanessa Dorismond: Nothing to disclose; Brendan Bui: Nothing to disclose; Dana M. Roque: Nothing to disclose; Tatiana V. Sanses: Nothing to disclose.

100 The real life outcome of percutaneous tibial nerve stimulation (PTNS) over a decade for refractory overactive bladder (OAB) symptoms

P. Bhal[1], J. Jones[1], N. Bhal[2,1], J. Davies[1], C. Bisseling[3,1]
[1]Urogynaecology and Vaginal Surgery, University Hospital of Wales, Cardiff, Wales, United Kingdom, [2]Royal Glamorgan Hospital, Llantrisant, United Kingdom, [3]Princess of Wales Hospital, Bridgend, United Kingdom

OBJECTIVES: The purpose of this review was to ascertain the outcomes in clinical practice of treatment in women undergoing PTNS for refractory OAB symptoms.

MATERIALS AND METHODS: We reviewed the departmental database of all patients undergoing PTNS since its introduction in 2010. All women had undergone urodynamics and had a diagnosis of detrusor dysfunction of either detrusor overactivity or low compliance. All patients had had conservative treatment as per the NICE guideline (UK) before embarking on treatment. PTNS was administered by our Urogynaecology nurse practitioners in an office-based setting as weekly treatments for a period of 12 weeks. Date on patient outcomes were collected prospectively from our departmental Urogynaecology database. Treatment outcomes were assessed using patient global impression scales as well as validated International Incontinence Impact questionnaires.

RESULTS: There were 97 patients in total over the ten-year period who were offered treatment following a multidisciplinary team discussion regarding its suitability. The mean age of patients in the treatment program was 57 years (range 32-89years) and the body mass index ranged from 20-50 (41/97; 42% being over 30). Most women were parous and nine percent (9/97) were nulliparous. The majority of women experienced 'wet' OAB symptoms (87/97;90%), that is leakage of urine with urinary urgency prior to treatment. More than 70% (71/97) of patients who commenced treatment had noticed an improvement in their OAB symptoms with 45 out of 97 patients 'feeling very much better' or 'much better' subjectively. 13% (13/97) dropped out of the treatment program for a variety of reason and a similar number felt their symptoms had worsened following completion of treatment.

CONCLUSION: PTNS is a valuable treatment option for intractable OAB. Improvement rates of 70% or more can be obtained with careful patient selection and the presence of a dedicated nursing team. The cost effectiveness of this treatment option longer term compared with cystoscopic Botox merits further evaluation.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Preetkiron Bhal: Nothing to disclose; Joanne Jones: Nothing to disclose; Nadia Bhal: Nothing to disclose; Joanna Davies: Nothing to disclose; Catharina Bisseling: Nothing to disclose.

101 Relationship of postoperative vaginal anatomy and sexual function

S. Kim-Fine[1], D. Antosh[3], E. Balk[2], K. V. Meriwether[4], G. Kanter[5], A. Dieter[6], R. Singh[7], M. Good[7], M. Foda[8], M. Mamik[9], D. D. Rahn[10], R. Rogers[11]
[1]Obstetrics and Gynecology, University of Calgary, Calgary, Alberta, Canada, [2]Brown University, Providence, RI, [3]Houston Methodist Hospital, Houston, TX, [4]University of Louisville, Louisville, KY, [5]Salinas Valley Medical Center, Salinas, CA, [6]University of Texas San Antonio, San Antonio, TX, [7]University of Florida Health Jacksonville, Jacksonville, FL, [8]University of Central Florida

College of Medicine, Starke, FL, [9]Albert Einstein College of Medicine, New York, NY, [10]University of Texas Southwestern, Dallas, TX, [11]University of Texas at Austin Dell Medical School, Austin, TX

OBJECTIVES: This was a planned secondary analysis of a systematic review that aimed to describe sexual function outcomes after POP surgery. We aimed to use this body of literatures to describe whether postoperative sexual function is associated transvaginal length (TVL). Data Sources: MEDLINE, Embase, and clinicaltrials.gov databases from inception to April 2018.

MATERIALS AND METHODS: We included prospective, comparative studies of pelvic organ prolapse (POP) surgeries that reported sexual function outcomes. Studies were extracted for population characteristics, sexual function outcomes, and vaginal anatomy. Data collected included baseline and postoperative sexual activity, dyspareunia, and validated sexual function questionnaire scores and TVL. Meta-regression analyses were performed on studies that reported both PISQ-12 score (higher scores indicate better sexual function) and TVL.

RESULTS: We screened 3124 abstracts and identified 4 comparative studies that reported adequate PISQ-12 and TVL data. Across studies, pre-operative PISQ-12 was found to be 3.7 (95% CI 1.9, 5.5) points higher per 1 cm greater baseline TVL (Figure 1). Final PISQ-12 was 3.2 (95% CI 0.2, 6.3) points higher per 1 cm greater final TVL, adjusted for surgery (Figure 2). However, changes in PISQ-12 were not associated with changes in TVL (-0.1; 95% CI -1.7, 1.5).

CONCLUSION: Better sexual function scores on a validated, condition-specific questionnaires were found to be associated with increased TVL, both pre-operatively and post-operatively. However, changes in TVL related to surgery were not found to be associated with changes in PISQ-12.

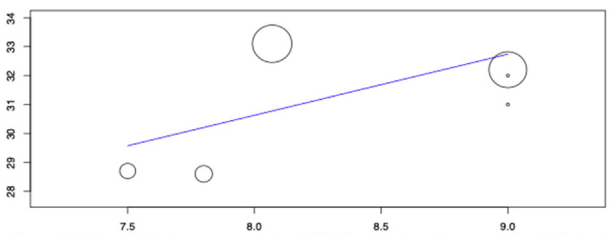


Figure 1.Relationship between pre-operative PISQ-12 on Y-axis with pre-operative TVL (cm) on X-axis.

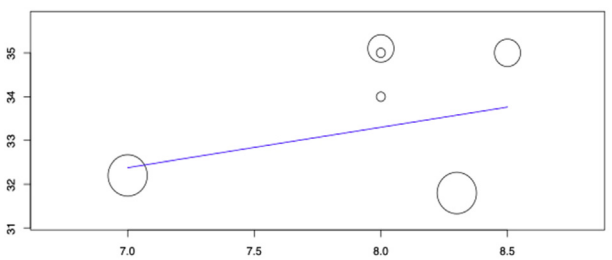


Figure 2. Relationship between post-operative PISQ-12 on Y-axis with post-operative TVL (cm) on X-axis, not adjusted for surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shunaha Kim-Fine: Nothing to disclose; Danielle Antosh: Nothing to disclose; Ethan Balk: Nothing to disclose; Kate V. Meriwether: Elsevier, author, royalties; Gregg Kanter: Nothing to disclose; Alexis Dieter: Nothing to disclose; Ruchira Singh: Nothing to disclose; Meadow Good: Nothing to disclose; Mohamed Foda: Nothing to disclose; Mamta Mamik: Nothing to disclose; David D. Rahn: Pfizer, Investigator, Research Support; Rebecca Rogers: Uptodate, Author, Royalties.

102 Withdrawn

103 Treatment of placenta accreta spectrum (PAS) utilizing a standardized multidisciplinary approach: The Obstetrics-Trauma Team

E. Myers[1], A. Rosenthal[2], D. Pigneri[2], S. Samuels[3], L. Rivera[1], J. Kang[1]

[1]Division of Obstetrics and Gynecology, Memorial Healthcare System, Hollywood, FL, [2]Division of Trauma Surgery, Memorial Healthcare System, Hollywood, FL, [3]Office of Human Research, Memorial Healthcare System, Hollywood, FL

OBJECTIVES: To describe the impact of implementing an obstetrics-trauma multidisciplinary surgical team on Placenta Accreta Syndrome (PAS) outcomes among patients seen at a high-risk Maternal Care Facility and Level I Trauma Center within a safety net community hospital in Florida.

MATERIALS AND METHODS: A retrospective chart review of patients, between the ages of 22 and 43 years old, with a confirmed diagnosis of PAS who were seen between the years 2013 and 2019 was conducted. Blood transfusion, hospital readmission within 6 weeks, maternal and fetal survival, estimated blood loss and common risk factors were examined pre- and post-implementation.

RESULTS: Twenty-one patients were included in this study; ten in the pre-period and eleven in the post-period. The average maternal age at birth was 32 and 35 years old in the pre and post period, respectively. All patients in the pre-period had a history of cesarean section (CS) compared to 82% in the post-period. The average number of prior CS was similar between the two periods (mean=2). When examining outcome measures, results showed that after implementation of the multidisciplinary team approach, a reduction in the proportion of blood transfusions were observed (63.6% vs. 77.8%; p=0.64). There was also a reduction in estimated blood loss (-2212.7; p=0.14). In terms of survival, maternal survival increased from 90% in the pre-period to 100% in the post-period (p=0.48), and fetal survival remained at 100%.

CONCLUSION: PAS-related critical illness shares several similarities to the care of trauma patients. In the setting of a community hospital where Gynecologic Oncology or surgically trained Maternal Fetal Medicine physicians are not available, Trauma surgeons involvement can be vital in reducing morbidity and mortality in a team setting. Results of our study suggest the benefit of a multidisciplinary surgical team in a PAS program. Incorporation of the multidisciplinary team may prove beneficial for centers dedicated to caring for these high risk deliveries in a community setting; however, further research is warranted.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Erin Myers: Nothing to disclose; Andrew Rosenthal: Nothing to disclose; Danielle Pigneri: Nothing to disclose; Shenae Samuels:

Nothing to disclose; Lillian Rivera: Nothing to disclose; Julie Kang: Nothing to disclose.

104 Systematic review and meta-analysis of commercially-available at-home pelvic floor training devices that provide biofeedback for treatment of urinary incontinence

J. F. Pennycuff, C. Wu, C. Iglesia
Georgetown University School of Medicine, Washington, DC

OBJECTIVES: To assess the effectiveness of commercially-available at home pelvic training devices that provide biofeedback on the treatment of urinary incontinence (UI).

MATERIALS AND METHODS: A prospective protocol was prepared in advanced. A systematic literature review was performed using keywords to identify all published studies on commercially-available at home pelvic floor training devices with primary outcome measures for urinary incontinence. The search was performed in accordance with the Preferred Reporting Items for Systematic Review and Meta-analysis statement. Data were analyzed using Comprehensive Meta-Analysis 3.0.

RESULTS: We conducted a literature search from 1975 to 8/2019. Data were available for a total of 691 women in 10 studies with a mean follow-up of 14.6 weeks. Meta-analysis for objective and subjective measures of UI showed a standard difference of means of 0.648 (95% CI 0.529, 0.767), $p < 0.0001$. Seven of the studies included data on pelvic floor strength. Meta-analysis for objective measures of pelvic floor strength showed a standard difference of means of 0.954 (95% CI 0.802, 1.107), $p < 0.0001$).

CONCLUSION: This meta-analysis indicates that at home pelvic floor trainers with biofeedback are effective for treating urinary incontinence and strengthening the pelvic floor. Limitations of this meta-analysis include relatively small number of patients, heterogeneity of studies and reported outcomes, publication bias, and low quality of evidence.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jon F. Pennycuff: Nothing to disclose; Caroline Wu: Nothing to disclose; Cheryl Iglesia: Nothing to disclose.

105 Retrospective assessment of the incremental disease burden of urinary incontinence

S. Pulliam[1,2], M. Datar[3], T. Goss[3], L. Pan[3], J. M. Wu[4]
[1]Obstetrics and Gynecology, Tufts University, Boston, MA, [2]Renovia, Inc., Boston, MA, [3]Boston Healthcare Associates, Boston, MA, [4]Obstetrics and Gynecology, University of North Carolina at Chapel Hill, Chapel Hill, NC

OBJECTIVES: To assess healthcare resource utilization and costs in patients diagnosed with stress or mixed urinary incontinence (SUI/MUI) compared to a matched cohort of patients without SUI/MUI.

MATERIALS AND METHODS: We conducted a matched cohort study of women using IBM Watson's MarketScan database. Women diagnosed with SUI/MUI between July 1, 2014 and June 30, 2016 were identified using the specific International Classification of Diseases (ICD) 9 and 10 codes for SUI or MUI, respectively; the first date of SUI/MUI diagnosis was identified as the index date. Pregnant women, those under 18 years of age, and those with less than 80% enrollment during the study period were excluded from the study. The SUI/MUI cohort was matched with a control cohort of women without SUI/MUI and other similar urinary conditions on age (±2 years) and Charlson's Comorbidity Index (CCI) (exact match) in a ratio of 1:1. The index date for the SUI/MUI patients was attributed to each corresponding matched control. Healthcare resource utilization and costs incurred by payers during the two-year period following the index date were compared in the matched cohorts using t-tests and chi-squared tests.

RESULTS: A total of 68,636 women with SUI/MUI were compared to an equal number of matched controls. A significantly higher proportion of patients in the SUI/MUI cohort had ≥1 inpatient visits in the two-year post-index period compared to the control group (18.9% vs. 12.1%; $p<0.0001$). Mean number of inpatient visits per patient were significantly higher in the SUI/MUI cohort compared to the control group (0.28 vs. 0.18; $p<0.0001$). Similarly, a significantly higher proportion of patients in the SUI/MUI cohort had ≥1 outpatient hospital visits in the two-year post-index period compared to the control group (88.4% vs. 73.2%; $p<0.0001$). Mean number outpatient visits per patient were significantly higher in the SUI/MUI cohort compared to the control group (7.8 vs. 4.8; $p<0.0001$). Mean primary care visits were significantly higher in the SUI/MUI cohort compared to the control group (7.3 vs. 5.5; $p<0.0001$) as were specialist visits (1.2 vs. 0.1; $p<0.0001$). Patients in the SUI/MUI cohort also had a significantly greater number of claims for pelvic floor muscle training compared to controls (0.14 vs. 0.07; $p<0.0001$). Mean outpatient costs were significantly higher in the SUI/MUI cohort compared to the control group ($7,032 vs. $3,349; $p<0.0001$), as were inpatient costs ($3,991vs. $2,314; $p<0.0001$).

CONCLUSION: Women with SUI/MUI consume significantly higher medical resources and incur significantly higher costs to payers, compared to women without SUI/MUI. Future research should focus on evaluating adherence to guideline-based care in diagnosing and managing these patients, to improve treatment effectiveness and reduce costs.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Samantha Pulliam: Renovia, Inc., Chief Medical Officer, Employer; Manasi Datar: Boston Healthcare Associates, Employee, Salary; Thomas F. Goss: Boston Healthcare Associates, Employee, Salary; Li-Chen Pan: Boston Healthcare Associates, Employee, Salary; Jennifer M. Wu: Nothing to disclose.

106 Pelvic floor symptoms following onabotulinumtoxinA trigger point injections for myofascial pelvic pain: Analysis of secondary outcomes

V. Demtchouk[1,2,3], E. A. Elkadry[1,2,3], A. Pettiette Erlinger[2,3]
[1]Boston Urogynecology Associates, Mount Auburn Hospital, Cambridge, MA, [2]Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Boston, MA, [3]Department of Obstetrics, Gynecology and Reproductive Biology, Harvard Medical School, Boston, MA

OBJECTIVES: Myofascial pelvic pain is a complex condition that is often associated with other pelvic floor symptoms. While pelvic floor physical therapy is considered first line therapy, pelvic floor injection of onabotulinumtoxinA is usually reserved for refractory myofascial pain. We set out to determine the effect of onabotulinumtoxinA point injections on pelvic floor symptoms compared to placebo.

MATERIALS AND METHODS: A double-blind, randomized, placebo-controlled trial in women with myofascial pelvic pain was conducted at a single institution. Participants were randomly allocated to a pelvic floor injection of 200 units of onabotulinumtoxinA or 20 mL of saline. All participants started 8 weeks of pelvic floor physical therapy at 4 weeks. Participants followed up at 2, 4, and 12 weeks

after injection for assessment of pain. In addition to validated questionnaires, data was collected on presence of specific pelvic floor symptoms, including constipation, pain with defecation, dyspareunia, and dysmenorrhea. At each follow up, subjects indicated whether each symptom was present, and designated it as new, better, same or worse compared to the previous visit. Among subjects who were symptomatic at baseline, symptoms categorized as none or better were considered improved, whereas symptoms categorized as unchanged or worse were considered not improved.

RESULTS: Sixty women were enrolled and randomized. One participant in the placebo group was lost to follow-up. Of the 59 subjects, 39 (66%) reported constipation, 28 (48%) reported pain with defecation, 35 (59%) reported dyspareunia, and 21 (36%) reported dysmenorrhea at baseline. Among subjects with constipation, 27% of intervention and 34% of control group reported improvement at 12 weeks. Among subjects with pain with defecation, 23% of intervention and 28% of control group reported improvement. Among subjects with dyspareunia, 27% of intervention and 17% of control group reported improvement. Lastly, among subjects with dysmenorrhea, 13% of intervention and 10% of control group reported improvement at 12 weeks.

CONCLUSION: In our study, participants who received onobotulinumA experienced overall similar responses as placebo in specific pain symptoms from baseline to 12 weeks. There may be a trend toward improvement in dyspareunia but the number of subjects was too small. Pelvic floor physical therapy, which is considered to be first line therapy for myofascial pain, may help regardless of intervention. Our findings suggest that onabotulinumtoxinA should be reserved for women with myofascial pain with symptoms that have not previously responded to physical therapy. Future studies should evaluate other factors such as duration of pain, comorbidities and other pain conditions as factors in response to therapy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Veronica Demtchouk: Nothing to disclose; Eman A. Elkadry: Allergan, Principal investigator, Investigator initiated research grant; Adrienne Pettiette Erlinger: Nothing to disclose.

01 Maintaining and reclaiming hemostasis in laparoscopic surgery

C. E. Foley, T. T. Lee
Minimally Invasive Gynecologic Surgery, Magee-Womens Hospital of UPMC, Pittsburgh, PA

OBJECTIVE: The objectives of this video are to describe common anatomic and pathologic challenges for achieving hemostasis, to outline the strategies for laparoscopic dissection to prevent bleeding and to deconstruct the process of regaining hemostasis when brisk bleeding occurs.

DESCRIPTION: In this video the relationship between dissection and hemostasis is explored. The authors outline concrete strategies to achieve hemostasis including principles of sharp and blunt dissection, hemostasis vigilance and how to respond to active bleeding. Throughout the video the authors emphasize how to optimize surgical technique, exposure, and anatomy to maintain safety. By following the principles suggested in this video, surgeons can confidently use energy to dissect and coagulate, bluntly dissect to create space and regain hemostasis when vessels bleed.

CONCLUSION: Hemostasis and dissection are both critical for safe, precise surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Christine E. Foley: Nothing to disclose; Ted T. Lee: Nothing to disclose.

02 The surgical approach to the obliterated anterior cul-de-sac

C. Arora, J. Kim, A. P. Advincula
Obstetrics and Gynecology, Columbia University, New York, NY

OBJECTIVE: To illustrate surgical techniques in the restoration of normal anatomy in an obliterated anterior cul-de-sac (OAC).

DESCRIPTION: We present a surgical video of a case of patient with severe abdominal discomfort due to an OAC. OAC's are defined by the complete loss of the vesico-uterine avascular space due to dense adhesive disease-causing distortion of normal anatomy. Common causes include a history of pelvic surgery, most often cesarean sections or inflammatory conditions such as endometriosis. The ability to manage OAC's are crucial in the safe completion of a minimally-invasive hysterectomy. They pose significant surgical challenges due to ranging levels of severity and involvement of vital structures. As a result there can be an increase in surgical time and complications, particularly with less-experienced surgeons. We review seven key steps for the successful restoration of normal anatomy in the setting of an OAC.

1. Lyse filmy adhesions first
2. Release adnexa and round ligament
3. Develop posterior broad ligament
4. Isolate, secure and tunnel over uterine artery
5. Repeat on contralateral side
6. Drop abdominal wall attachment
7. Connect both sides of the tunnel.

CONCLUSION: Awareness of these key nuanced surgical concepts will facilitate successful restoration of normal anatomy in the setting of an OAC.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Chetna Arora: Medtronic, fellow research, research grant; Applied Medical, fellow research, research grant; CooperSurgical, fellow research, research grant; Karl Storz, fellow research, research grant; Jin Hee Kim: AbbVie, consulting, consulting fee; Arnold P. Advincula: Intuitive Surgical, consulting, consulting fee; ConMed, consulting and surgeon advisory board, surgeon advisory board and consulting fee; AbbVie, consulting, consulting fee; Applied Medical, consulting, consulting fee; CooperSurgical, consulting, royalties, consulting fee, royalties; Titan Medical, surgeon advisory board, surgeon advisory board.

03 Safety and efficiency in the laparoscopic hysterectomy: Techniques to optimize the surgical approach

J. Lauer, A. Advincula, J. J. Kim
Obstetrics and Gynecology, Columbia University, New York City, NY

OBJECTIVE: To demonstrate techniques which enable the gynecologic surgeon to improve both the efficiency and safety of a laparoscopic hysterectomy.

DESCRIPTION: This video highlights techniques which can be used during the steps of a laparoscopic hysterectomy to ensure safety and improve efficiency of the procedure.

CONCLUSION: The laparoscopic hysterectomy can be improved by using techniques aimed at preventing complications and improving efficiency.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jacob Lauer: Nothing to disclose; Arnold Advincula: AbbVie, Consultant, honorarium; Con Med, surgeon advisory board and consultant, honorarium; Cooper surgical , surgical consultant, consulting fees; Titan Medical, surgeon advisory board, honorarium; Intuitive, consulting, consulting fees; Jin Hee J. Kim: AbbVie, consultant, consulting fees; Intuitive surgical, consulting fees, consulting fees.

04 A novel method of vaginal extraperitoneal colpopexy by sacrospinous ligament fixation using biologic grafts in the post mesh era

S. Shenoy, J. N. Sosa-Stanley, T. Fan, V. Lucente
OBGYN, St. Lukes University Hospital Network, Allentown, PA

OBJECTIVE: Biologic Grafts are alternative to Mesh in vaginal extraperitoneal colpopexy procedures given the FDA removal of Mesh products. Our video describes a novel method in which a biological graft is used for vaginal prolapse procedures.

DESCRIPTION: Step 1: Distension of Vesicovaginal space with local anesthetic, dissection of vaginal wall through all histological levels of the vagina to reach vesicovaginal space, extending dissection to urethral vaginal junction anteriorly and to the cervix posteriorly.

Step 2: Continue dissection of bladder away from vagina laterally with tenotomy or Metzenbaum scissors, enter the paravaginal space behind the vaginal wall, through the facial endopelvina, using blunt dissection to access sacrospinous ligament and coccygeous muscle complex through endopelvina connective tissue bilaterally.

Step 3: Place vaginal fixation sutures to posterior of vagina at the level of the UVJ. Keep needle and suture in place and clamp with hemostat without tying.

Step 4: Using Anchosure device, deploy anchor within the lower 1/3 and medial 1/3 of the sacrospinous ligament with Prolene suture. Confirm proper placement with palpation.

Step 5: Cut out biologic graft to specific dimensions.

Step 6: Using Mayo needle, attach one end of sacrospinous ligament fixation sutures through the biologic graft. Attach other end of sacrospinous ligament fixation suture through biologic graft while fixating suture through cervical stroma.

Step 7: Push arms of Biologic Graft down to the level of the sacrospinous ligaments along with the Prolene sutures, Tie each side of suspension sutures carefully to avoid unwanted lateral movements of the suspension. Finally close remainder of vaginal incision.

CONCLUSION: The procedure is minimally invasive, requires no mesh implants, and provides an alternative to vaginal extraperitoneal prolapse procedures previously utilizing mesh.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sachin Shenoy: Nothing to disclose; Jessica N. Sosa-Stanley: Nothing to disclose; Tiffany Fan: Nothing to disclose; Vincent Lucente: Advanced Tactile Imaging, Research, Grants/Research Support; Allergan, Speaker, Honorarium.

05 Retroperitoneal anatomy and parametrial dissection in robotic uterine-artery sparing radical trachelectomy

R. Delara, J. F. Magrina, P. Magtibay
Gynecology, Mayo Clinic, Phoenix, AZ

OBJECTIVE: To review retroperitoneal and parametrial anatomy, demonstrate surgical techniques for retroperitoneal and parametrial dissection, and describe obstetric outcomes of uterine artery-sparing radical trachelectomy.

DESCRIPTION: A 29-year old with stage 1B1 adenosquamous carcinoma of the cervix underwent uterine artery-sparing robotic-assisted radical trachelectomy, upper vaginectomy, excision of bilateral pelvic sentinel lymph nodes, excision of left internal iliac node, and cerclage placement. The parametrial dissection was performed with robotic assistance, while the colpotomy, trachelectomy, and cerclage were performed transvaginally to minimize contamination to the peritoneal cavity.

CONCLUSION: Minimally-invasive trachelectomy has benefits of decreased blood loss and less recovery time, and attempts to spare the uterine artery should be considered in patients desiring fertility preservation.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Ritchie Mae Delara: Nothing to disclose; Javier F. Magrina: Nothing to disclose; Paul Magtibay: Nothing to disclose.

06 A four step strategy for robot-assisted abdominal cerclage placement prior to pregnancy

A. Heiden[1], P. Katebi Kashi[1,3], G. S. Rose[1], K. L. Dengler[1,2]
[1]OBGYN, Inova Fairfax Medical Center, Falls Church, VA, [2]OBGYN, Walter Reed National Military Medical Center, Bethesda, MD, [3]MedStar Georgetown University Hospital- Washington Hospital Center, Washington, DC

OBJECTIVE: This video demonstrates a four step strategy for robot-assisted (RA) abdominal cerclage placement prior to pregnancy.

DESCRIPTION: Cerclages are used to treat cervical insufficiency that can affect 1% of all pregnancies. In women who failed transvaginal cerclage, or have anatomic variants, abdominal cerclage is recommended. This case demonstrates a four step strategy to place a RA abdominal cerclage in a 38yo G4P0220 who had a prior failed transvaginal cerclage and a history of two second trimester losses.

Step one: Create the bladder flap. Careful attention must be paid during dissection to avoid lateral extension into the uterine arteries.

Step two: Identify pertinent anatomy. This includes the uterosacral ligaments, uterine arteries, and the lateral edges of the cervical stroma at the level of the internal os; thus allowing correct placement of the cerclage.

Step three: Place the cerclage. Depending on surgeon preference, the cerclage knot can be tied anteriorly or posteriorly.

Step four: Perform confirmatory hysteroscopy. This allows for intraoperative evaluation confirming appropriate placement, ensuring cervical patency, and permitting intraoperative correction.

CONCLUSION: Abdominal cerclages significantly improve pregnancy and neonatal outcomes in women who have previously failed transvaginal cerclage. This patient did well postoperatively without increased blood loss or operative time. RA abdominal cerclage placement allows a minimally invasive approach with enhanced dexterity and better visualization for the surgeon over conventional laparoscopy, as well as, decreased pain and shorter recovery time over laparotomy. RA abdominal cerclage is a safe, viable alternative to traditional abdominal cerclage placed with laparotomy. This video demonstrates placement of a history indicated RA abdominal cerclage utilizing a simple four step strategy to ensure successful, correct, easy placement.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Allison Heiden: Nothing to disclose; Payam Katebi Kashi: Nothing to disclose; G. S. Rose: Nothing to disclose; Katherine L. Dengler: Nothing to disclose.

07 A minimally-invasive modification for fascia lata mid-urethral sling

K. A. Gerjevic, P. Hanissian, J. Shaw
Division of Female Pelvic Medicine and Reconstructive Surgery, Dartmouth-Hitchcock Medical Center, Lebanon, NH

OBJECTIVE: The aim of this video is to demonstrate modifications which permit an autologous fascial sling to be performed in a minimally-invasive way.

DESCRIPTION: Both the Crawford and Masson fascial strippers are demonstrated on a cadaver. A 4cm transverse incision on the lateral aspect of the thigh approximately 6cm superior to the lateral femoral epicondyle is made. The stripper is advanced for fascial harvest. The "sling on a string" is prepared with a 2-0 monofilament suture transfixed at each end. A tie is placed around the suture insertion points to bind the fascia and provide greater tensile strength. A 1cm midline suprapubic incision is made in preparation for a single trocar exit site. Bilateral tunnels are created extending from the mid-urethra to the inferior aspect of the pubic symphysis in the usual fashion. The monofilament suture leader is then placed in a groove on the retropubic sling trocar. The trocar is advanced through the vaginal incision, aiming initially for the ipsilateral shoulder. Once the tip reaches the abdominal fascia, but before it pierces it, the trocar is directed medially to allow exit via the 1cm midline suprapubic incision. The sling is placed flat under the mid-urethra. A clamp resting between the mid-urethra and graft ensures the desired degree of tension. The sutures are tied suprapubically to each other across the midline over the fascia while the desired loose placement is maintained at the mid-urethra.

CONCLUSION: These are techniques which preserve both function of the leg and maintain high patient satisfaction. Loose placement of "sling on a string" at the mid-urethra likely lowers risk of voiding

dysfunction and urinary retention compared to urethrovesical junction under tension. This minimally-invasive technique is appropriate to consider as a primary sling for patients seeking to avoid mesh.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kristen A. Gerjevic: Nothing to disclose; Paul Hanissian: Nothing to disclose; Jonathan Shaw: Nothing to disclose.

08 Circumferential urethral diverticulum: A surgical conundrum

S. Mehta, C. H. Suh, O. Harmanli
Obstetrics and Gynecology, Yale University School of Medicine, New Haven, CT

OBJECTIVE: Our primary aim is to present safe and successful surgical management of a circumferential urethral diverticulum, a technically challenging surgery. Additionally, we will briefly review background, theoretical pathogenesis, and evaluation of a urethral diverticulum.

DESCRIPTION: A urethral diverticulum is rare, benign epithelium-lined outpouching of the female urethra that affects about 5% of women. A circumferential diverticulum is a rare, complex form of an already uncommon condition. We present a 69-year-old woman with a history of stage 3C high grade serous ovarian cancer on maintenance chemotherapy who initially presented with 3-week history of severe dysuria and suprapubic pain. She reported 25 minutes of severe post void pain. A T2 weighted pelvic MRI showed a circumferential diverticulum extending over the dorsal midurethra without evidence of urethral communication. Non-surgical management with bladder instillations was ineffective. She ultimately underwent surgical excision of this complex circumferential diverticulum. The diverticulum was identified, incised, and excised in segments. To achieve optimal excision, we dissected dorsal to the urethral meatus into the retropubic area. Finally, a communicating tract from the ventral loculation of the diverticulum to the urethra was identified. The excess diverticulum tissue was excised, the communication was obliterated, and the urethra was repaired with 2 layers and reinforced with a spared fibromuscular flap. The fluid tight seal was confirmed by backfilling the bladder with methylene blue solution and cystourethroscopy. The patient's dysuria and suprapubic pain resolved postoperatively.

CONCLUSION: This video highlights the steps required to successfully excise a complex circumferential diverticulum that extends over the dorsal midurethra and has a communicating channel with the urethra.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shailja Mehta: Nothing to disclose; Christina H. Suh: Nothing to disclose; Oz Harmanli: Nothing to disclose.

09 Considerations for the surgical management of diaphragmatic endometriosis

M. Luna Russo[1], M. Dassel[1], D. Raymond[2], E. Richards[3], T. Falcone[3], C. King[1]
[1]Obstetrics and Gynecology, Minimally Invasive Gynecologic Surgery, Cleveland Clinic, Cleveland, OH, [2]Thoracic and Cardiovascular Surgery, Cleveland Clinic, Cleveland, OH, [3]Obstetrics and Gynecology, Reproductive Endocrinology & Infertility, Cleveland Clinic, Cleveland, OH

OBJECTIVE: The goal of this video is to highlight the relevant anatomy for the surgical management of diaphragmatic endometriosis as well as tips and tricks that may be helpful for surgeons to implement during these procedures.

DESCRIPTION: The exact prevalence of diaphragmatic endometriosis is unknown. Most cases of diaphragmatic endometriosis are asymptomatic while others can present with cyclic or non-cyclic shoulder pain, upper quadrant pain, chest pain, catamenial pneumothorax and catamenial hemoptysis. When patients present with debilitating symptoms, surgical management of the lesions has shown to provide relief. A multidisciplinary approach is vital to successful and safe management of these patients. The gynecologic surgeon responsible for the care of these patients must be familiar with liver, diaphragmatic, and thoracic anatomy. Prior experience in these types of cases is also key. Thoracic surgery, anesthesia, and radiology should be included in the preoperative phases in the event they are needed intraoperatively. Preoperative MRI should be used to map suspicious lesions, allowing for proper planning. Use of intraoperative imagining and frozen sections can be helpful for complete resection and prevention of recurrence.

CONCLUSION: Surgical management of diaphragmatic endometriosis is complex. A multidisciplinary team approach is vital. The surgeon performing these cases should be familiar with upper abdominal and thoracic anatomy to safely care for the patient. Prior experience with these cases is crucial to optimize patient outcomes.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Miguel Luna Russo: Nothing to disclose; Mark Dassel: Nothing to disclose; Daniel Raymond: Nothing to disclose; Elliott Richards: Nothing to disclose; Tommaso Falcone: Nothing to disclose; Cara King: Nothing to disclose.

10 Complete pelvic peritonectomy

M. Misal, R. Delara, M. Wasson
Department of Gynecologic Surgery, Mayo Clinic Arizona, Phoenix, AZ

OBJECTIVE: Evidence regarding the role of excision of endometriosis is limited. In our experience, complete pelvic peritonectomy appears to improve endometriosis-related symptoms. The objectives of this video are to review indications for pelvic peritonectomy, discuss preoperative set up, and demonstrate our technique of complete pelvic peritonectomy.

DESCRIPTION: When approaching complete pelvic peritonectomy, it is important to consider surgical optimization. If hysterectomy is planned, we suggest performing peritonectomy prior to hysterectomy, because the uterus provides excellent countertraction during the procedure. Use of a uterine manipulator or temporary uteropexy as well as oophoropexy assists in visualization of the posterior cul-de-sac and ovarian fossae. The key to safe sidewall dissection is identification of the ureter and vasculature. Peritonectomy is accomplished with judicious use of electrosurgery and adequate traction of the tissue, combined with gentle push movements. When delineating the path of the ureter, both instruments are used to gently stretch the tissue parallel to the ureter. The posterior cul-de-sac dissection is approached laterally to enter the rectovaginal space. The rectum is identified visually by its characteristic longitudinal fibers. Endometriosis may distort anatomy and the rectum may be pulled much higher than anticipated. In cases where there is obliterative disease in the posterior cul de sac, an assistant can insert an EEA sizer into the rectum. When minimal endometriosis is present, blunt dissection can be more successful than electrosurgery.

CONCLUSION: Laparoscopic peritonectomy can be used to assist with diagnosis and management of pelvic pain. It can be safely performed with adequate knowledge of anatomy and basic surgical principles.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Meenal Misal: Nothing to disclose; Ritchie Mae Delara: Nothing to disclose; Megan Wasson: Nothing to disclose.

11 Fundamentals of laparoscopic surgery (FLS) manual skills exam: Tips and tricks

Y. B. Chen[1], A. Chen[2], T. T. Pham[1]
[1]Female Pelvic Medicine and Reconstructive Surgery, Departments of Obstetrics/Gynecology and Urology, Loyola University Medical Center, Maywood, IL, [2]Loyola University Chicago Stritch School of Medicine, Maywood, IL

OBJECTIVE: We review the five technical tasks that comprise the Fundamentals of Laparoscopic Surgery (FLS) manual skills exam, and we provide examinees with our "tips and tricks" for a successful testing experience.

DESCRIPTION: FLS provides training and education for residents, fellows, and physicians in the knowledge and surgical skills in laparoscopic surgery. In addition to providing education, FLS offers a two-part examination: a multiple-choice written component and a manual skills test to assess a candidate's knowledge and technical performance in basic laparoscopy. In 2018, the American Board of Obstetrics and Gynecology (ABOG) announced that OBGYN residents graduating after May 31, 2020 would be required to pass this exam in order to achieve board certification. In implementing this requirement, ABOG aims to promote the standardization of laparoscopic training and knowledge for all OBGYN residents, while adding objective measures to assess surgical competency for board certification. The five technical tasks on the manual skills test are 1) peg transfer, 2) precision cutting, 3) ligating loop, 4) suturing with extracorporeal knot tying, and 5) suturing with intracorporeal knot tying. In this video we present our tips and tricks on how to approach each of these tasks.

CONCLUSION: Our tips and tricks, along with sufficient practice, can improve an examinee's laparoscopic efficiency and promote a successful test taking experience.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Yufan B. Chen: Nothing to disclose; Andy Chen: Nothing to disclose; Thythy T. Pham: Nothing to disclose.

12 Outside-in: Intraperitoneal anterior and posterior plication during prolapse surgery

A. DiCarlo-Meacham[1], K. L. Dengler[1], N. Horbach[2], J. Welgoss[2], W. Von Pechmann[2], D. D. Gruber[1]
[1]Walter Reed National Military Medical Center, Bethesda, MD, [2]INOVA Fairfax, Falls Church, VA

OBJECTIVE: This video presents a novel technique and approach combining the benefits of anterior and posterior colporrhaphy with laparoscopic sacrocolpopexy.

DESCRIPTION: Sacrocolpopexy is used to treat women with advanced stage three or stage four prolapse. These patients often have significant vaginal laxity, which can make reconstruction challenging. In women with severe vaginal wall laxity, a series of plication stitches placed on either the anterior or posterior vaginal wall using delayed absorbable suture can reduce redundancy and reinforce the repair. Following intraperitoneal vaginal wall plication, the mesh covers a higher percentage of the vaginal wall, leaving less unsupported vagina at risk for recurrent prolapse. Plication also adds bulk to the vagina where a large portion of mesh will be attached, which may decrease the risk of mesh exposure. Sutures can be placed either horizontally or vertically, depending on the patient's anatomy. Vertical plication adds traction to a distensible proximal vagina which allows the surgeon to reach the trigone anteriorly or the rectovaginal septum posteriorly. If placement falls short of these landmarks, patients may be at higher risk for prolapse recurrence. The same technique can be performed vaginally with vaginal assisted laparoscopic sacrocolpopexy (VALS) prior to vaginal mesh attachment. Since the vaginal muscularis is not compromised, there is scant blood loss and minimal time added to the procedure.

CONCLUSION: Intraperitoneal vaginal wall plication is the outside-in version of anterior and posterior colporrhaphy. The technique can optimize dissection and mesh placement and provide support for attenuated vaginal walls. It also balances the ratio of mesh to vaginal tissue without increasing mesh burden. This novel technique is another tool that surgeons can use to provide the best outcomes for their patients.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Angela DiCarlo-Meacham: Nothing to disclose; Katherine L. Dengler: Nothing to disclose; Nicolette Horbach: Ethicon/Johnson and Johnson, consultant, consulting fee; Jeffrey Welgoss: Coloplast, consultant, consulting fee; Walter Von Pechmann: Coloplast, consultant, consulting fee; Daniel D. Gruber: Nothing to disclose.

13 The art of peritoneal closure during sacrocolpopexy

A. M. Artsen, A. Stork, H. Zyczynski
Obstetrics and Gynecology, University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVE: To demonstrate an efficient surgical technique for peritoneal closure at the time of laparoscopic sacrocolpopexy.

DESCRIPTION: Laparoscopic sacrocolpopexy is a common surgical treatment for pelvic organ prolapse. Closure of the peritoneum over the mesh has historically been recommended by both expert surgeons and mesh manufacturers to decrease the risk of bowel obstruction, adhesion formation, and mesh erosion. Case reports of these complications have been published in the urogynecology and general surgery literature. However, controversy remains as the benefits of re-peritonealization have been difficult to demonstrate, even in studies of up to 400 patients. In addition, many surgeons find this step time-consuming and difficult to perform as the peritoneum is delicate and tears can result in gaps over the mesh or bowel obstruction. In light of the seriousness of bowel obstruction or mesh erosion and the litigious environment in which most gynecologists practice, many surgeons continue to perform peritoneal closure in the absence of further safety data. We present a video demonstrating one surgeon's technique for efficient peritoneal closure at the time of laparoscopic sacrocolpopexy. Key steps include retraction of the sigmoid epiploica using a stitch pulled through the anterior abdominal wall, creation of a retroperitoneal tunnel from the sacral peritoneal window to the rectovaginal dissection, and use of a monofilament suture for the remaining re-peritonealization.

CONCLUSION: With the appropriate techniques, peritoneal closures over mesh at the time of laparoscopic sacrocolpopexy can be performed with relative ease and efficiency.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Amanda M. Artsen: Nothing to disclose; Abby Stork: Nothing to disclose; Halina Zyczynski: Nothing to disclose.

14 Vaginal surgery: Don't get bent out of shape

K. Woodburn[1], R. Kho[2]
[1]National Center for Advanced Pelvic Surgery, MedStar Health, Washington, DC, [2]Women's Health Institute, Cleveland Clinic, Cleveland, OH

OBJECTIVE: The purpose of this video is to demonstrate the set-up and optimization of two tools used that may be used to improve ergonomics and visualization for the entire surgical team.

DESCRIPTION: Vaginal surgery is reported as the most common clinical activity among obstetricians and gynecologist to cause back pain. 86.7% of vaginal surgeons report work related musculoskeletal disorders, with surgeons involved in surgical teaching and female surgeons more likely to report work-related musculoskeletal disorders. Thus far, ergonomics has been applied to laparoscopy and robotic surgery, but there is little data on ergonomics in vaginal surgery. The use of a camera is integral to endoscopic surgery and table-mounted retractor systems have been used for decades in open surgery. We bring these two concepts into vaginal surgery, using a table-mounted camera system and a table-mounted vaginal retractor.

CONCLUSION: We demonstrate two tools that when used together can improve visualization and ergonomics for the entire surgical team, including learners, during vaginal surgery. These have the potential to decrease work related musculoskeletal injury during vaginal surgery while improving surgical team visualization.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Katherine Woodburn: Nothing to disclose; Rosanne Kho: Applied Medical, Consultant, Honorarium; AbbVie, Scientific Advisory Board, Honorarium; Up To Date, Author Contributor, Royalties.

15 Masquerade bulge: Approach to the large vaginal mass

C. Kieserman-Shmokler, S. Uppal, J. O. DeLancey
Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI

OBJECTIVE: To demonstrate an interdisciplinary approach to evaluation and surgical excision of a large vaginal mass.

DESCRIPTION: In this case a 36 year old G2P2 presented with difficulty voiding to her family doctor, who diagnosed a cystocele on exam. She underwent multiple imaging tests demonstrating a 7-8cm pelvic mass and was subsequently referred to three specialists (OB/Gyn, urology, and gynecologic oncology) before undergoing a core biopsy of the mass that was consistent with leiomyoma. Her gynecologic oncologist planned a joint surgery with urogynecology. Despite the oncologist's initial plan to approach the mass abdominally, the excision of the mass was ultimately accomplished vaginally.

CONCLUSION: This case of the large vaginal mass illustrates the importance of interdisciplinary care and the versatility of vaginal surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Caroline Kieserman-Shmokler: Nothing to disclose; Shitanshu Uppal: Nothing to disclose; John O. DeLancey: Nothing to disclose.

16 Indications and technique for cadaveric fascia lata pubovaginal sling

M. L. Hoover[1], M. Karram[1], G. Farley[2]
[1]Urogynecology, The Christ Hospital, Cincinnati, OH, [2]University of Louisville, Louisville, KY

OBJECTIVE: The objective of this video case report is to describe the indications and implementation methodology for an alternative surgical technique using a cadaveric fascia lata pubovaginal sling.

DESCRIPTION: A 73-year-old patient presented to our office with recurrent, severe stress urinary incontinence (SUI) and suprapubic pain. She had had two prior synthetic slings - the Sparc retropubic sling and the adjustable TRT Remeex sling. During our evaluation, a Pelvic CT illustrated an abscess formation around the previous implanted sling hardware. The patient was taken to the operating room for incision and drainage with washout of the abscess and concurrent sling excision. At this time, the patient did not meet criteria for another synthetic sling secondary to her continued issues with SUI and recent infection. Given the location and extent of the abscess, the patient was not felt to be a good candidate for the harvesting of the rectus fascia for an autologous graft. This video highlights the technique of the Suspend cadaveric fascia lata manufactured by RTI and marketed and sold by Coloplast in the management of this patient's recurrent SUI.

CONCLUSION: We have had very good success with the Suspend fascia lata and feel this offers significant advantages to harvesting rectus fascia. The advantages include less pain, quicker recovery, smaller incision, and no potential chance of herniation from a defect in the fascia. Situations will arise when synthetic slings and the autologous harvesting of fascia is not a feasible means for management of SUI or in the best interest of the patient. It is critical to maintain allograft slings as a part of the urogynecologist's armamentarium.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Mallorie L. Hoover: Nothing to disclose; Mickey Karram: Cryosure, Consultant, Consulting fee; Coloplast, Consultant, Consulting fee; Caldera, Consultant, Consulting fee; Allergan, speaker, honorarium; Astellas, speaker, honorarium; LumeNXT, stock owner , stock owner; Gabrielle Farley: Nothing to disclose.

17 Single-incision pubovaginal sling with fascia lata autograft

P. Samimi[1], J. Panza[1], S. Hartigan[2], R. A. Adam[1]
[1]OBGYN, Vanderbilt University, Nashville, TN, [2]Urology, Vanderbilt University Medical Center, Nashville, TN

OBJECTIVE: A pubovaginal sling is performed with harvest of the fascia lata or the rectus fascia. The sling is often tensioned from an abdominal approach. In this video, we present a pubovaginal sling with fascia lata autograft without an abdominal incision.

DESCRIPTION: A 76-year-old woman with recurrent stress urinary incontinence has a significant history of multiple surgeries for SUI and pelvic organ prolapse, including a transobturator sling, a retropubic sling, a robotic-assisted laparoscopic sacrocolpopexy with significant lysis of adhesions, as well as a recent hernia repair within months of her presentation. The patient was counseled on her treatment options, with plans to proceed with harvest and transfer of autologous fascia lata graft for pubovaginal sling. In the right lateral decubitus position, the fascia lata graft was obtained through a small incision using a fascial stripper. Following closure of the leg incision, the patient was re-positioned to dorsal lithotomy for the vaginal portion of the procedure. An inverse U-incision was made and the retropubic space dissected to access Cooper's ligament bilaterally. The graft was then attached with permanent suture to the ligament using a transvaginal suture capturing device. The pubovaginal sling was tensioned with a urethral catheter in place. The vaginal incision was closed with absorbable suture. A voiding trial was performed on the morning of post-operative day 1. Her operative course was without complications. She successfully passed a voiding trial and was discharged home on post-operative day 1. At her 6-week post-operative visit, she continues to do well with no complaints of urinary incontinence.

CONCLUSION: With the use of a transvaginal suture capturing device, a pubovaginal sling can be effectively performed without an abdominal incision. There remains a need for continued support and development of additional tools in vaginal surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Parisa Samimi: Nothing to disclose; Joseph Panza: Nothing to disclose; Siobhan Hartigan: Nothing to disclose; Rony A. Adam: Nothing to disclose.

18 A novel, meshless method of vaginal colpopexy by sacrospinous ligament fixation using the EnPlace System to treat pelvic organ prolapse

S. Shenoy[1], J. N. Sosa-Stanley[1], T. Fan[1], V. Lucente[2,1]
[1]Minimally Invasive Gynecologic Surgery, St. Luke's University Health Network, Allentown, PA, [2]Urogynecology, The Institute for Female Pelvic Medicine, Allentown, PA

OBJECTIVE: To demonstrate a new, minimally invasive sacrospinous ligament fixation approach to treat apical uterine prolapse, without the use of a graft.

DESCRIPTION: The EnPlace device is a novel and promising minimally invasive technique that has emerged for the vaginal repair of apical prolapse in the "post-mesh era". Patients that should be considered for this technique have symptomatic prolapse with a dominant Level I vaginal support defect. With familiarization of the anatomy, the steps of the procedure are short, simple, easy to perform, and do not require deep pelvic dissection. Normal anatomic support is restored at the conclusion of this procedure, and short-term outcomes have demonstrated a very low risk of recurrence. Consideration of its use along with concomitant procedures in a comprehensive approach to the treatment of pelvic organ prolapse is a promising area of future research.

CONCLUSION: A polypropylene suture-based minimally invasive vaginal repair of apical prolapse is easy to perform as a treatment for apical pelvic organ prolapse without the use of a graft or extensive surgical dissection.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sachin Shenoy: Nothing to disclose; Jessica N. Sosa-Stanley: Nothing to disclose; Tiffany Fan: Nothing to disclose; Vincent Lucente: Nothing to disclose.

19 Modified Manchester-Fothergill procedure for pelvic organ prolapse in a patient with spina bifida

E. C. Rutledge, S. Pai, T. Muir, D. Antosh
Urogynecology, Houston Methodist Hospital, Houston, TX

OBJECTIVE: The objective of this video is to demonstrate a novel modification to a surgical technique for pelvic organ prolapse in a high risk patient population.

DESCRIPTION: The Manchester-Fothergill procedure has been described as a less invasive surgical approach for the treatment of pelvic organ prolapse by avoiding entry into the peritoneal cavity and allowing for shorter operative time and faster recovery. Spina bifida patients are a unique population that typically present with a history of multiple prior pelvic surgeries and advanced stage prolapse at a young age despite often being nulliparous. This unique case demonstrates a modification to the traditional Manchester-Fothergill procedure with the addition of a pre-peritoneal uterosacral hysteropexy for added support in the surgical management of pelvic organ prolapse in a patient with spina bifida.
CONCLUSION: This modification of the Manchester-Fothergill procedure is a safe and effective approach to the surgical management of pelvic organ prolapse in patients who would benefit from a less invasive surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Emily C. Rutledge: Nothing to disclose; Shweta Pai: Nothing to disclose; Tristi Muir: Nothing to disclose; Danielle Antosh: Nothing to disclose.

20 Resection of cystic adenomyosis

J. Gisseman, C. Ramirez, T. Baker
Obstetrics and Gynecology, San Antonio Military Medical Center, San Antonio, TX

OBJECTIVE: To characterize juvenile cystic adenomyosis and discuss surgical management of the disease.
DESCRIPTION: This video will display and discuss two cases of juvenile cystic adenomyosis. The disease is typically seen in patients under the age of 30 with cyclic pelvic pain that worsens despite treatment with hormonal contraceptives. The video will then discuss the importance of imaging in characterizing the disease. Finally, it will show the surgical management of the disease including excision, repair of uterine defects, and utilizing a posterior colpotomy to remove specimens.
CONCLUSION: Juvenile cystic adenomyosis is a rare disorder that requires excision for complete resolution of symptoms. The workup for the disease, as well as proper surgical technique during excision, is shown in this video.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jordan Gisseman: Nothing to disclose; Christina Ramirez: Nothing to disclose; Tieneka Baker: Merck, Nexplanon trainer, Consulting fee.

21 A posterior uteroperitoneal fistula: AN unexpected finding

K. L. Dengler[1,2], P. Katebi Kashi[2], A. DiCarlo-Meacham[1,2], G. S. Rose[2]
[1]OB/GYN, Walter Reed National Military Medical Center, Bethesda, MD, [2]OB/GYN, INOVA Fairfax Hospital, Annandale, VA

OBJECTIVE: This video shows the surgical evaluation of a posterior uteroperitoneal defect resulting in excision of a fistula tract and repair in multiple layers.
DESCRIPTION: Uteroperitoneal fistulas are rare and when discovered are typically anterior in the location of a uterine scar. We present a unique case of a spontaneous posterior uteroperitoneal fistula in a patient who presented for evaluation of pelvic pain, dysmenorrhea and secondary infertility. She had a prior history of one uncomplicated cesarean section. During evaluation of her secondary infertility, imaging was performed that revealed findings suggestive of a fistula. The patient underwent robotic-assisted operative laparoscopy that revealed a four-centimeter mass on the right posterior aspect of the uterus independent from her adnexa. Concomitant hysteroscopy revealed normal endometrium and no evidence of a fistula. During chromopertubation, extravasation was seen into the peritoneal cavity from this mass. The mass and fistula tract were excised to the level of the endometrium without a connection found from her cesarean scar. Reconstruction was performed in multiple layers. She also had endometriotic lesions intraperitoneally in locations distant from the mass. The patient had significant improvement in her symptoms postoperatively.
CONCLUSION: We present a unique case of a suspected spontaneous posterior uteroperitoneal fistula in the presence of endometriosis without evidence of a connection to her prior hysterotomy scar. Possible etiologies of this include an undiagnosed hysterotomy extension that went unrepaired or a result of chronic inflammation from deep infiltrating endometriosis. As in our case, successful treatment of symptoms resulting from an uteroperitoneal fistula requires removal of the fistula tract. The constellation of pelvic pain, dysmenorrhea, post-menstrual bleeding, and infertility should raise suspicion for an uteroperitoneal fistula.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Katherine L. Dengler: Nothing to disclose; Payam Katebi Kashi: Nothing to disclose; Angela DiCarlo-Meacham: Nothing to disclose; G S. Rose: Nothing to disclose.

22 Creation of a surgical skills teaching model for anterior and posterior colporrhaphy

S. Lenger, B. Liang, J. Lowder, E. Strand, C. Chu
Washington University in St. Louis, St. Louis, MO

OBJECTIVE: To develop a low cost, durable, realistic model for teaching anterior and posterior colporrhaphy.
DESCRIPTION: Surgical simulation is a fundamental component of current obstetrics and gynecology training programs, but there is a need for a low cost, durable, and realistic surgical simulation model for resident training of anterior and posterior colporrhaphy. Construction of the model in this video uses supplies easily acquired from a hardware store. Supplies include 3" polyvinyl chloride (PVC) pipe, nuts, bolts, washers, a plastic storage box, and two paver bricks. A single beef tongue is cut into 5 to 7 pieces for use on the model. To build the model, a coping saw is used to cut notches from the end of the PVC pipe. The pipe is cut to length according to the specification diagram. The pipes are sanded to remove the rough edges prior to drilling holes next to the notches for attaching the beef tongue pieces to the model. Bolt holes are drilled in the PVC pipe and plastic box. The model pieces are then assembled. After assembly, two paver bricks are placed inside the plastic box to provide stability during use. Once the beef tongue pieces are attached, the model is ready for use. The model is both inexpensive and reusable with exception of the beef tongue. Its double-ended nature also allows both an anterior colporrhaphy and a posterior colporrhaphy to be performed simultaneously by two groups of trainees, making a smaller number of models needed for a single simulation session. In this video, we demonstrate how to build the model and then use the model to demonstrate an anterior colporrhaphy and a posterior colporrhaphy with perineorrhaphy.

CONCLUSION: This video demonstrates how to build a low cost, durable, realistic model for teaching anterior and posterior colporrhaphy. We believe surgical simulation has a positive impact on resident education by providing hands on experience outside of the operating room.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Stacy Lenger: Nothing to disclose; Brooke Liang: Nothing to disclose; Jerry Lowder: Nothing to disclose; Eric Strand: Nothing to disclose; Christine Chu: Nothing to disclose.

23 How to salvage an air knot

A. Zelivianskaia[1], N. Hazen[2,1], E. Brunn[2,1], J. Robinson[2,1], V. Morozov[2,1]
[1]OBGYN, MedStar Washington Hospital Center, Washington, DC, [2]National Center for Advanced Pelvic Surgery, MedStar Washington Hospital Center, Washington, DC

OBJECTIVE: Learn how to convert an air knot into a slip knot and secure on tissue.

DESCRIPTION: Knot tying is a fundamental surgical skill and must be done securely. However, if an air knot is thrown instead of a flat square knot on the tissue, it is possible to convert the air knot into a slip knot and then slide the slip knot against the tissue. Once the slip knot is tight against the tissue, it can again be converted into a square knot. The air knot can thus be "salvaged." This technique is illustrated in the video. The most common types of suture, their categories, number of knots required, and tissue uses are reviewed at the end of the video.

CONCLUSION: An air knot can be converted into a slip knot by tugging on the top of the loop and the suture tail, which is the free end not swedged on to the needle. The slip knot can be slid down until it is against the tissue, converted back to a square knot, and secured with successive square knots. Tying secure knots with the appropriate suture type and number of knots is a key skill in any surgery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Anna Zelivianskaia: Nothing to disclose; Nicholas Hazen: Nothing to disclose; Elizabeth Brunn: Nothing to disclose; James Robinson: Nothing to disclose; Vadim Morozov: Nothing to disclose.

24 Ureteral anatomy for the junior learner

J. Sisto[2], N. Garg[3], E. Stockwell[1], M. Gutierrez[4]
[1]MIS, LVMIS, Las Vegas, NV, [2]Vermont Gynecology, Burlington, VT, [3]Obstetrics & Gynecology, UC Irvine, Orange, CA, [4]BH OBGYN, Beverly Hills, CA

OBJECTIVE: This educational video will highlight the ureteral anatomy from a transperitoneal approach with a focus on the learning objectives of the junior learner.

DESCRIPTION: Educational video.

CONCLUSION: An understanding of ureteral anatomy is essential to avoid operative injury during gynecologic procedures. This video will assist the junior in identification and visualization of the course of the ureter from a transperitoneal approach highlighting relevant anatomic landmarks and common locations for injury.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jessica Sisto: Nothing to disclose; Nisha Garg: Nothing to disclose; Erica Stockwell: Nothing to disclose; Melissa Gutierrez: Nothing to disclose.

25 Indocyanine green dye for intraoperative assessment of ovarian perfusion: A feasibility study

J. Traylor, S. Whalen, M. Milad
Obstetrics & Gynecology, Northwestern University Feinberg School of Medicine, Chicago, IL

OBJECTIVE: The purpose of this study is to determine the feasibility of intravenous indocyanine green (ICG) administration to facilitate assessments of ovarian vasculature and perfusion.

DESCRIPTION: Modern surgical techniques have incorporated the use functional imaging to better identify and target areas of interest. Indocyanine green (ICG) is a Food and Drug (FDA)-approved tricarbocyanine dye that is fluorescent under near-infrared (NIR) light. In this case example, ICG is injected intravenously and a near infrared optical system is used to visualize uptake of the dye into the pelvic vessels and adnexa, before and after laparoscopic ovarian cystectomy.

CONCLUSION: In summary, using ICG is a low risk intervention that facilitates intraoperative assessment of ovarian perfusion, without significantly adding to operative time. In the future, we hope to determine if quantitative measures of differential fluorescence are feasible and informative, and if this technology can ultimately inform clinical decision making in the setting of adnexal pathology.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jessica Traylor: Nothing to disclose; Sydney Whalen: Nothing to disclose; Magdy Milad: Nothing to disclose.

26 Utilization of indocyanine green for ureteral identification with robotic firefly fluorescence imaging

M. G. Mueller[3], A. Abdeen[1], K. Kenton[3], P. Culligan[4], D. Glazier[1,2]
[1]Virginia Urology for Women, Midlothian, VA, [2]Johnson Willis Hospital, Richmond, VA, [3]Northwestern University Feinberg School of Medicine, Chicago, IL, [4]Weill Cornell Medicine, New York, NY

OBJECTIVE: The overall incidence of iatrogenic ureteral injuries caused during operative procedures varies from 0.5 to 5% and is most common during gynecological surgery. Ureteral injury can occur during open surgery, laparoscopy, or endoscopic procedures. Injury to the ureteral can result from devascularization, laceration and most iatrogenic ureteral injuries involve the pelvic ureter. Prevention before detection of a ureteral injury is critical.

DESCRIPTION: We present a step by step video of how to use indocyanine green to identify the ureter with robotic firefly fluorescence imaging.

CONCLUSION: Utilization of indocyanine green with robotic firefly fluorescence imaging is an attractive option for ureteral identification.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Margaret G. Mueller: Nothing to disclose; Ahmed Abdeen: Nothing to disclose; Kimberly Kenton: Nothing to disclose; Patrick Culligan: Nothing to disclose; David Glazier: Nothing to disclose.

27 Surgical technique for combined robotic supracervical hysterectomy with sacrocolpopexy and ventral mesh rectopexy

M. M. Rieger[1], M. Tomassi[2], D. Klaristenfeld[2], S. Menefee[3], J. Tan-Kim[3]
[1]Female Pelvic Medicine and Reconstructive Surgery, Kaiser Permanente San Diego/UC San Diego, La Jolla, CA, [2]Colorectal Surgery, Kaiser Permanente

San Diego, San Diego, CA, [3]Female Pelvic Medicine and Reconstructive Surgery, Kaiser Permanente San Diego, San Diego, CA

OBJECTIVE: This video demonstrates our technique for robotic supracervical hysterectomy with sacrocolpopexy and ventral mesh rectopexy performed by a team of urogynecologists and colorectal surgeons for the treatment of concurrent uterovaginal and rectal prolapse.

DESCRIPTION: We utilize photography and video from three of our surgical cases, paying specific attention to instruments and materials used, with the goal that our technique may be replicated. With the patient in dorsal lithotomy position, 6 laparoscopic ports are placed — four 8 mm robotic ports, one 5 mm upper quadrant assistant port, and one 12 mm suprapubic port for extraction of the uterine fundus at the end of the case. First, supracervical hysterectomy is performed. Then, anterior vaginal dissection is completed, followed by the posterior vaginal dissection to the perineum, dissection over the sacrum to expose the anterior longitudinal ligament, and rectal mobilization. Two leaves of type 1 wide-pore polypropylene mesh are prepared. One leaf is attached to the posterior vagina, perineal body, and anterior rectum with 2-0 polyglactin interrupted sutures, and the other leaf is attached to the anterior vagina and cervix with 2-0 polyglyconate interrupted sutures. A single interrupted 2-0 polyglyconate suture attaches the posterior cervix to the posterior mesh leaf. Mesh tensioning is performed while pressure is applied to the perineum by an assistant's hand. The proximal arms of the mesh leaves are attached to the anterior longitudinal ligament overlying S1 with interrupted 0 polypropylene sutures. The mesh is extraperitonealized by closing the peritoneal incision with 2-0 polyglactin suture.

CONCLUSION: Robotic supracervical hysterectomy with sacrocolpopexy and ventral mesh rectopexy is a feasible operation for the treatment of concurrent uterovaginal and rectal prolapse.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Mary M. Rieger: Nothing to disclose; Marco Tomassi: Nothing to disclose; Daniel Klaristenfeld: Nothing to disclose; Shawn Menefee: Nothing to disclose; Jasmine Tan-Kim: Nothing to disclose.

28 Vaginal attachment of mesh for sacrocolpopexy at the time of hysterectomy

J. Heft, E. E. Weber LeBrun
University of Florida, Gainesville, FL

OBJECTIVE: This video aims to show an approach to sacrocolpopexy with vaginal hysterectomy and vaginal attachment of the polypropylene mesh used in the suspension.

DESCRIPTION: We present a patient with stage 2 anterior compartment and uterine prolapse. The vaginal hysterectomy is performed first by the resident physician. The cervix is grasped with two Jacobs tenaculi, infiltrated at the incision line with 0.25% bupivacaine, and incised through full thickness epithelium with a curved Mayo scissor. The posterior cul-de-sac is then entered sharply. Lateral pedicles are taken sequentially including sharp anterior entry until the hysterectomy is completed. The rectovaginal dissection is continued to the perineal body and the vesicovaginal dissection is carried out to the ureterovesical junction. Attention is turned to attachment of the mesh. The anterior mesh arm is sutured to the vaginal cuff in the previously dissected space. We include a one centimeter apical "free triangle" which is not be directly sutured to the vaginal cuff, but provides a buffer to reduce the risk of mesh erosion. The Y-stem of the mesh is placed into the abdominal cavity and the posterior arm of the mesh attached within the rectovaginal space. The vaginal cuff is then closed in two layers; the first layer is subcutaneous after which no mesh is visible or palpable at the cuff and the second layer brings together the skin edges with vertical mattress sutures. The sacrocolpopexy is then performed with robotic assistance. Estimated blood loss in this case was 15 milliliters and the patient went home on the day of surgery. At one year postoperatively, the patient was doing well with no recurrent prolapse or surgical complications.

CONCLUSION: The combination of vaginal hysterectomy with sacrocolpopexy ensures our learners gain this important surgical experience while the vaginal placement of the mesh allows for a secure, tension-free attachment.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jessica Heft: Nothing to disclose; Emily E. Weber LeBrun: Nothing to disclose.

29 Minimally invasive surgical management of lumbosacral discitis following sacrocolpopexy: Treatment and prevention

J. Davitt, J. Yi
Medical and Surgical Gynecology, Mayo Clinic Arizona, Phoenix, AZ

OBJECTIVE: This video reviews the proper laparoscopic placement of sacrocolpopexy mesh, discusses the incidence of complications of sacrocolpopexy including discitis, reviews diagnosis and management of discitis, and demonstrates minimally invasive surgical management of discitis.

DESCRIPTION: Minimally invasive approaches to sacrocolpopexy provide the added benefits of less blood loss, less pain, faster time to recovery, and shorter hospital stays. Although minimally invasive sacrocolpopexy (MISC) provides multiple benefits over an abdominal approach, limited visualization of the surgical field increases the risk for improper placement of anchoring sutures into the L5-S1 disc. This video presents a case in which placement of sutures into the L5-S1 disc during MISC resulted in lumbosacral spondylodiscitis. Discitis represents one of the least reported postoperative complications and is among the most morbid. In this video we demonstrate confirmation of discitis on laparoscopy, review the anatomic landmarks of the pelvis that can be used to ensure proper placement of sacrocolpopexy sutures, as well as the process of robot assisted, laparoscopic mesh excision and re-suspension of the vaginal apex. In addition, we review the expected course of recovery and integration of multidisciplinary team approach to the treatment of lumbosacral spondylodiscitis.

CONCLUSION: Minimally invasive mesh excision (MIME) is not only possible, but also confers the added benefits of a minimally invasive surgical treatment for lumbosacral discitis following sacrocolpopexy. Additionally, MIME allows for concomitant native tissue repair at time of excision. Although data regarding treatment of discitis following sacrocolpopexy is limited the utilization of a multimodal approach to treatment, including MIME, appears to offer the most encouraging opportunity for patient recovery.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: John Davitt: Nothing to disclose; Johnny Yi: Nothing to disclose.

30 Removing infected sacrocolpopexy mesh: Tips and tricks about avoiding ureteral and bowel complications

M. G. Mueller[2], A. Abdeen[1], K. Kenton[2], P. Culligan[4], D. Glazier[1,3]

[1]Virginia Urology for Women, Midlothian, VA, [2]Northwestern University Feinberg School of Medicine, Chicago, IL, [3]Johnson Willis Hospital, Richmond, VA, [4]Weill Cornell Medicine, New York, NY

OBJECTIVE: Mesh exposure at the vaginal apex is challenging if it is associated with infection. The close proximity of the right ureter, sigmoid colon and rectum during sacrocolpopexy mesh removal can make it very challenging. This presentation helps illuminate these potential pitfalls.

DESCRIPTION: Relation of the Right Ureter to Mesh:

Use of opened 5 French stent with 5 mls of indocyanine green injected into ureter and the use of firefly setting on the robot help identify the ureters.

Dissect on the mesh and use traction to pull mesh from right ureter and use firefly to help identify ureter.

Relation of Sigmoid Colon to Mesh.

The fat surrounding the sigmoid colon can be densely adherent to the mesh on the left side.

Dissect at the edge of the mesh and stay on the mesh.

Place probe into anus and advance to demonstrate sigmoid colon.

Relation of rectum to colon.

Place a probe into rectum to help identify mesh and rectum.

Dissect the tissue off the mesh and stay on the mesh to guide to avoid enterotomy into rectum.

These removal cases require full bowel preparation.

CONCLUSION: If removing sacrocolpopexy mesh be aware of the close proximity of :-

1) Right Ureter
2) Sigmoid Colon
3) Rectum.

This video highlights these points and suggests Tips and Tricks to prevent injury to any one of these structures during removal of infected sacrocolpopexy mesh.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Margaret G. Mueller: Ethicon, Expert Witness, Honorarium; Ahmed Abdeen: Nothing to disclose; Kimberly Kenton: Ethicon, Expert Witness, Honorarium; Boston Scientific, Advisory Board, Honorarium; Patrick Culligan: Orgami, Principle, Honorarium; David Glazier: Nothing to disclose.

31 Robotic-assisted resection of a 10 cm retroperitoneal pelvic ganglioneuroma

P. Katebi Kashi[1], K. P. Zeligs[1], J. Vaz[1], R. Garg[2,1]
[1]Division of Gynecologic Oncology, Department of OB/GYN, Inova Women's Hospital, Falls Church, VA, [2]Mid Atlantic Gynecology Oncology & Pelvic Surgery Associate, Fairfax, VA

OBJECTIVE: This video demonstrates the surgical resection of pelvic Ganglioneuroma located in right retroperitoneal space using robotic platform.

DESCRIPTION: Ganglioneuroma (GN) are benign tumors of the sympathetic nervous system that arise from embryonic crest cells. They originate along the sympathetic chain and frequently involve the mediastinum, retroperitoneum, and adrenal glands. Symptoms occur as a result of mass compression of surrounding organs or nerve plexuses. When feasible, surgical excision is the preferred treatment modality. Herein we report a case involving robotic-assisted resection of a 10 cm retroperitoneal GN surrounding major pelvic vasculature. The patient is a 64-year-old female who presented with right lower quadrant abdominal pain and constipation. MRI revealed a right, non-enhancing, retroperitoneal mass adjacent to the right iliac vessels and distinctly separate from the right ovary. Right pelvic lymphadenopathy was also noted.

Total operative time for the robotic-assisted resection was 96 minutes. Minimal blood loss was noted. Patient was discharged home on post-operative day one. Pathology revealed a right retroperitoneal GN. All pelvic lymph nodes were negative. Her post-operative MRI revealed no residual tumor.

CONCLUSION: To our knowledge this is the first reported case of a robotic-assisted resection of GN. The application of robotic surgery for complete and safe resection of a rare retroperitoneal tumor such as GN is an acceptable approach with less sustained blood loss and shorter hospital stay.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Payam Katebi Kashi: Nothing to disclose; Kristen P. Zeligs: Nothing to disclose; Jennifer Vaz: Nothing to disclose; Ruchi Garg: Nothing to disclose.

32 Laparoscopic management of a cornual ectopic pregnancy

C. Lam[1], S. Plosker[2], A. Imudia[1]
[1]Obstetrics and Gynecology, University of South Florida, Tampa, FL, [2]Shady Grove Fertility, Tampa, FL

OBJECTIVE: The purpose of this video is to demonstrate the technique of laparoscopic management of a cornual ectopic pregnancy.

DESCRIPTION: Cornual ectopic pregnancies carry a high risk of catastrophic outcome due to the high vascularity of the area of implantation. Emergent conditions often mandate laparotomy, or conversion to laparotomy, given the fear of hemorrhage and potential difficulty in reapproximating uterine tissue after cornual wedge resection. This is the case of an asymptomatic 34-year-old G2P0 in whom the diagnosis of a right cornual ectopic pregnancy was made by ultrasound, prior to rupture, at 7 weeks 3 days gestation. A right cornual EP was confirmed at the time of laparoscopy. As the video clearly demonstrates, a laparoscopic cornual wedge resection and myometrial re-approximation were carried out without complication. After the case, serial HCG titers were followed until undetectable. No adjuvant methotrexate was necessary.

CONCLUSION: Management of cornual ectopic pregnancy with laparoscopy is a feasible and safe technique in the setting of appropriate preoperative planning and adequate intraoperative surgical proficiency. This video is able to clearly illustrate the salient techniques of a laparoscopic cornual wedge resection.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Clarissa Lam: Nothing to disclose; Shayne Plosker: Nothing to disclose; Anthony Imudia: Nothing to disclose.

33 Localization of the midurethra during midurethral sling placement

H. Barnes, Y. B. Chen, E. R. Mueller
Female Pelvic Medicine and Reconstructive Surgery, Loyola University Medical Center, Oak Park, IL

OBJECTIVE: We demonstrate a technique to precisely and reliably determine the midurethral location during the placement of a midurethral sling.

DESCRIPTION: Midurethral slings have become widely accepted as surgical treatment of symptomatic or occult stress urinary incontinence. They act to increase resistance below the urethra during maneuvers that increase intraabdominal pressure. During placement, ensuring positioning in the mid portion of the female urethra is crucial to the success of the sling. Too proximal or distal sling placement can decrease procedural effectiveness and can cause complications such as voiding dysfunction. This video describes our technique to objectively measure the urethral length and determine midurethral location in order to minimize suboptimal sling placement. A Foley catheter is placed and a mark is made at the level of the external urethral orifice along the catheter tubing. The catheter is removed, the balloon re-inflated, and the distance between the balloon and mark is measured indicating the urethral length. The midurethral location is calculated by dividing the urethral length by two. The distance of the midurethral location is then marked on a Kelly clamp, which is then inserted into the urethra to the level of the mark. The tip of the clamp is palpated and marked on the anterior vaginal wall, indicating the exact midurethral location. This helps guide the suburethral incision and sling position.

CONCLUSION: This simple technique of measuring urethral length and determining midurethral location is a quick and reproducible method to ensure optimal sling positioning.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Hayley Barnes: Nothing to disclose; Yufan B. Chen: Nothing to disclose; Elizabeth R. Mueller: Nothing to disclose.

34 3-Port laparoscopic supracervical hysterectomy without uterine manipulator using Harmonic ACE+ 7 device

Tariro Mupombwa
Gynecology, Virginia Mason Medical Center, Seattle, WA

OBJECTIVE: The purpose of this video is to demonstrate a surgical technique of performing a 3 port laparoscopic supracervical hysterectomy using Harmonic Ace+ 7 device for the dissection including transection of uterus from the cervical stump without a uterine manipulator.

DESCRIPTION: We present the case of a 37 year-old multiparous women who failed medical management for abnormal uterine bleeding in the setting of fibroids. She desired definitive management with a hysterectomy but wanted to keep her cervix for sexual

function. We begin the surgery by placing a sponge stick and inflated pneumo-occluder balloon on ring forceps in the vagina. A 10-mm umbilical port is placed with visiport guidance after closed entry with Veress needle. Two 5-mm trocars are placed in bilateral lower quadrants. We perform the laparoscopic supracervical hysterectomy using Harmonic Ace+ 7 for the energy device and laparoscopic tenaculum for retraction. During the procedure, we highlight relevant anatomical structures that must be identified to facilitate a safe procedure. The endocervical canal is ablated with the Harmonic Ace+ 7 after the uterus is detached. A 15 mm laparoscopic bag is placed into the umbilical incision to retrieve the specimen. The specimen is removed using the extracorporeal C-incision tissue extraction (EXCITE) technique with a scalpel at the skin.

CONCLUSION: Laparoscopic supracervical hysterectomy can be safely performed using 3 ports, Harmonic Ace+ 7 device and, without a uterine manipulator. The feasibility and safety of this technique might be especially useful in cases where one cannot place a uterine manipulator due to unfavorable anatomical conditions.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Tariro Mupombwa: Nothing to disclose.

35 Management of nerve entrapment after robotic ureteral reimplantation with psoas stitch

B. Roberts[1], E. Salom[2]
[1]OB GYN, USF, Tampa, FL, [2]OB GYN, FIU, Miami, FL

OBJECTIVE: Present signs and symptoms of a patient with nerve entrapment following ureteral reimplantation. Explain the procedure and steps of robotic reimplantation surgery. Demonstrate management of nerve entrapment after ureteral reimplantation.

DESCRIPTION: This is a case of a 38 year old female who underwent a total laparoscopic hysterectomy complicated by injury to the right ureter leading to hydronephrosis and a pelvic hematoma. Patient elected for subsequent management with a robotic right ureteroneocystostomy, psoas stitch, and right nephroureteral stent placement. Following the procedure, on post-operative day 1, the patient was noted to have numbness and paresthesias of her anterior thigh which radiated to the superior aspect of the knee. With a high index of suspicion for a nerve entrapment, the patient had a following surgery releasing and replacing the original psoas stitches releasing the suspected entrapped nerve from the initial surgery.

CONCLUSION: Placement of a psoas stitch can be complicated by injury to adjacent neurovascular structures. Persistence of pain and paresthesias in the setting of permanent suture placement should prompt the provider to evaluate thoroughly for neurologic injury and nerve entrapment. Ultimately, the psoas muscle should be identified free of all neuromuscular tissue prior to the placement of a permanent suture in order to avoid such injury.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Brittany Roberts: Nothing to disclose; Emery Salom: Nothing to disclose.

36 Different techniques for dissecting an adnexal mass

Cristobal Rodriguez-Valero
OBGYN, Tecnologico De Monterrey, Monterrey, MTY, Mexico

OBJECTIVE: An educational video to demonstrate the correct technique for dissecting an adnexal mass:

-Hidro-dissection
- Preserve ovary and fertility
-Traction and contra traction
- Use of endo-bag
-Open and close scissors
- Minimal bleeding
-Rolling on the instrument.

DESCRIPTION: We did a laparoscopy using 10 mm transumbilical port and three 5-mm ports, each side and supra pubic one, finding a giant cyst without torsion phenomenon. We started dissecting using scissors with open close technique, posteriorly hidro dissection and traction and contraction trying to preserve most healthy ovary. We limited the use of bipolar energy and used an endbag to extract the cyst transumbilicaly. We achieve hemostasis and finish our procedure.

CONCLUSION: Laparoscopy for benign adnexal mass is the gold standard treatment having the benefits of a laparoscopy, minimal bleeding, minimal pain, sooner recovery, and ambulatory procedure, which reduces intrahospital costs.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Cristobal Rodriguez-Valero: Nothing to disclose.

37 Role of maternal laparoscopy in fetal surgery

B. Willborg, A. Cope, T. Burnett, R. Ruano
OBGYN, Mayo Clinic, Rochester, MN

OBJECTIVE: Fetal surgery may require fetoscopic entry into the uterus, necessitating consideration of placental location and maternal anatomy. Laparoscopic assistance in these cases can provide direct visualization of trocar placement and ability to reposition maternal organs, allowing for safe access to the intrauterine cavity while avoiding transfixing anterior placentas.

DESCRIPTION: The potential role of maternal laparoscopy in fetal surgery is illustrated in two cases of twin-to-twin transfusion syndrome with complete anterior placentas. Ultrasound prior to the procedures confirmed complete anterior placentas, requiring posterior uterine entry for a safe and effective surgery. Maternal positioning at time of surgery was left lateral tilt using a wedge to reduce risk of compression of the aorta and inferior vena cava from the gravid uterus. Open laparoscopic entry was used with bipolar electrosurgery for hemostasis at incision sites. Intraabdominal pressure from pneumoperitoneum was reduced to further improve cardiac return and subsequent uterine and placental perfusion. In both cases, laparoscopic assistance allowed for optimal fetoscopic entry into the maternal abdomen and amniotic sac, resulting in successful laser photocoagulation of placental anastomoses.

CONCLUSION: This multidisciplinary approach promotes collaboration between medical specialties to provide quality patient care.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Brooke Willborg: Nothing to disclose; Adela Cope: Nothing to disclose; Tatnai Burnett: Nothing to disclose; Rodrigo Ruano: Nothing to disclose.

38 Your left hand is your right hand's best assistant: How to become a two-handed surgeon

L. K. Newcomb, S. Mansuria
Minimally Invasive Gynecologic Surgery, University of Pittsburgh Medical Center, Pittsburgh, PA

OBJECTIVE: To demonstrate several surgical situations in which two-handed surgery can be employed, and how to use your left hand (or non-dominant hand) to best achieve this. Port placement options are reviewed, and tips and tricks to becoming more ambidextrous are offered.
DESCRIPTION: In this video, we review several examples of surgical situations in which two-handed surgery is extremely helpful to complete the procedure efficiently and safely. These include: retroperitoneal dissection, performing a salpingectomy, laparoscopic suturing of the vaginal cuff, and excising endometriosis. To become more proficient, consider performing everyday activities such as brushing your teeth, eating, and using the mouse with your non-dominant hand.
CONCLUSION: Becoming a two-handed surgeon is not easy or intuitive, but can have many benefits for your surgical practice. Many surgical procedures are improved by a surgeon's comfort with their left hand in surgery. To achieve this, time and effort should be invested into becoming more ambidextrous in everyday activities.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Laura K. Newcomb: Nothing to disclose; Suketu Mansuria: Nothing to disclose.

39 Repair of middle to distal ureteral injuries in urologic and gynecologic surgeries

O. O. Cardenas-Trowers[1], T. Fitzgibbon[2], A. Gupta[1], S. L. Francis[1], M. Ankem[2]
[1]University of Louisville, Department of Obstetrics, Gynecology, and Women's Health, Division of Female Pelvic Medicine & Reconstructive Surgery, University of Louisville, Louisville, KY, [2]University of Louisville, Department of Urology, University of Louisville, Louisville, KY

OBJECTIVE: Iatrogenic ureteral injuries can occur during any surgery but are more likely to occur during urologic and gynecologic procedures. The middle and distal ureter are especially at risk of injury during these surgeries. The objective of this video was to demonstrate how to repair middle to distal ureteral injuries that may occur during urologic and gynecologic surgeries with the following techniques: direct ureteroureterostomy, ureteroneocystostomy, vesicopsoas hitch, and Boari-Ockerblad bladder flap.
DESCRIPTION: A female cadaver was used to show how to repair injuries to the middle and distal ureter. Each repair technique was surgically demonstrated.
CONCLUSION: Middle to distal ureteral injuries occurring during urologic and gynecologic surgeries can be repaired by the techniques demonstrated in this video.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Olivia O. Cardenas-Trowers: AMAG Pharmaceuticals, Inc., Clinical investigator, Research grant; TJ Fitzgibbon: Nothing to disclose; Ankita Gupta: Nothing to disclose; Sean L. Francis: Nothing to disclose; Murali Ankem: Nothing to disclose.

40 Abstract Withdrawn

41 Sling plication for persistent stress urinary incontinence after midurethral sling

C. H. Suh, L. Rickey, R. Bercik, O. Harmanli
Yale School of Medicine, New Haven, CT

OBJECTIVE: To demonstrate the sling plication technique, a treatment option for failed midurethral sling.
DESCRIPTION: Persistent or recurrent stress urinary incontinence after midurethral sling placement is a relatively common problem. Treatment options include placement of a second midurethral sling, autologous fascia sling, colposuspension, or urethral bulking. Sling plication is an alternative option that offers some advantages over a repeat sling procedure: it can decrease cost and operative time, and it avoids the risk of trocar injury and additional mesh burden. In this video, we demonstrate the sling plication technique on a 74-year-old patient with persistent stress urinary incontinence 5 weeks after retropubic midurethral sling placement. The key steps are as follows: suburethral incision and sharp dissection to identify the sling; mobilization of 4 cm of the sling; plication with two interrupted, horizontal sutures placed 1cm laterally on each side; application of upward pressure while tying the sutures and tensioning the sling; and closure of the vaginal epithelium.
CONCLUSION: Sling plication is an effective, low-risk option to treat persistent stress urinary incontinence after failed midurethral sling procedures.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Christina H. Suh: Nothing to disclose; Leslie Rickey: Nothing to disclose; Richard Bercik: Nothing to disclose; Oz Harmanli: Nothing to disclose.

42 Removal of specimen via mini-umbilical incision during laparoscopic prolapse repairs

Woojin Chong[1,2]
[1]Inspira Health, Vineland/Mullica Hill, NJ, [2]Icahn School of Medicine at Mount Sinai, New York, NY

OBJECTIVE: Since FPA warning against power morcellation in 2014, practice patterns of hysterectomy for benign indications have changed because of inability to ensure benign pathology preoperatively and concerns for negative outcomes for patients with occult malignancies. The purpose of this video presentation is to describe a method of specimen removal via mini-umbilical incision during laparoscopic supracervical hysterectomy and sacrocervicopexy (LSC SCH/SCP).

DESCRIPTION: This video describes the steps of removing specimen via mini-umbilical incision during LSC SCH/SCP: 1) making a mini-umbilical incision, 2) assembling Gel device with sleeves, 3) inserting the device into the abdominal incision, 4) once completing intra-abdominal procedures, removing the specimen in an endocatch bag through the Gel device, 5) closing mini-umbilical incision after removing the Gel device.

CONCLUSION: The presenting method allows surgeons to remove the specimen (uterus +/- adnexa) without fear of spreading specimen debris intraperitoneally. With a desirable cosmetic outcome, this method permits the minimal disruption in surgical flow during LSC SCH/SCP. In addition, larger specimen can be safely removed without the need for extending the incision.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Woojin Chong: Nothing to disclose.

43 Removal of specimen via posterior colpotomy during (robotic-assisted) laparoscopic prolapse repairs

Woojin Chong[1,2]
[1]Inspira Health, Vineland/Mullica Hill, NJ, [2]Icahn School of Medicine at Mount Sinai, New York, NY

OBJECTIVE: Since FPA warning against power morcellation in 2014, practice patterns of hysterectomy for benign indications have changed because of inability to ensure benign pathology preoperatively and concerns for negative outcomes for patients with occult malignancies. The purpose of this video presentation is to describe a method of specimen removal via posterior colpotomy during (robotic assisted) laparoscopic supracervical hysterectomy and sacrocervicopexy (RA-LSC SCH/SCP).

DESCRIPTION: This video describes the steps of removing specimen during (RA)-LSC SCH/SCP: 1) creating posterior colpotomy, 2) inserting an endocatch bag through the colpotomy incision, 3) placing the specimen in the bag and removing it from the abdomen, 4) closing the colpotomy.

CONCLUSION: The presenting method allows surgeons to remove the specimen (uterus +/- adnexa) without fear of spreading specimen debris intraperitoneally. This method also allows to keep the cervix while removing the specimen transvaginally without the need for extending the abdominal port site incision. In addition, it permits the minimal disruption in surgical flow during (RA)-LSC SCH/SCP, especially when the uterus is in normal size.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Woojin Chong: Nothing to disclose.

44 Vaginal cyst presenting as pelvic organ prolapse

A. R. Carrubba, M. G. Leon, A. Chen
Division of Gynecologic Surgery, Mayo Clinic, Jacksonville, FL

OBJECTIVE: The purpose of this video is to describe an unusual case of a large vaginal cyst presenting as pelvic organ prolapse and to demonstrate techniques for vaginal reconstruction.

DESCRIPTION: A 47-year-old gravida 4 para 2 presented with pelvic fullness, which she thought was prolapse. On pelvic exam, a 4-centimeter cystic mass was located on the posterior vagina and protruded past the hymen. Magnetic resonance imaging showed a 3.5 x 2.8 x 3.8 cm posterior vaginal wall cyst without solid components, septations, nodularity, or other suspicious features. The patient desired corrective surgery, so she underwent vaginal excision of the cyst. When in the operating room, exam under anesthesia confirmed the posterior vaginal wall mass. There was no evidence of pelvic floor prolapse. The vaginal mucosa overlying the cyst was incised. Allis clamps were placed on the mucosal edges bilaterally to provide traction. The cyst wall was sharply dissected off the vaginal mucosa. During the dissection, the cyst cavity was entered and a large amount of fluid was expulsed. The cyst was completely excised from the underlying tissue. The rectovaginal fascia was reinforced and plicated with interrupted 2-0 absorbable sutures. The posterior vaginal mucosa was trimmed and re-approximated with a running locking 2-0 absorbable suture. Hemostasis was ensured along the suture line. Rectovaginal exam confirmed no injury to the rectum. The patient was discharged home in a stable condition. Pathology demonstrated a benign simple cyst and benign vaginal mucosa without dysplasia. She was seen for a postoperative visit, at which time there was a healing but intact suture line along the posterior vaginal mucosa.

CONCLUSION: It is important to include vaginal cysts in the differential diagnosis of pelvic organ prolapse. Vaginal removal and reconstruction can be performed successfully.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Aakriti R. Carrubba: Nothing to disclose; Mateo G. Leon: Nothing to disclose; Anita Chen: Nothing to disclose.

45 Roticulating knot tying technique for laparoscopic surgery

Allan Adajar[1,2]
[1]Obstetrics and Gynecology, Illinois Institute of Gynecology & Advance Pelvic Surgery, Chicago, IL, [2]MIGS101, Chicago, IL

OBJECTIVE: The following video demonstrates a laparoscopic intracorporeal knot tying technique, that utilizes roticulation of the laparoscopic instrument to achieve this goal.

DESCRIPTION: Intracorporeal knot tying is one of the most challenging skills to master in laparoscopic surgery. One factor that makes intracorporeal knot tying difficult is the fact that the conditions to tie an intracorporeal knot are seldom optimal. The following video demonstrates a laparoscopic intracorporeal knot tying technique, which utilizes roticulation of the laparoscopic instrument to

achieve this goal. There are 3 essential steps needed to successfully complete a laparoscopic intracorporeal knot:

1. To fully loop the suture around the shaft of the instrument and grasp the opposite end of the suture.
2. To successfully advance the loop over the tip of the instrument, without losing the loop or getting caught on the instrument itself.
3. To lay the square knot flat.

Intracorporeal knot tying techniques teach methods to overcome the most difficult step, looping the suture around the shaft of the instrument. The Roticulating knot tying technique accomplishes this step by utilizing the rotational functionality of laparoscopic instrumentation. This is accomplished by wrapping the suture around the shaft of the instrument, using a roticulating grasper, while holding the distal portion of the suture along the shaft of the instrument. The needle is grasped from the instrument jaws, and the loop is advanced over the tip of the instrument. Care is taken to lay the square knot flat. This knot tying technique can also be accomplished using the suture alone, without the use of a needle.

CONCLUSION: The roticulating intracorporeal knot tying technique can be advantageous in certain circumstances. However, like all laparoscopic skills, repetition and practice are required to make it a practical addition to the surgeon's laparoscopic armament.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Allan A. Adajar: Nothing to disclose.

46 Transperineal hysterectomy: A novel approach

K. Menhaji[1], B. Gaigbe-Togbe[1], P. Sylla[2], A. D. Garely[1]
[1]Obstetrics and Gynecology, Mount Sinai Hospital, New York, NY, [2]Colon & Rectal Surgery, Mount Sinai Hospital, New York, NY

OBJECTIVE: This video presents a new approach to performing a hysterectomy with bilateral salpingo-oophorectomy.

DESCRIPTION: J.O. is a 77-year-old G2P2002 female who presented as a consult from colorectal surgery to our urogynecology practice for evaluation of her known pelvic organ prolapse. She also had full-thickness rectal prolapse for which she was followed by colorectal surgery. The patient recently started experiencing painful and bothersome symptoms and thus surgical management was planned. A combined procedure for exam under anesthesia, LeFort's Colpocleisis, cystoscopy, and perineal proctosigmoidectomy was undertaken. After the LeFort Colpocleisis the colorectal team began their portion of the procedure, however once peritoneal cavity was entered it was noted that the position of the uterus would not allow their portion of the procedure to be completed. Thus the decision was made to perform a transperineal supracervical hysterectomy with bilateral salpingo-oophorectomy after consent was obtained from family members over the phone. The procedure was uncomplicated and the patient did well postoperatively without any complications and with resolution of her symptoms and prolapse.

CONCLUSION: A transperineal hysterectomy is a safe procedure that may be considered.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Kimia Menhaji: Nothing to disclose; Bertille Gaigbe-Togbe: Nothing to disclose; Patricia Sylla: Nothing to disclose; Alan D. Garely: Nothing to disclose.

47 Pelvic congestion syndrome: A laparoscopic approach

C. Barake[1], N. S. Moawad[2]
[1]OBGYN, American University of Beirut Medical Center, Beirut, Lebanon, [2]University of Florida, Gainesville, FL

OBJECTIVE: The goal of this video is to demonstrate a laparoscopic approach for the management of chronic pelvic pain secondary to pelvic congestion syndrome presented by large tortuous ovarian vessels.

DESCRIPTION: Pelvic congestion syndrome is found in 30% of patients complaining of chronic pelvic pain and in who work up reveals no pathologies. Although the etiology of pelvic congestion syndrome is still not clear, multiple treatment modalities are available for the symptomatic patient. Our patient is a 69-year-old patient with one-year history of left lower quadrant pelvic pain. CT abdomen/ pelvis showed congested pelvic vessels on the left side and a small persistent ovarian cyst. Decision was made to perform laparoscopic ligation of the left ovarian veins with concurrent bilateral salpingo-oophorectomy. Laparoscopic high ligation of the ovarian vessels is described. After adequate exposure of the infundibulopelvic ligament and identification of the surrounding structures, the ovarian vein was isolated, sealed, and transected above the pelvic brim. Careful systematic dissection of the pelvic sidewall ensures uncomplicated resection of the congested ovarian venous plexus.

CONCLUSION: Our video demonstrates a minimally invasive approach to pelvic congestion syndrome. The laparoscopic high ligation technique is often chosen when a concurrent gynecologic surgery is required.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Carole Barake: Nothing to disclose; Nash S. Moawad: Nothing to disclose.

48 Withdrawn

49 Modified colpocleisis for vaginal herniation after anterior exenteration

S. Mehta, C. Arkfeld, O. Harmanli
Obstetrics and Gynecology, Division of Urogynecology, Yale University School of Medicine, New Haven, CT

OBJECTIVE: We aim to present a modified colpocleisis technique for management of a stage 4 POP after a radical cystectomy/ anterior pelvic exenteration. Additionally, we will briefly review urothelial cancer and surgical management as it relates to gynecology.

DESCRIPTION: We present a 69 year old with of muscle invading urothelial carcinoma and anterior vaginal sparing radical cystectomy and creation of ileal conduit in 2017 presenting with stage 4 POP. She was not interested in maintaining vaginal sexual function and desired a vaginal obliteration procedure. Her iatrogenic anterior wall defect and lack of lower urinary tract organs led to an anterior wall enterocele. On exam, anterior vaginal wall epithelium was 2mm in depth. MRI confirmed omental herniation at rest and small bowel herniation with valsalva. Incision of the anterior wall led to immediate intraabdominal entry and exposed an omental herniation. The omentum was freed and the peritoneum was closed. The anterior wall had paucity of fibromuscular tissue typically used to perform a colpocleisis. Posterior vaginal wall dissection was performed with care to preserve fibromuscular tissue. As the vagina was obliterated,

the anterior wall was reinforced with fibromuscular tissue from the posterior wall. Uniquely, cystourethroscopy was neither possible nor indicated. The patient was very satisfied with surgical outcome at her recent 2-month post-operative visit. Radical cystectomy and urinary diversion is the preferred management of muscle invading urothelial cancer. Surgeons may also perform an anterior exenteration, or removal of the uterus, fallopian tubes, and ovaries to achieve complete resection.

CONCLUSION: We reviewed the steps required for repairing an omentum containing enterocele in the anterior wall, with primary peritoneal closure, and subsequent colpocleisis. It also provides unique surgical education for management of POP after anterior exenteration.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shailja Mehta: Nothing to disclose; Christopher Ke Arkfeld: Nothing to disclose; Oz Harmanli: Nothing to disclose.

50 How to complete a voiding diary: A patient education video

S. Mehta, S. Dalal, O. Harmanli
Obstetrics and Gynecology, Yale University School of Medicine, New Haven, CT

OBJECTIVE: We aim to present an institution sponsored, web-based, instructional video that teaches how to properly complete a voiding and intake diary. This video is available for public use. We are currently investigating the effects of our standardized teaching video for patient education on patient adherence and accuracy at our institution. We hypothesize that widespread use of an instructional video may streamline and standardize instructions and result in increased adherence and accuracy in completing voiding diaries.

DESCRIPTION: We created a 5-minute educational video to explain how to properly complete a video diary. The video illustrates relatable scenarios in each of the 3 types of voiding diary entries— intake, voiding, and urinary leakage. Patients also have access to the video on YouTube for reference at home. An accurately completed voiding diary worksheet can provide essential information about bladder function and voiding disturbances that complement the information obtained during a clinical visit. Voiding diary information can also provide baseline information if the patient will be undergoing bladder training in the future and will help determine further diagnostic work up. Despite their benefits, bladder diaries have a poor return rate. Citing various reasons, patients who return to their next visit often come back without additional information expecting a diagnosis and/or treatment. The most common reasons are forgetting and not understanding. There is no evidence base standard of care regarding the quality, medium, or extent of instructions a patient is provided. Providers or other clinical staff may choose to verbally explain instructions if they choose. Thus far, an instructional video has not been formally studied.

CONCLUSION: This free, web-based voiding diary patient education video for completion of a voiding diary can complement various office standard practice and may help ensure increased adherence and accuracy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shailja Mehta: Nothing to disclose; Shana Dalal: Nothing to disclose; Oz Harmanli: Nothing to disclose.

51 Ultrasound-guided hysteroscopy

J. Guner[1], L. Ghidei[1], R. Howard[3], P. Zarutskie[1], J. Appleton[2], V. George[2], A. Schutt[1]
[1]Obstetrics and Gynecology, Baylor College of Medicine, Houston, TX, [2]Radiology, Texas Children's Hospital, Houston, TX, [3]Obstetrics and Gynecology, Texas Children's Hospital, Houston, TX

OBJECTIVE: The purpose of this video is to describe the benefit of ultrasound use during complicated hysteroscopy.

DESCRIPTION: Hysteroscopy is a common gynecologic surgery that may be technically complex in situations where anatomic landmarks are distorted, including Asherman's syndrome, Mullerian anomalies, and leiomyoma. We demonstrate how real-time ultrasound can aide the gynecologic surgeon to make key decisions in this case series. The first patient was diagnosed with hematometria secondary to cervical stenosis. The Seldinger technique (commonly used in vascular and cardiac surgery) was employed to perform cervical dilation. Severe intrauterine adhesions distort normal uterine architecture and increase the risk of uterine perforation. Ultrasound can alert the surgeon to the risk of perforation by providing a transabdominal, global view of the uterus, which is demonstrated with the second patient case in our video. The third patient was diagnosed with a complete uterine septum and duplicated cervices. Care needs to be taken to incise the septum in the lower uterine segment cephalad to the cervices to decrease future complications in pregnancy. In addition, ultrasound can be used to notify the physician as to when the septum has been completely incised to the level of the fundus. Similarly, hysteroscopic myomectomy under ultrasound can provide guidance regarding proximity of hysteroscope to the peritoneal cavity and also prevent staged procedures that may be needed to resect the entire fibroid. In our fourth patient case, we demonstrate how ultrasound can visually verify that the surgeon has excised the entire fibroid.

CONCLUSION: Ultrasound-guided hysteroscopy may decrease the risk of uterine perforation in Asherman's syndrome, assist in identifying anatomical landmarks in uterine septum incision, and ascertain complete fibroid resection, potentially reducing surgical times, fluid deficits, and the need for multiple staged procedures.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Joie Guner: Nothing to disclose; Luwam Ghidei: Nothing to disclose; Rohn Howard: Nothing to disclose; Paul Zarutskie: Nothing to disclose; Jewel Appleton: Nothing to disclose; Verghese George: Nothing to disclose; Amy Schutt: Nothing to disclose.

52 Management of the suburethral mass in the postoperative transgender woman

O. H. Chang, C. A. Ferrando
Female Pelvic Medicine and Reconstructive Surgery, Cleveland Clinic Foundation, Cleveland, OH

OBJECTIVE: The objective of this video is to review the differential diagnosis and management of a transgender woman presenting with a suburethral mass.

DESCRIPTION: In this video, we review the differential diagnosis of a transgender woman who presented to the office 14 months after a penile-inversion vaginoplasty surgery. Based on physical exam, the bulge was most likely due to remnant bulbospongiosus tissue. This is commonly seen after vaginoplasty as surgeons vary in their technique in removing this tissue. We first reviewed the steps of the penile-inversion vaginoplasty, when the bulbospongiosus tissue was

removed from the dorsal aspect of the urethra. We then present the surgical video when the patient was brought to the operating room for the removal of excess bulbospongiosus tissue. Lastly, we discuss the post-operative management for this patient.

CONCLUSION: There is a short list of differential diagnosis for a postoperative transgender woman presenting with a suburethral mass. The most common diagnosis is remnant bulbospongiosus tissue. Surgeons with a gynecologic skillset who perform vaginal surgery are more than qualified to perform this outpatient procedure as it has favorable outcomes and improves a patient's quality of life.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Olivia H. Chang: Nothing to disclose; Cecile A. Ferrando: Nothing to disclose.

53 Operate like a pro: An expert guide to TVH

J. J. Fitzgerald, E. Hoang, A. I. Sokol, A. J. Park
Gynecology and Obstetrics, Georgetown School of Medicine/ MedStar Health, Washington, DC

OBJECTIVE: The purpose of this video is to demonstrate a refinement of operative techniques for success when performing a benign vaginal hysterectomy.

DESCRIPTION: Hysterectomy is one of the most frequently performed surgical procedures in the United States. While guidelines for choosing the route of hysterectomy exist, ultimately surgical planning for benign cases is frequently influenced by a surgeons training, and comfort with the procedure. The vaginal hysterectomy is the most minimally invasive approach and is recommended whenever safely feasible. The aim of this video is to demonstrate refinement of the steps of a benign vaginal hysterectomy to optimize the flow of the procedure and increase success rates.

CONCLUSION: With this video, the a gynecologic surgeon can optimize their operating room setup, steps, and transitions to comfortably and competently perform vaginal hysterectomies.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Jocelyn J. Fitzgerald: Nothing to disclose; Elizabeth Hoang: Nothing to disclose; Andrew I. Sokol: Nothing to disclose; Amy J. Park: Nothing to disclose.

54 Using the application Explain Everything™ to create a patient educational video

S. E. Jeney, V. Ihara, B. D. Heliker
Ob/Gyn, UC Irvine, Orange, CA

OBJECTIVE: The objective of this video is to present the use of an interactive tablet application, Explain Everything, to create customized patient educational videos.

DESCRIPTION: We used a novel application, Explain Everything, to create a patient educational video about the mid-urethral sling surgery. This application is an easy-to-use platform that providers can use to create their own customized videos. We present a segment of our video highlighting the application's unique creative features, such as interactive drawing, laser pointer, and video within a video.

CONCLUSION: The application Explain Everything is an easy-to-use, inexpensive, tablet-based whiteboard application providers can use to create customized patient educational videos. The use of this type of video to augment in-person counseling and informed consent may improve patient understanding and satisfaction.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sarah E. Jeney: Nothing to disclose; Valerie Ihara: Nothing to disclose; Bhumy D. Heliker: Nothing to disclose.

55 A pre-sacral cyst: Dissection in the retro-rectal space

A. R. Carrubba, M. G. Leon, A. Chen, P. Pettit, C. C. DeStephano
Division of Gynecologic Surgery, Mayo Clinic, Jacksonville, FL

OBJECTIVE: The objectives of this video are to present an unusual case of a pre-sacral cyst and to demonstrate techniques for dissection in the retro-rectal space.

DESCRIPTION: A 27-year-old presented with acute pelvic pain, nausea, vomiting, and headache. She had normal vital signs and lab values. On pelvic exam, a large mobile mass was palpated inferior to the cervix. Imaging showed a cystic lesion in the rectovaginal space measuring 6.4 by 6.6 by 5.9 centimeters. There was anterior compression of the cervix and vagina and lateral displacement of the rectum. She proceeded with surgical removal via robotic-assisted excision. The mass was visualized posterior and inferior to the uterus. The retro-rectal space was developed by opening the peritoneum lateral to the mass and medial to the uterosacral ligament. This incision was carried toward the sacral promontory. When the promontory was visualized, the sigmoid colon was displaced towards the right pelvic sidewall. The pre-sacral space was developed to the level of the levator muscles bilaterally. The mass was freed circumferentially and excised entirely. It was placed in a specimen retrieval bag. A surgical hemostatic agent was placed in the dissection plane to decrease the risk of bleeding, and the peritoneum was re-approximated using a running 2-0 barbed suture. Flexible sigmoidoscopy was performed noting intact bowel lumen and no evidence of injury. Pathology showed a dermoid cyst with associated histiocytic response. The patient was discharged home in a stable condition.

CONCLUSION: Gynecologic surgeons rarely enter the retro-rectal space, but knowledge of anatomy is essential during this dissection. Tumors in the retro-rectal space are rare, but the differential diagnosis is broad.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Aakriti R. Carrubba: Nothing to disclose; Mateo G. Leon: Nothing to disclose; Anita Chen: Nothing to disclose; Paul Pettit: Nothing to disclose; Christopher C. DeStephano: Nothing to disclose.

56 Use of resectoscope to remove fractured intrauterine device (IUD)

S. Miles[1], D. Chan[2], R. Guido[1]
[1]Minimally Invasive Gynecologic Surgery, Magee-Womens Hospital, Pittsburgh, PA, [2]Gynecologic Oncology, Magee-Womens Hospital, Pittsburgh, PA

OBJECTIVE: To demonstrate the use of a hysteroscopic resectoscope to remove an embedded fractured intrauterine device (IUD).

DESCRIPTION: After unsuccessful attempts at removing a fractured IUD using combinations of hysteroscopic graspers and scissors a resectoscope was introduced into the endometrial cavity. The resectoscope was used in systematic fashion using the IUD itself as a guide to shave the overlying myometrium. This allowed successful removal of the IUD.

CONCLUSION: Non-traditional instruments, such as the resectoscope, should be considered in challenging cases to allow safe and successful completion of these procedures.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shana Miles: Nothing to disclose; Daniel Chan: Nothing to disclose; Richard Guido: Nothing to disclose.

57 Tips and tricks: A new approach to coincidental appendectomy: The vaginal appendectomy (VAGAPPY)

W. T. Ross, G. J. Harkins, A. S. Benton, T. Deimling
Department of Obstetrics and Gynecology, Penn State Health, Hershey, PA

OBJECTIVE: The purpose of this video is to describe the vaginal appendectomy (VagAppy), a novel approach to coincidental appendectomy at time of hysterectomy. Coincidental appendectomy at time of a primary gynecologic procedure has been described in the literature for many years. There is a growing body of evidence supporting appendectomy as part of surgical management of endometriosis given the prevalence of appendiceal endometriosis, as high as 39% in deep infiltrating endometriosis. A common technique for performance of a laparoscopic appendectomy is with a surgical stapler. A downside with most staplers is the necessity of using a 12 mm or larger trocar to introduce the stapler into the abdomen. Increased trocar size can be associated with increased rates of port site herniation and post-operative pain. Additionally, 12 mm incisions require fascial closure and can have decreased cosmesis. The VagAppy uses the colpotomy as a natural orifice, allowing surgery to be completed through the traditional 5mm or 8 mm ports.
DESCRIPTION: In this technique, the meso-appendix is skeletonized laparoscopically, and the appendicular artery is transected with the Harmonic Scalpel (Ethicon). The stapler, in this video the Echelon powered vascular stapler with a white load (Ethicon), is placed through a Koh Pneumo-occlusion balloon (Cooper Surgical) and introduced through the colpotomy. When the stapler is introduced trans-vaginally, it is in direct alignment with the base of the appendix. The stapler is activated off of tension, and the appendix delivered through the colpotomy.
CONCLUSION: The VagAppy is a novel and efficient approach to performance of a coincidental appendectomy at time of laparoscopic hysterectomy through small caliber trocars.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Whitney T. Ross: Nothing to disclose; Gerald J. Harkins: AbbVie, Speaker, Honorarium; Titan Medical Inc., Consultant, Honorarium; Andrea S. Benton: Nothing to disclose; Timothy Deimling: AbbVie, Speaker, Honorarium.

58 Vaginal hysterectomy 101: A step-by-step guide for learners emphasizing surgical anatomy

E. Lee[1], T. Sachs[2], M. Anand[1]
[1]Obstetrics & Gynecology, Boston University School of Medicine, Boston Medical Center, Boston, MA, [2]Surgical Oncology, Boston University School of Medicine, Boston Medical Center, Boston, MA

OBJECTIVE: The purpose of this video is to provide learners with a step-by-step resource that reviews important surgical anatomy of the vaginal hysterectomy using a combination of diagrams and surgical video.
DESCRIPTION: Vaginal hysterectomy is cited to be the safest and most cost-effective route of hysterectomy. Despite these findings, the proportion of hysterectomies completed vaginally is decreasing. The Society of Gynecologic Surgeons' Education Committee identifies critical factors that are associated with underuse of vaginal hysterectomy. These factors include inadequate surgical training due to a diminished number of cases completed by residents, as well as difficulty maintaining surgical skills due to low surgical volumes. This video aims to assist learners of vaginal hysterectomy by reviewing the key steps of a vaginal hysterectomy. Visual aids in the form of surgical video and diagrams help illustrate important anatomy and teaching points. In particular, there will be a focus on safe intraperitoneal entry during anterior and posterior colpotomy. The structures highlighted include the cervicovaginal epithelium, supravaginal septum, vesicocervical space, vesicouterine peritoneal fold, rectouterine peritoneal fold, uterosacral ligament, cardinal ligament, ureter, uterine artery, ovarian ligament, round ligament, and Fallopian tube. This video does not demonstrate bilateral salpingectomy or closure of the vaginal cuff.
CONCLUSION: Vaginal hysterectomy is a key surgical skill to be mastered during residency training. This video is meant to be a resource for learners to help elucidate important steps of the vaginal hysterectomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Eung-Mi Lee: Nothing to disclose; Teviah Sachs: Nothing to disclose; Mallika Anand: Nothing to disclose.

59 A case series of surgical reconstruction in patients with female genital mutilation/cutting utilizing 3D ultrasound

E. Welch[1], J. Alshiek[3], A. S. Shobeiri[2]
[1]Urogynecology, Walter Reed National Military Medical Center, Bethesda, MD, [2]Department of Obstetrics & Gynecology, INOVA Women's Hospital, Falls Church, VA, [3]Hillel Yafe Hospital, Hadera, Israel

OBJECTIVE: Female genital mutilation/cutting (FGM/C) is a procedure that involves the partial or total removal of external genitalia or injury to the female genital organs for non-medical reasons. Surgical management of FGM/C has the potential to reduce local pain and restore sexual pleasure, however, information is limited regarding its efficacy and safety as well as the potential role of 3D ultrasound in pre-operative planning.
DESCRIPTION: We present three cases of FGM/C that illustrate techniques of vaginoplasty and plastic repair of the introitus with use of pre-operative 3D ultrasound. The FGM/C WHO classification ranged from IIb to IIIb. Each patient underwent ultrasound studies pre-operatively to scan the pelvic floor and vaginal area. Doppler flow studies of the clitoral area were also performed. This surgical video presents the general surgical approach that was performed in this case series. The Lone Star® retractor was used for retraction, and the fused labia were undermined and incised using the scalpel. The vaginal and labial epithelium were closed with interrupted sutures, and at the conclusion of the procedure, the vagina easily accommodated two digits with normal length and anatomy restored. All three patients were satisfied with the cosmetic results of the surgery.
CONCLUSION: We conclude that the prevalence of patients with FGM/C is increasing in the U.S., necessitating greater education and training of healthcare providers. Surgical reconstruction by defibulation and vaginoplasty can effectively treat patients with

symptomatic FGM/C. Additionally, 3D ultrasound is a useful adjunct in pre-operative work-up in patients with FGM/C.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Eva Welch: Nothing to disclose; Jonia Alshiek: Nothing to disclose; Abbas S. Shobeiri: Nothing to disclose.

60 Using iPAD based interactive white board app to create annotated surgical videos for training purposes

S. Uppal, L. Burns, D. Marzano
Obstetrics and Gynecology, University of Michigan, Ann Arbor, MI

OBJECTIVE: Videos are an integral part of surgical training. However, audio narration alone is often insufficient to highlight surgical planes or illustrate complex steps of a procedure.

DESCRIPTION: We utilized an interactive iPad based white-board app to create annotated videos. Using this app users can draw on the recorded surgical video stream to highlight anatomic structures and create free-form drawings (alongside with the video) using the Apple Pencil to explain complex surgical steps.

CONCLUSION: Annotating surgical videos using iPad based interactive white-board app can enhance the ability of surgical trainees to learn basics of surgical procedures.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Shitanshu Uppal: Nothing to disclose; Luke Burns: Nothing to disclose; David Marzano: Nothing to disclose.

61 Complex labioplasty in patient with congenital primary lymphedema

S. Spector, S. T. Mama
OB/GYN, Cooper Medical School of Rowan University, Voorhees, NJ

OBJECTIVE: This video summarizes the diagnosis, evaluation, underlying anatomy, surgical intervention, and follow-up in a patient with congenital primary lymphedema undergoing complex labioplasty.

DESCRIPTION: We present a case of a 17 year old female with a history of congenital primary lymphedema who underwent complex labioplasty. At birth the patient had thigh and labial swelling increasing in size over time. Imaging was unremarkable. No intervention was felt possible by vascular surgery. After puberty, the left labia minora enlarged to 9 x 7 x 4 cm, the left labia majora to 7 x 3 x 3 cm. This interfered with ADL's including dressing, walking, and pain on sitting. Patient had significant mental stress. Primary lymphedema affects 1 in 100,000 individuals, caused by abnormal development of the lymphatic system (primary) or an insult after birth (secondary). The majority have lower limb involvement, the left leg more often involved. This patient had no prior history of infection, radiation, surgery, or trauma. An awareness of the blood supply of the labia was critical in creating flaps. The initial flap extended from the introitus in a narrow to wider configuration, the lateral portion of labia minora tissue was included to match the color and texture of the right, the pedicle coming from 5 to 7 o'clock with deep dissection 3.5 cm at the base preserving the blood supply. Dissection to the level of the left frenulum. Underlying excess tissue excised allowing the skin flap to be placed in a normal configuration. Left labia majora reduced with an elliptical incision and underlying tissue excised to reduce the bulk. Postoperatively the patient had minimal separation of the superior aspect of labia minora resutured in the office setting with marked improvement in the overall appearance.

CONCLUSION: This case illustrates the importance of conserving the blood supply to the labia in the creation of viable flaps in complex labioplasty.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Sean Spector: Nothing to disclose; Saifuddin T. Mama: Nothing to disclose.

62 High posterior wall defects: A laparoscopic approach

J. Heusinkveld[1,2], A. Lakhanpal[1,2]
[1]OBGYN, University of Arizona, Tucson, AZ, [2]Banner Health, Tucson, AZ

OBJECTIVE: To demonstrate a laparoscopic technique for repairing high defects in the posterior vaginal wall.

DESCRIPTION: High defects in the posterior vaginal wall may result from apical detachment of the fascia of the posterior vaginal wall and resist repair by a traditional colporrhaphy because there is little or no lateral connective tissue that can be brought together over the defect. Instead, it is frequently effective to re-suspend the posterior wall fascia from the apex using the uterosacral ligaments as an attachment point. We identify the upper edge of the "RV septum" connective tissue by finding the point at which the ruggae disappear. An Alice clamp is placed to mark the top of the septum. Laparoscopy is then performed, and the top of the RV septum can be identified by manipulating the clamp. Sutures are placed attaching the RV septum to the uterosacral ligaments. Kinking of the ureters is prevented by opening the peritoneum between the ureters and the uterosacral ligaments. A traditional colporrhaphy or perineorrhaphy may be performed to address laxity in the distal posterior vaginal wall if needed.

CONCLUSION: Laparoscopic resuspension of the posterior wall fascia from the uterosacral ligaments provides a sturdy and anatomic repair for high defects in the posterior vaginal wall.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: John Heusinkveld: Nothing to disclose; Aleena Lakhanpal: Nothing to disclose.

63 High posterior defects: A vaginal approach

J. Heusinkveld[1,2], A. Lakhanpal[1,2]
[1]OBGYN, University of Arizona, Tucson, AZ, [2]Banner Health, Tucson, AZ

OBJECTIVE: To demonstrate a vaginal technique for repairing high defects in the posterior vaginal wall.

DESCRIPTION: High defects in the posterior vaginal wall may result from apical detachment of the fascia of the posterior vaginal wall and resist repair by a traditional colporrhaphy because there is little or no lateral connective tissue that can be brought together over the defect. Instead, it is effective to re-suspend the posterior wall fascia from the apex using the uterosacral ligaments as an attachment point. We identify the upper edge of the "RV septum" connective tissue by finding the point at which the ruggae disappear. The attenuated epithelium over the rectocele/enterocele is then excised, and the fascia is attached to the uterosacral ligaments with delayed absorbable sutures. A few additional sutures are placed in between to approximate the tissue edges. Frequently a traditional colporrhaphy or perineorrhaphy is performed to address laxity in the distal posterior vaginal wall.

CONCLUSION: Resuspension of the posterior wall fascia from the uterosacral ligaments provides a sturdy and anatomic repair for high defects in the posterior vaginal wall.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: John Heusinkveld: Nothing to disclose; Aleena Lakhanpal: Nothing to disclose.

64 Gynecologic laparoscopic surgical training in rural Guatemala: A video to help train local staff in laparoscopic equipment and operating room set up

E. S. Han[1], A. Dinsmore[2], J. Kim[1], D. Deitsch[2], A. P. Advincula[1,2]
[1]OB/Gyn, Columbia University, New York, NY, [2]Mary & Michael Jaharis Simulation Center, Columbia University College of Physicians and Surgeons, New York, NY

OBJECTIVE: In 2018, the gynecologic specialty surgery division at the Columbia University Medical Center began a laparoscopic training program at a hospital in rural Guatemala. Here we present the creation and use of a training video that was successfully used as part of the training curriculum for non-surgeon surgical team members.

DESCRIPTION: An integral part of any surgical training program in low- and middle-income countries is the training and preparation of all staff members that will be assisting or circulating in the operating room. The video introduces trainees to the basic equipment and operating room set up for laparoscopic gynecologic surgery. It is meant to provide a generic overview so that it can be used across different hospitals in different countries, each with their own equipment and room layout. It should be used as an introduction to the operating room and as an adjunct to more hands-on, in-person training. The video was created first in Spanish and later re-recorded in English and can easily be dubbed in any language depending on local needs. It will be made available online for public use in similar training programs.

CONCLUSION: We hope to not only encourage the use of this video, but the creation and sharing of other such videos in this age of leapfrogging technology and increased access to smartphones and apps that enable easy distribution to healthcare workers in locations around the world.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Esther S. Han: Nothing to disclose; Alexander Dinsmore: Nothing to disclose; Jin Hee Kim: Nothing to disclose; David Deitsch: Nothing to disclose; Arnold P. Advincula: Nothing to disclose.

65 Robotic assisted approach to Burch urethropexy

R. E. Stepanek[1], G. Kilic[2], T. Lee[2]
[1]School of Medicine, University of Texas Medical Branch, Galveston, TX, [2]Obstetrics & Gynecology, University of Texas Medical Branch, Galveston, TX

OBJECTIVE: The goal of this video is to demonstrate our robotic assisted approach to the Burch urethropexy.

DESCRIPTION: Stress urinary incontinence (SUI) affects nearly one in three women in the United States. The Burch urethropexy, originally described as an open procedure in 1961, was long considered the standard surgical option for treating SUI. Though the Burch procedure fell out of favor in recent decades due to the ease of placing mid-urethral slings, it is regaining popularity as a safe and effective mesh-free surgical option for the treatment of SUI. It is also an option for patients who have undergone a failed mesh procedure. The many advantages of mastering the robotic assisted approach to the Burch procedure are illustrated in this video, including improved visualization and dissection of the bladder edge, retropubic space, and surrounding vessels, as well as the superior range of motion of the robotic instruments over their laparoscopic counterparts.

CONCLUSION: The Burch urethropexy is a safe and effective option for treating SUI. The robotic assisted approach demonstrated in this video increases the ease and safety of the procedure, solidifying its place in the toolbox of the modern gynecologist.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Rachel E. Stepanek: Nothing to disclose; Gokhan Kilic: Nothing to disclose; Toy Lee: Nothing to disclose.

66 Laparoscopic ureteroneocystostomy

E. Brunn, K. Woodburn, J. Robinson, L. A. Richter
Urogynecology, Washington Hospital Center, Arlington, VA

OBJECTIVE: The purpose of this video is to demonstrate our technique for laparoscopic ureteroneocystostomy for complete ureteral transection identified at the time of laparoscopic hysterectomy.

DESCRIPTION: Published rates of ureteral injury in benign gynecologic surgery are approximately 0.08%, with higher risk surgeries including reconstructive surgeries, surgeries for advanced endometriosis or large uteri and surgeries complicated by significant adhesive disease. We present the minimally invasive management of a complete ureteral transection identified during total laparoscopic hysterectomy for a 16-week size fibroid uterus in a patient with four prior laparoscopic endometriosis resections. The space of Retzius was dissected to promote bladder mobilization. The mobilized bladder was tacked to the sidewall peritoneum to ensure a tension free anastomosis. By stabilizing the proximal ureter on the bladder prior to anastomosis, manipulation of the ureter can be minimized. This may also facilitate easier passage of the ureteral stent. Postoperative management includes maintaining a ureteral stent for 1-2 months with endoscopic evaluation of the ureter at time of stent removal.

CONCLUSION: Laparoscopic ureteroneocystostomy is a feasible and safe option for management of intraoperatively recognized distal ureteral injury at the time of laparoscopic hysterectomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Elizabeth Brunn: Nothing to disclose; Katherine Woodburn: Nothing to disclose; James Robinson: Nothing to disclose; Lee A. Richter: Nothing to disclose.

67 Repair of a complex rectovaginal fistula

I. Addis[1,2], J. Heusinkveld[1,2]
[1]OBGYN, University of Arizona, Tucson, AZ, [2]Banner Health, Tucson, AZ

OBJECTIVE: The goal of our video is to demonstrate a novel surgical technique for repairing a complex rectovaginal fistula after breakdown of a 4th degree laceration repair.

DESCRIPTION: Rectovaginal fistula is rare in the United States with most occurring due to obstetrical trauma. Fortunately, only 1.7 % of deliveries lead to 4th degree lacerations and only 0.5% of those develop into fistulae. These are fistulae are often large and can lead to stool in the vagina and severely decreased quality of life. Scar tissue around the area of the fistula makes it challenging to identify the planes of tissue and demarcate vaginal mucosa from rectal mucosa and sphincter muscle. We utilized a novel method of closure of a complex

rectovaginal fistula that included (1) identifying and separating vaginal and rectal tissue, (2) closure of the rectal mucosa and sphincter, (3) dissecting and closing the vaginal tissues in layers (4) completing the closure in the method of a 2nd degree laceration repair.
CONCLUSION: This video illustrates a novel method of repairing a large rectovaginal fistula after breakdown of a 4th degree laceration repair.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Ilana Addis: Nothing to disclose; John Heusinkveld: Nothing to disclose.

68 Robotic resection and revision of uterine scar defect with hysteroscopic guidance

C. Savilo, R. B. Smith, J. Mourad
Minimally Invasive Gynecologic Surgery, University of Arizona College of Medicine Phoenix, Phoenix, AZ

OBJECTIVE: To demonstrate the steps of a robotic-assisted resection and revision of a uterine scar defect with hysteroscopic guidance and review tips and trips for this rare surgical procedure.
DESCRIPTION: In this surgical video, we present a case of a woman with secondary infertility and a uterine scar defect in the setting of a history of prior cesarean delivery. She was referred by an REI physician due to history of aborted embryo transfers with abnormal fluid collections in the uterine defect. This video describes the step by step approach to a robotic resection and revision of a uterine scar defect using hysteroscopic guidance to identify the target anatomy. Additionally, we describe tips and tricks to utilize while performing this rare surgical procedure to facilitate identification of the uterine scar laparoscopically, resect the defect in its entirety, improve hemostasis, and place a supportive suture for revision.
CONCLUSION: A minimally invasive approach to uterine scar defects can utilize simultaneous robotic-assisted laparoscopy and hysteroscopic guidance to identify the defect for resection and revision in symptomatic women or for fertility indications.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Christine Savilo: Nothing to disclose; Rachael B. Smith: Nothing to disclose; Jamal Mourad: Nothing to disclose.

69 Incorporating transvaginal laparoscopy (vNOTES) into your surgical practice

Leslie Kammire
Ob-Gyn, Wake Forest School of Medicine, Winston Salem, NC

OBJECTIVE: Explain vNOTES, practical uses, and how to incorporate the techniques into a minimally invasive gynecology practice.
DESCRIPTION: NOTES (Natural Orifice Transluminal Endoscopic Surgery) uses natural orifices to access the cavities of the human body for surgical interventions, decreasing surgical trauma and postoperative pain. It is a realistic alternative for open and laparoscopic surgery for multiple gynecologic and GI procedures. Although not yet widely done in the United States, it is becoming more prevalent in Europe and China. vNOTES combines single site surgery with vaginal surgery. This video demonstrates practical uses for transvaginal laparoscopic surgery and how to get started with it in a minimally invasive gynecologic practice. Diagnostic vaginal laparoscopy allows evaluation of pelvis and abdomen in patients in patients undergoing vaginal hysterectomy with pain complaints, to avoid missing additional pathology such as endometriosis of adhesions. The cul de sac, pelvic sidewalls, adnexa, as well as the abdomen are easily visualized. A limitation of this technique is that the anterior cul de sac is not well seen. This technique is also valuable to determine safe abdominal port placement for patients with known adhesions who are undergoing traditional laparoscopy. vNOTES allows removal of the adnexa at completion of VH that would be difficult by traditional vaginal adnexectomy. A case is presented of a patient with 7 cm benign cystic left ovarian cystadenoma that was removed via this technique after completion of TVH by morcellation.
CONCLUSION: vNOTES is expanding the options for minimally invasive gynecologic surgery by allowing more procedures to be done without incision through the transvaginal route. It can be incorporated into a minimally invasive surgical practice, starting with diagnostic cases and adnexal removal at vaginal hysterectomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Leslie D. Kammire: Nothing to disclose.

70 vNOTES (vaginal laparoscopy) case presentation: Ovarian detorsion, drainage of hemorrhagic cyst and bilateral salpingectomy in a patient with multiple prior abdominal surgeries

Leslie Kammire
Ob-Gyn, Wake Forest School of Medicine, Winston Salem, NC

OBJECTIVE: Describe technique/indication for a vNOTES case. An ovarian torsion due to a large hemorrhagic cyst, with bilateral salpingectomy for sterilization in a patient with multiple prior abdominal surgeries.
DESCRIPTION: NOTES (Natural Orifice Transluminal Endoscopic Surgery) uses the body's natural orifices (mouth, vagina, and anus) to access the cavities of the human body to perform surgical interventions. This decreases the magnitude of surgical trauma and likely reduces postoperative pain. It is a realistic alternative for open and laparoscopic surgery for multiple gynecologic and general surgery procedures. For gynecologic surgery, the vagina allows ready access to the peritoneal cavity via the posterior cul de sac. Although not yet widely done in the United States, it is becoming more prevalent in Europe and China, with studies underway comparing it with traditional laparoscopy. Transvaginal NOTES (vNOTES) combines single site surgery techniques with vaginal surgery, and adnexal surgery lends itself especially well to this approach. This video demonstrates vNOTES technique for performing common adnexal procedures. A 40 year old G4P4 patient presented with acute LLQ pain, a large hemorrhagic ovarian cyst with torsion, and she also desired sterilization. She had a history one year earlier of bowel resection/reanastomosis surgery with a vertical midline upper abdominal incision and also a remote laparoscopic cholecystectomy. She underwent cyst drainage, ovarian detorsion and bilateral salpingectomy via transvaginal laparoscopy. She had an uncomplicated postoperative course and required no narcotics.
CONCLUSION: vNOTES is expanding the options for minimally invasive gynecologic surgery by allowing common gynecologic procedures to be done without incision through the transvaginal route.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Leslie D. Kammire: Nothing to disclose.

71 Robotic colostomy take-down

Wafa Khadraoui
OB/GYN, YNNH Bridgeport Hospital, Bridgeport, CT

OBJECTIVE: To describe a robotic assisted minimally invasive approach to colostomy take down in a patient with oncology history and multiple prior abdominal surgeries.

DESCRIPTION: This video outlines the surgical approach, considerations and steps for a robotic assisted colostomy take down. The patient had a history of stage IIIA endometrioid endometrial carcinoma who underwent optimal cytoreductive surgery with required sigmoid resection with descending end-colostomy secondary to diverticulitis. She was taken to the operating room following completion of treatment and being disease free for a significant period of time. We present the surgical steps required for colostomy take down using a robotic assisted minimally invasive approach.

CONCLUSION: In conclusion, robotic-assisted colostomy take-down and anastomosis of descending colon to rectum was successfully performed in this patient. Minimally invasive techniques should be considered as an alternative to laparotomy for patients with colostomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Wafa K. Khadraoui: Nothing to disclose.

72 Liver laceration with Palmer's Point entry in the super obese patient

A. Stone, J. Mourad
MIGS, Banner University Medical Center, Phoenix, AZ

OBJECTIVE: To present an uncommon liver laceration complication with Palmer's Point entry and describe considerations for laparoscopic entry in the obese patient.

DESCRIPTION: In this surgical video, we present a case report of a liver laceration during laparoscopic entry with Palmer's Point. Given this patient's super obesity, both her external and internal anatomy were distorted contributing to our surgical complication. In order to address this, we describe strategies and considerations for laparoscopic entry in the obese patient with specific emphasis on the consideration of hepatomegaly due to fatty liver disease. Finally, we discuss the management of liver lacerations as recommended by the American Association for the Surgery of Trauma.

CONCLUSION: A diagnosis of hepatomegaly must be considered in the super obese patient prior to planning laparoscopic entry using Palmer's point.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Ashley Stone: Nothing to disclose; Jamal Mourad: Nothing to disclose.

73 Laparoscopic uterosacral ligament suspension task trainer

M. Youngstrom, N. Metcalfe, K. Falk, J. Ogorek, E. Chahine
Gynecology and Obstetrics, Emory University, Atlanta, GA

OBJECTIVE: Simulation is becoming an important cornerstone of surgical teaching and has been shown to effectively improve a trainee's surgical skills. Consequently, there is an increasing demand for low-cost models to simulate different surgical approaches. Laparoscopic uterosacral ligament suspension (LUSLS) is an effective apical prolapse repair procedure, however, it demands complex laparoscopic skills. We created an LUSLS task trainer for trainees to safely learn the key anatomy and steps of a LUSLS.

DESCRIPTION: Our model is constructed using a square plastic container, two clown balloons representing the ureters, an additional balloon for the bladder, an infant sock and pantyhose for the vaginal cuff, and two shoelaces for the uterosacral ligaments (USL). The vaginal cuff is made by cutting the toe of the infant sock, placing the pantyhose over the sock, and suturing the two together circumferentially. The USL are then sewn in with suture on the posterior portion of the sock and placed through two holes made in the bottom of the container and tied down. The "ureters" are threaded through 4 holes to allow them to run laterally to the ULS approximating its anatomic course. The balloon bladder is then tied on either side with suture and attached to the ureters, and glued to the vaginal cuff. Two sutures are placed at 3 o'clock and 9 o'clock on the vaginal cuff. A door stopper is placed under the plastic container to create a more anatomical view. The attached video shows the step-by-step assembly of the model and a LUSLS using the model.

CONCLUSION: This model is low-cost and quick to assemble, and it is small, reusable, and portable. We recognize that LUSLS can be performed a variety of ways. We believe that this model allows for the practice of key steps of LUSLS. Our model is unique in that it allows trainees to safely and frequently practice the complex laparoscopic skills required to successfully learn and perform a LUSLS.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Mallory Youngstrom: Nothing to disclose; Nina Metcalfe: Nothing to disclose; Kerac Falk: Nothing to disclose; John Ogorek: Nothing to disclose; E. Britton Chahine: Nothing to disclose.

74 Utilizing the posterior vaginal fornix for primary laparoscopic access

Allan Adajar[1,2]
[1]Obstetrics and Gynecology, Illinois Institute of Gynecology & Advance Pelvic Surgery, Chicago, IL, [2]MIGS101, Chicago, IL

OBJECTIVE: The objective of this video is to demonstrate a technique for primary laparoscopic access, using the posterior vaginal fornix to enter through the posterior cul-de-sac.

DESCRIPTION: When performing laparoscopic surgery, the initial entry into the abdominal cavity has many potential risks for complications. This is especially true for patients with a high BMI. This is also true for patients with a significant past surgical history. Palmer's point, located along the left mid-clavicular line, 2-3 cm below the subcostal margin, is a relatively safe point of entry, for these patients. Palmer's point is not recommended however, in patients with splenomegaly, or a previous history of surgery in the left upper abdomen. The following video demonstrates a technique for primary laparoscopic access, using the posterior vaginal fornix to enter through the posterior cul-de-sac. This entry method may be considered for patients in whom entry through the left upper quadrant is contraindicated. Prior to performing the procedure, a thorough recto-vaginal exam under anesthesia must be performed to assess the posterior cul-de-sac. Any palpable nodularity, immobility of the recto-vaginal septum, or other clinical findings that suggests obliteration of the posterior cul-de-sac, is a contraindication to this method of entry. Because this technique has potential risk for injury to the colon, it is recommended to ALWAYS evaluate for the presence of a colon injury at the end of the case.

CONCLUSION: Direct optical entry, through the posterior vaginal fornix is a laparoscopic entry method to be considered, for patients in whom a left upper quadrant entry is contraindicated.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Allan A. Adajar: Nothing to disclose.

75 Surgical correction of obstructed defecation syndrome

T. Cui, C. A. Matthews
Urology, Wake Forest School of Medicine, Winston Salem, NC

OBJECTIVE: We present a video description of anterior rectopexy at the time of sacrocolpopexy with obliteration of the rectovaginal space to address posterior compartment prolapse as a cause of outlet constipation.

DESCRIPTION: Obstructed defecation syndrome (ODS) is a form of colonic constipation in which stool cannot effectively be evacuated from the rectum. ODS is usually caused by a combination of behavioral, functional, and anatomic factors. While many women with ODS can experience improvement with aggressive medical management, the anatomic contribution what we term a "posterior" enterocele to defecation obstruction can be significant.

CONCLUSION: To date, we have completed 12 procedures with resolution of ODS in all subjects. With 6-12 months of post-operative follow up, there have been no operative complications and no recurrent posterior enterocele. One subject had recurrent rectal mucosal prolapse. Prospective data collection is still ongoing. The modification to sacrocolpopexy presented in this video seeks to address ODS by obliterating the rectovaginal space. Traditional sacrocolpopexy does not effectively address this defect and small bowel continues to herniate behind the posterior vaginal mesh.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Tao Cui: Nothing to disclose; Catherine A. Matthews: Boston Scientific, Investigator, Grant Support; Johnson and Johnson, Expert witness, Honorarium.

76 Robotic myomectomy with intraoperative ultrasound guidance

M. Guirguis[1], J. Alshiek[2], A. S. Shobeiri[1]
[1]Inova Fairfax Hospital, Falls Church, VA, [2]Hillel Yafe Hospital, Hadera, Israel

OBJECTIVE: The objective of this video is to demonstrate the technique for utilization of intraoperative ultrasound guidance at the time of robotic myomectomy.

DESCRIPTION: When the intramural fibroid was noted to be difficult to find, the BK Flex Focus 5000 with robotic ultrasound probe was introduced through one of the lateral ports. The ultrasound probe was utilized to scan the uterus for the location, depth, and distance from the endometrial cavity of the intramural fibroid. The fibroid was then successfully accessed without entrance of the endometrial cavity. Removal of all fibroids was achieved without entrance into the endometrial cavity, and the patient was noted to have normal menstrual cycles at the 3-month postoperative visit.

CONCLUSION: Intraoperative ultrasound guidance is an effective method for localizing intramural fibroids that are difficult to palpate while avoiding the endometrial cavity.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Marina Guirguis: Nothing to disclose; Jonia Alshiek: Nothing to disclose; Abbas S. Shobeiri: Nothing to disclose.

77 Tips and tricks: Presacral neurectomy

H. Chapman[2], A. McHenry[2], M. Hibner[2], K. M. de Souza[1]
[1]Gynecology, Pennsylvania State University School of Medicine, Hershey, PA, [2]Obstetrics/Gynecology, Creighton University School of Medicine, Phoenix, AZ

OBJECTIVE: This video reviews tips for successful presacral neurectomy.

DESCRIPTION: Presacral neurectomy is a relatively uncommon intervention for central pelvic pain and/or dysmenorrhea. The most important element in completing this procedure is identification of the appropriate area of retroperitoneal dissection. The pertinent anatomy is reviewed in this video. Additionally, use of the third arm to optimize visualization, methodical isolation of the nerve plexus, and cranial to caudal transection of the nerve are also reviewed in detail.

CONCLUSION: For clinicians who offer presacral neurectomy to their patients, this video offers a review of the procedure with special attention to approach and maneuvers that increase visualization and maintain hemostasis so that the intervention can be performed in an efficient and complete manner.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Hannah Chapman: Nothing to disclose; Avory McHenry: Nothing to disclose; Michael Hibner: Nothing to disclose; Katherine M. de Souza: Nothing to disclose.

78 A novel robotic endoscopic device used for operative hysteroscopy: Retained IUD

L. Harvey[1], R. Hendrick[2], N. Dillon[3], E. Blum[3], L. Branscombe[3], S. Webster[2], T. Anderson[1]
[1]Obstetrics and Gynecology, Vanderbilt University Medical Center, Nashville, TN, [2]Vanderbilt University, Nashville, TN, [3]Virtuoso Surgical, Nashville, TN

OBJECTIVE: To trial the use of a novel robotic endoscopic surgery platform for operative hysteroscopy to remove a retained intrauterine device (IUD).

DESCRIPTION: The robotic endoscope provides two concentric tube instruments that are 1-2 mm in size. These instruments extend from the tip of a standard rigid endoscope and are controlled robotically by an operator distant from the surgical field. In this pilot, a hook, and monopolar needle were used to remove an IUD from a commercially available porcine uterine model simulating retained IUD (Gynesim). Surgical principles of adequate exposure and traction and counter-traction are demonstrated.

CONCLUSION: The platform may offer advantages that will be useful for some gynecologic applications in the future. These include improved exposure, finer dissection capability, and use of two-handed technique to allow traction and counter-traction. Further study regarding the safe, efficient, and cost-effective use of the robotic endoscope in gynecology is needed.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Lara Harvey: Nothing to disclose; Richard Hendrick: Virtuoso, employee, interest, salary; Neal Dillon: Virtuoso, employee, interest, salary; Evan Blum: Virtuoso, employee, interest, salary; Lauren Branscombe: Virtuoso, employee, interest, salary; Scott Webster: Virtuoso, employee, interest, salary; Ted Anderson: Nothing to disclose.

79 Avoiding oophorectomy in acute ovarian torsion

M. G. Leon, A. R. Carrubba, M. Robertson, T. A. Dinh
Surgical Gynecology, Mayo Clinic, Jacksonville, FL

OBJECTIVE: Our objectives are to present the laparoscopic management of acute ovarian torsion in the setting of a large adnexal mass by mass decompression, ovarian detorsion, and cystectomy. To review the literature supporting detorsion without oophorectomy in the setting of an acute ovarian torsion, and to identify the findings that support oophorectomy in this setting.

DESCRIPTION: Adnexal torsion is the fifth most common gynecologic emergency, and 30 percent occur in females younger than 20 years. Previous studies suggest that ovarian preservation in these cases is safe and that ovarian reserve reflected by the antral follicle count is not compromised. Despite a growing body of evidence supporting detorsion without oophorectomy, several unfounded myths and non- evidence-based statements including risk of ovarian vein thrombosis, non-viability of the ovarian tissue, and ovarian functional loss, continue to contribute to the practice of oophorectomy. This video reviews the literature surrounding detorsion without oophorectomy based on a case presentation.

CONCLUSION: Adnexal conservation should be prioritized in the setting of acute ovarian torsion despite the appearance of the ovary. In most cases, the ovary will regain perfusion, remain viable, and remain functional. Oophorectomy should be performed if there is a strong suspicion of malignancy, or if the severely necrotic ovary falls apart.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Mateo G. Leon: Nothing to disclose; Aakriti R. Carrubba: Nothing to disclose; Matthew Robertson: Nothing to disclose; Tri A. Dinh: Nothing to disclose.

80 Intraoperative suprapubic cystoscopy

J. Gonzalez[1,3], F. Gonzales[2], K. Lund[1], T. Muffly[3]
[1]Obstetrics and Gynecology, University of Colorado, Denver, CO, [2]Surgery, University of Colorado, Denver, CO, [3]Obstetrics and Gynecology, Denver Health and Hospital Authority, Denver, CO

OBJECTIVE: Cystourethroscopy is a common tool used in obstetrics, benign, and subspecialty gynecology for both diagnostic and therapeutic purposes. Conventionally, the cystoscope is inserted transurethrally where the entirety of the bladder can be observed through various angled rigid scopes or flexible scopes. However, less conventional and alternative techniques may be warranted depending on the clinical scenario or when pathologic conditions may limit conventional cystourethroscopy. In this video, we demonstrate a safe and useful alternative to investigate the bladder using suprapubic cystoscopy in a patient in which there was strong suspicion for trophoblastic invasion of the bladder tissues.

DESCRIPTION: We performed a review of the use for suprapubic cystoscopy as it is currently used in obstetrics and gynecology and urology. We demonstrate the steps and technique to perform suprapubic cystoscopy in a patient with invasive placentation in whom bladder involvement was strongly suspected. The technique and steps to perform suprapubic cystoscopy was demonstrated intraoperatively. Adequate bladder survey was able to be performed safely without the need for prolonged catheterization, antibiotic prophylaxis, or need for post-operative imaging without post-operative genitourinary complication.

CONCLUSION: Suprapubic cystoscopy can be a useful tool for the obstetrician gynecologist in cases where trans-urethral cystoscopy is limited by pathology or alternative views for diagnostic purposes are warranted such as this case where there was great concern for trophoblastic invasion of the bladder. This technique can be performed safely and is a low risk procedure.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Javier Gonzalez: Nothing to disclose; Fred Gonzales: Nothing to disclose; Kirsten Lund: Nothing to disclose; Tyler Muffly: Nothing to disclose.

81 Hysteroscopic uterine artery laceration in setting of cervical stenosis: A case study

O. Borodulin[1], A. A. Adajar[2]
[1]University of Nevada Las Vegas, Las Vegas, NV, [2]Illinois Institute of Gynecology and Advanced Pelvic Surgery, Chicago, IL

OBJECTIVE: Discuss management of cervical stenosis and techniques for avoidance of perforation, as well as risks for uterine perforation, sites of potential perforation, and management options in the event of a perforation.

DESCRIPTION: Hysteroscopy, while a low-risk procedure, can be associated with significant risks, including creation of a false passage during dilation. This risk is increased in the setting of cervical stenosis. Our video discusses the risks factors for cervical stenosis, the preoperative and intraoperative management techniques of this condition, and demonstrates a case of hysteroscopic uterine perforation in a patient with known cervical stenosis. We identify the potential sites through which a perforation may occur, and management of defects at these sites. In our case study, the perforation occurred through the right broad ligament and lacerated the right uterine artery, which required laparoscopic exploration of the broad ligament and ligation of the uterine artery.

CONCLUSION: This video will provide a thorough review of cervical stenosis as well as uterine perforation, and will discuss the management options in both scenarios, and will demonstrate one such case, in which the uterus was perforated along the right cervical canal into the right broad ligament, lacerating the uterine artery in the process. We also demonstrate the process of identifying the defect and repairing it laparoscopically.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Olga Borodulin: Nothing to disclose; Allan A. Adajar: Teleflex, Speaker, Honorarium.

82 10 Steps to a successful laparoscopic myomectomy

Amira Quevedo
Obstetrics and Gynecology, St. Joseph Hospital, Eureka, CA

OBJECTIVE: To demonstrate easy to replicate steps to decreasing blood loss, avoid vital structures, increase efficiency, and perform in bag morcellation during laparoscopic myomectomies.

DESCRIPTION: In this video, I demonstrate easy to replicate steps to a laparoscopic myomectomy. I illustrate the use of judicious use of ureteral stents in appropriate candidates. I describe the use of dilute vasopressin, misoprostol, and tranexamic acid to decrease blood loss. The use of barbed suture in order to suture efficiently. Finally, the use of in-bag morcellation is reviewed through a mini-laparotomy.

CONCLUSION: This video illustrates easy to replicate steps in laparoscopic myomectomy in order to safely identify the ureters, decrease blood loss, suture efficiently, and the use of in bag morcellation through a mini-laparotomy.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Amira Quevedo: Nothing to disclose.

83 Technique for retrograde robotic hysterectomy for management of dense bladder adhesions

F. Getaneh, L. Mutlu, F. Seifi
Yale New Haven Hospital, New Haven, CT

OBJECTIVE: The primary objective is to show a technique for performing retrograde dissection of densely adherent bladder from anterior uterine wall during robotic-assisted laparoscopic hysterectomy.

DESCRIPTION: Many women who undergo hysterectomy have a history of prior cesarean sections, which can result in dense anterior uterine adhesions. Significant adhesions between uterus and bladder create a challenge for safe completion of hysterectomy without injury to lower urinary tract. Here, we show a technique for performing a retrograde hysterectomy in which all major blood supply to the uterus is sealed and the colpotomy completed prior to bladder adhesiolysis. Furthermore, we show a technique for retrograde dissection of the bladder from uterine wall starting inferiorly at the level of the cardinal ligaments and working superiorly towards the fundus of the uterus. With this technique, there is early control of vascular supply thus decreasing intraoperative blood loss, direct visualization of ureters thus decreasing risk of injury, and a 360-degree access to bladder adhesions once colpotomy is complete in order to safely perform adhesiolysis. We show dissection of the pararectal and paravesical spaces, bilateral ureterolysis, and sealing of uterine artery at its origin.

CONCLUSION: Performing a retrograde hysterectomy allows early control of blood supply, constant visibility of ureters, and access to inferior bladder adhesions. Performing a retrograde dissection of the bladder can decrease risk of injury to lower urinary tract. These techniques can be used to safely perform robot-assisted laparoscopic hysterectomy in patients with dense uterine adhesions to the bladder.

DISCLOSURE OF RELEVANT FINANCIAL RELATIONSHIPS: Feven Getaneh: Nothing to disclose; Levent Mutlu: Nothing to disclose; Farinaz Seifi: Nothing to disclose.

E

F

G

H

I

*Member Candidate

T

U

V

W

X

Y

Z