Cleveland Clinic

Obstetrics, Gynecology & Women's Health Institute

4TH ANNUAL

Research Day

May 22, 2019

Bunts Auditorium

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RESEARCH DAY

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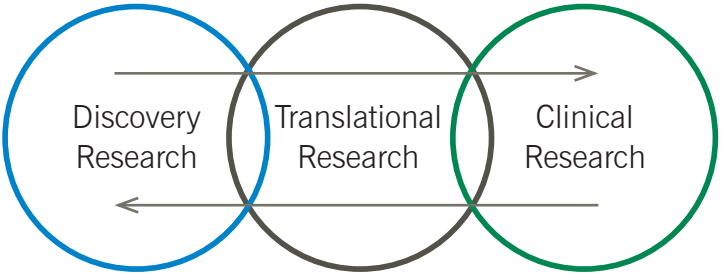

Key Note Address & Lecture

Deborah Driscoll, MD
Luigi Mastroianni Professor and Chair,
Department of Obstetrics and Gynecology
Perelman School of Medicine
University of Pennsylvania

Judges (Oral Presentations)

Deborah Driscoll, MD

Linda Bradley, MD

Jeffrey Goldberg, MD

Marie Fidela Paraiso, MD

Stephanie Ricci, MD

Judges (Poster Presentations)

Pelin Batur, MD

Cecile Ferrando, MD, MPH

Rebecca Flyckt, MD

Chad Michener, MD

Katherine Singh, MD

Agenda

7–7:30 am	**Registration and Continental Breakfast**
7:30–7:35 am	**Welcome** Beri Ridgeway, MD
7:35–7:40 am	**Introduction** Ruth Farrell, MD, MA
7:40–8:40 am	**Key Note Address** ***Transforming care through research and innovation*** Deborah Driscoll, MD
8:40–9:50 am	**Graduating Fellow Oral Presentations**
8:40 am	***Of Mice and Mesh: investigating the etiology of mesh complications in a mouse model of prolapse*** C. Emi Bretschneider, MD Fellow, Female Pelvic Medicine & Reconstructive Surgery
8:50 am	***Thy-1 predicts poor prognosis and is associated with self-renewal in ovarian cancer*** Elizabeth Connor, MD Fellow, Gynecologic Oncology
9:00 am	***2-Octylcyanoacrylate for the prevention of anastomotic leak*** Anthony Costales, MD Fellow, Gynecologic Oncology
9:10 am	***Perioperative adverse events in women undergoing concurrent urogynecologic oncology surgeries for suspected malignancy*** Emily Davidson, MD Fellow, Female Pelvic Medicine & Reconstructive Surgery

9:20 am — ***Ovarian tissue cryopreservation and auto-transplantation: a comparison of freezing protocols, surgical techniques, and a novel tissue preparation and delivery system***
Anne Davis, MD
Fellow, Reproductive Endocrinology & Infertility

9:30 am — ***Cost-effectiveness analysis of APEXM™ pelvic floor therapy for the treatment and management of female urinary incontinence***
Camille Moreno, DO, NCMP
Fellow, Specialized Women's Health

9:40 am — ***Effectiveness of InTone™ and InToneMV™ pelvic floor stimulation therapy for women suffering from urinary incontinence and/or fecal incontinence***
Sabrina Sahni, MD, NCMP
Fellow, Specialized Women's Health

9:50–10:25 am	Bunts Lobby	Refreshment Break & PGY2 Resident Poster Presentations

9:55 am — ***Feasibility and outcomes of opportunistic bilateral salpingectomy during vaginal hysterectomy in patients with traditional relative contraindications***
Anna Chichura, MD

10:00 am — ***Cervico-vaginal junction to anterior culdesac: measured distance during vaginal hysterectomy in patients with a history of cesarean section***
Alyssa Herrmann, MD

10:05 am — ***Correlation between clinical chorioamnionitis and histopathology: How can we better predict outcomes?***
Melanie Katz, MD

10:10 am — ***Antibiotic prophylaxis for surgical site infection at the time of hysterectomy in patients with reported penicillin allergy***
Lia Miceli, MD

10:15 am — ***Characterization of endometrial cancer in young patients diagnosed under the age of 40 years***
Jessica Son, MD

10:30–11:45 am	PGY3 Resident Oral Presentations
10:30 am	*Understanding trends and risk factors for vaginal cuff dehiscence after laparoscopic hysterectomy* Dee Das, MD
10:45 am	*Is immediate post-abortion LARC placement at time of elective termination effective at reducing rates of repeat abortion?* Sarah Hershman, MD
11:00 am	*Association between hemoglobin A1C and hypertensive disorders in Type 2 diabetics* Emily Holthaus, MD
11:15 am	*Thickened endometrium in postmenopausal women with an initial biopsy of limited, benign, surface endometrium: clinical outcome and subsequent pathologic diagnosis* Christine Hur, MD
11:30 am	*Gynecology Oncology physician barriers and perceptions of palliative care and hospice services* Erica Newlin, MD

11:45 am–1 pm	Innovations in Ob/Gyn Lunch
12:00 pm	*Fueling (surgical) innovation from areas of need* Rosanne Kho, MD
1:15 pm	Presentation of Certificate to Deborah Driscoll, MD
1:30 pm	Foyer Group Picture – Presenters, mentors, judges, discussants, Program Directors, Drs. Farrell, Falcone and Ridgeway
1:30 pm	Adjourn

1:45–2:45 pm	Post Research Day Breakout Sessions
TT1-100	How to write and publish a high-impact journal article
TT1-114	The ABC's of federal, foundation & CCF funding opportunities
TT1-102	How to get involved in research and academics

Past Research Day Award Winners

Resident Poster Presentation – 1st Place

2018 Sarah Hershman, MD
2017 Caitlin Carr, MD
2016 Laura Moulton, DO

Resident Oral Presentation – 1st Place

2018 Caitlin Carr, MD
2018 Julian Gingold, MD, PhD
2017 Laura Moulton, DO
2016 Jamie Stanhiser, MD
2016 Lisa Caronia Hickman, MD

Fellow Oral Presentation – 1st Place

2018 Tonya Nikki Thomas, MD
2017 Kathryn Maurer, MD
2016 Linnea Goodman, MD

Key Note Address & Lecture

Deborah Driscoll, MD

Luigi Mastroianni Professor and Chair,
Department of Obstetrics and Gynecology
Perelman School of Medicine, University
of Pennsylvania

Deborah A. Driscoll, MD, is the Luigi Mastroianni, Jr. Professor and Chair of the Department of Obstetrics and Gynecology and Director of the Center for Research on Reproduction and Women's Health at the Perelman School of Medicine at the University of Pennsylvania. She also holds joint appointments in the Departments of Pediatrics and Human Genetics. A graduate of Smith College and New York University School of Medicine, she completed a residency in Obstetrics and Gynecology at the Hospital of the University of Pennsylvania and a fellowship in Clinical and Molecular Genetics at the University of Pennsylvania.

Dr. Driscoll is internationally known for her research on the 22q11.2 deletion syndrome and for her expertise on genetic screening and the care of women with genetic conditions. Dr. Driscoll is the principle investigator of the Women's Reproductive Health Research (WRHR) career development program and the March of Dimes Prematurity Research Center at the University of Pennsylvania.

Dr. Driscoll has held numerous leadership roles at Penn and nationally, including President of the Council of University Chairs in Obstetrics and Gynecology and President of the American Board of Obstetrics and Gynecology. She is a member of the National Academy of Medicine and an honorary fellow of the Royal College of Obstetricians & Gynecologists.

Oral Presentation Judges

Deborah Driscoll, MD
Luigi Mastroianni Professor and Chair,
Department of Obstetrics and Gynecology
Perelman School of Medicine,
University of Pennsylvania

Marie Fidela Paraiso, MD
Professor of Surgery
Section Head, Urogynecology
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Linda Bradley, MD
Associate Professor of Surgery
Vice Chair, Obstetrics, Gynecology &
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Stephanie Ricci, MD
Clinical Assistant Professor of Surgery
Staff, Gynecologic Oncology
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Jeffrey Goldberg, MD
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Section Head, Reproductive
Endocrinology & Infertility
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Poster Presentation Judges

Pelin Batur, MD
Associate Professor of Medicine
Obstetrics, Gynecology &
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Chad Michener, MD
Associate Professor of Surgery
Interim Chair, Department of
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Cecile Ferrando, MD, MPH
Assistant Professor of Surgery
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Katherine Singh, MD
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Associate Staff, Maternal Fetal Medicine
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Rebecca Flyckt, MD
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Obstetrics, Gynecology & Women's Health Institute
Graduating Fellows

Oral Presentations

Of Mice and Mesh: investigating the etiology of mesh complications in a mouse model of prolapse

C. Emi Bretschneider, MD

Objective: To assess aberrations of elastin in mesh implanted tissue in an animal model of POP in order to better elucidate the pathophysiological cause of mesh complications.

Methods: The Lysyl oxidase like-1 knockout (KO) mouse is an animal model that spontaneously and reliably develops POP after delivery. We bred KO mice and genetically matched Wild-Type (WT) mice for this study. KO mice were randomized to either undergo sham surgery or have a polypropylene (PP) implant placed in the rectovaginal space; WT mice only underwent the sham surgery. A total of 42 KO mice and 18 WT mice were needed to power the study to detect a difference in histologic outcomes between the 3 different groups.

6, 12 and 18 weeks after surgery, the rectovaginal septum of each mouse was harvested and underwent histologic testing. A modified Hart's stain was used to assess elastin, hematoxylin & eosin (H&E) to evaluate inflammatory changes, and Masson's trichrome to assess collagen. Weight, perineal length, prolapse stage and pain sensitivity assessments were collected every three weeks.

Elastin was evaluated in a quantitative manner while collagen and inflammation were evaluated in a semi-quantitative manner. Comparisons of all measurements were performed between WT sham and KO sham as well as KO sham and KO implant groups using ANOVA.

Results: A total of 60 mice were included in the study. In terms of elastin measurements, maximum diameter and angle were significantly decreased in KO sham compared to WT sham at 18 weeks ($p<.001$ and $p=0.04$, respectively). Tortuosity was significantly decreased in KO sham compared to WT sham at all three time points ($p= 0.04$, $p= 0.02$, and $p= 0.04$, respectively). The amount of elastin, represented by percent area, was significantly greater in the KO sham compared with both KO implant ($p<.001$) and with WT sham ($p<.001$) at 12 weeks. A trend for decreasing collagen in the KO implant group was appreciated over time.

Conclusions: A significantly decreased amount of elastin was noted in the KO implant group compared to the KO sham group, suggesting that mesh decreases the elasticity of the surrounding tissues and thus could play a role in mesh related complications.

Funding: Cleveland Clinic Research Program Committee grant

Faculty Mentor: Margot Damaser, PhD

Thy-1 predicts poor prognosis and is associated with self-renewal in ovarian cancer

Elizabeth Connor, MD

Objective: To identify cancer stem cell (CSC) markers in epithelial ovarian cancer (EOC), correlate with clinical outcomes, and assess for potential therapeutic targets.

Methods: High throughput screening (HTS) compared cell surface marker expression between ovarian CSCs and non-CSCs. The Cancer Genome Atlas (TCGA) data were correlated with survival outcomes. Quantitative real-time PCR, flow cytometry, and immunoblots assessed RNA and protein expression. Limiting dilution assays assessed self-renewal capacity and proliferation assays assessed tumorigenicity. RNA in-situ hybridization was performed on patient specimens to assess feasibility.

Results: CD90 (Thy-1) is more highly expressed in ovarian CSCs than non-CSCs, in EOC compared to benign ovarian epithelium ($P<0.001$), and is highest in serous EOC ($P<0.05$). Serous ovarian cancers with high Thy-1 expression have poorer outcomes (median PFS 15.8 vs. 18.9 months, $P=0.003$; median OS 40.1 v. 45.8 months, $P=0.005$). Endometrioid ovarian cancers with high Thy-1 have poorer PFS, but no difference in OS (upper quartile PFS 34 v. 11 months, $P=0.013$; quartile OS not reached, $P=0.58$). *In vitro*, Thy-1 expression is higher in CSCs versus non-CSCs ($P<0.001$). EOC cells with high Thy-1 expression demonstrate increased proliferation and self-renewal ($P<0.001$). Thy-1 knock-

down in EOC cells decreases expression of NANOG ($P<0.05$), and decreases tumorigenicity ($P<0.05$) and self-renewal capacity ($P<0.05$). RNA in situ hybridization is feasible in ovarian cancer tissue specimens.

Conclusions: Thy-1 is a marker of ovarian CSCs. Increased expression of Thy-1 in EOC predicts poor prognosis and is associated with increased tumorigenicity and self-renewal capacity. Thy-1 knockdown decreases tumorigenicity and self-renewal capacity, and represents a potential therapeutic target.

Funding: Funding for this research provided by Cleveland Clinic Foundation, Clinical and Translational Science Collaborative of Cleveland (UL1TR000439), Case Comprehensive Cancer Center, Case Western Reserve University (P30 CA043703), the Cleveland Clinic VeloSano Bike to Cure Impact Award, and the Laura J. Fogarty Endowed Chair for Uterine Cancer Research (Dr. Reizes).

Faculty Mentor: Ofer Reizes, PhD

2-Octylcyanoacrylate for the prevention of anastomotic leak

Anthony Costales, MD

Objective: Anastomotic leak after colorectal surgery is a significant cause of morbidity and mortality. The aim of this study was to evaluate the impact of a reinforced colo-colonic anastomosis with tissue adhesive, 2-octylcyanoacrylate (2-OCA), on the integrity of anastomotic healing as measured by anastomotic bursting pressure.

Methods: Sixty-eight female Sprague-Dawley rats underwent a rectosigmoid colon transection and a sutured end-to-end anastomosis followed by randomization to receive no further intervention or reinforcement with the tissue adhesive, 2-OCA. After seven postoperative days, a macroscopic assessment of the anastomosis, mechanical assessment to determine anastomotic bursting pressure, and a detailed semi-quantitative histopathologic healing assessment were performed.

Results: Thirty-four animals were randomized to each group. Study characteristics did not differ between the groups. There was also no difference in the degree of adhesions present postoperatively. Although there was no difference between the net proximal and distal luminal areas in the two groups (0.37 cm^2versus 0.55 cm^2, $P = 0.26$), the 2-OCA group exhibited evidence of stricture in 15% of anastomoses as compared with 3% in the suture-only group ($P < 0.0001$). Histologically, the presence of only fibroblasts density was statistically more evident in the 2-OCA group compared with the sutured-only anastomosis ($P = 0.0183$). There was not a significant increase in mechanical strength in the 2-OCA group (238.9 mm Hg) versus in the suture-only group (231.8 mm Hg). There was no difference in the rate of anastomotic leak in the 2-OCA as compared with the suture-only group (9.1 versus 8.8%).

Conclusions: Application of 2-OCA to reinforce a colo-colonic anastomosis clinically provides no benefit to its mechanical strength and detrimentally increases the rate of obstruction and/or stricture in this in vivo model.

Funding: Research Program Committee of the Cleveland Clinic Foundation [Grant #225]

Faculty Mentor: Chad Michener, MD and John Kirwan, PhD

Perioperative adverse events in women undergoing concurrent urogynecologic and gynecologic oncology surgeries for suspected malignancy

Emily Davidson, MD

Objective: To compare the incidence of adverse events after concurrent urogynecologic and gynecologic oncology surgery to gynecologic oncology surgery alone and to describe the frequency of modification in planned urogynecologic procedures

Methods: This was a retrospective matched cohort study of women who underwent concurrent surgery at a large tertiary care center between January 2004 and June 2017. Cohorts were matched by surgeon, surgery route, date, and final pathologic diagnosis. Perioperative data and postoperative adverse events classified by Clavien-Dindo grade were compared.

Results: One hundred and eight patients underwent concurrent surgeries, with 216 matched cohorts. Concurrent-case patients were more likely to be older, postmenopausal, have greater vaginal parity, have had preoperative chemotherapy, and have preoperative cardiac or pulmonary disease. There were no differences in intraoperative complications or Dindo grade ≥ 3 adverse events between groups, but there were more grade 2 adverse events in the concurrent cohort (44 vs 19%, $p < 0.0001$) including postoperative urinary tract infection (UTI) (26 vs 7%, $p < 0.0001$). Concurrent surgery remained associated with a higher incidence of grade ≥ 2 events on multivariate analysis [odds ratio (OR) 2.5, 95% confidence interval (CI) 1.5-4.2, $p = 0.0004$). Discharge with a urinary catheter was more frequent after concurrent cases (35 vs 2%, $p < 0.0001$). Planned urogynecologic procedures were modified in 10% ($n = 11$) of cases.

Conclusions: Concurrent surgeries have an increased incidence of minor but not serious perioperative adverse events. One in ten planned urogynecologic procedures is either modified or abandoned during combined surgeries. Gynecologic oncology and urogynecology surgeons could improve patients' quality of life by assessing for pelvic floor disorders preoperatively and planning combined surgeries when possible.

Funding: None

Faculty Mentor: Cecile Ferrando, MD, MPH

Ovarian tissue cryopreservation and auto-transplantation: a comparison of freezing protocols and a novel tissue preparation and delivery system

Anne Davis, MD

Objective: Compare two methods of ovarian cryopreservation: slow freezing and vitrification. Evaluate the feasibility of isolating smaller ovarian units and preparing them for transplant using a novel tyramine-based hyaluronan hydrogel.

Methods: This study was designed as a prospective pilot. Six female ewes underwent 18 surgical procedures at the CCF Biological Resources Unit, under an approved IACUC protocol. These included 1) recovery of ovarian cortex, 2) re-implantation of frozen then thawed ovarian cortex, 3) recovery of transplanted ovari-

an cortex. Tissue was divided by laterality with right undergoing slow-freezing and left undergoing vitrification and ultimately transplanted back to the same laterality in each animal. After each stage (fresh, thawed, transplanted) samples of the cortices were submitted for pathologic analyses and IHC staining with CCASP3 and CD31 – apoptosis and angiogenesis markers respectively. In addition, portions of tissue frozen by each method were morcellated and treated with the hyaluronon gel prior to the second surgery.

For each animal, difference in CD31 and CCASP3 were calculated at each stage. Paired T-tests were performed by pairing fresh vs. vitrification for each animal. All paired T-tests had sample size of 6 pairs. Finally, unpaired CD31 and CCASP3 values at each stage were summarized using means and standard deviations and compared using two-sample t-tests. They were also summarized using medians and quartiles and compared using Wilcoxon rank sum tests.

Results: For changes between fresh and thawed, there was no significant change for CCASP3 ($p=0.38$). For changes between fresh and transplanted, there was no significant change for either CD31 ($p=0.55$) or CCASP3 ($p=0.53$) in the whole tissue or the morcellated tissue (CD31 $p=0.76$, CCASP3 $p=0.54$).

Conclusions: Although the sample size in this pilot study was not powered for statistical significance, using the animals as their own controls, we did not observe a significant difference between the two freezing methods with respect to apoptosis or angiogenesis markers.

With respect to the feasibility of morcellating the tissue and suspending in the hyaluronon hydrogel prior to transplant, our analysis of this method was compromised by technical difficulties with retrieval. Therefore, this may still be a beneficial method for re-implantation of cryopreserved ovarian tissue.

Funding: CCF RPC grant 180 S4

Faculty Mentor: Rebecca Flyckt, MD

Cost-Effectiveness Analysis of APEXM™ Pelvic Floor Therapy for the Treatment and Management of Female Urinary Incontinence

Camille Moreno, DO, NCMP

Objective: To assess the cost-effectiveness of APEXM™ pelvic floor therapy in the management of female urinary incontinence in comparison to prescription medications, pelvic floor physical therapy, and surgery.

Methods: This is a retrospective, descriptive, cohort study of 47 women who purchased APEXM™ and participated in a treatment protocol. This group is compared to 217 women who were eligible and determined to benefit from the use of APEXM™ but chose not to purchase it.

Day incontinence episodes, nocturia episodes, and female incontinence pads at the initial and follow-up visits were collected from April 1, 2014-January 31, 2018. Health-related direct costs of UI (in U.S. dollars) including prescription medications, pelvic floor physical therapy sessions, surgical interventions, and female incontinence pads in patients who used APEX M™ compared to those who didn't use the device were collected.

Wilcoxon signed-rank tests were performed for paired before and after follow-up outcomes. All analyses were done using SAS (version 9.4, The SAS Institute, Cary, NC) and a $p < 0.05$ was considered statistically significant.

Results: 47 APEX M™ patients had mean age 58.1 and 217 control patients had age 57.7. Among APEX M™ patients, there was only one (2.1%) who was taking a prescription medication. For the control patients (N=24) taking a prescription medication, the median cost was $4114.8. The majority of APEX M™ N=41 (87.2%) and control patients N=190 (87.6%) had no associated cost of UI Surgery. For control patients with history of UI Surgery (N=27), TVT Sling Procedure ($23017) was the most common. None of the APEX M™ patients underwent pelvic floor physical therapy (PFPT). For the control patients for those who underwent PFPT (N=5), the median cost was $14270.00. The majority of APEX M™ patients N=41 (87.2%) had a total cost of $299. For the control patients N=24 (11.1%), total median cost reported was $18888.10.

Conclusions: Wilcoxon signed-rank tests showed that daytime incontinence episodes, nocturia, and number of pads used had significant decreases from the initial visit to follow-up at patient level (day incontinence episodes $P<0.001$, episodes of nocturia $P<0.001$ and number of pads $P=0.014$).

Funding: N/A

Faculty Mentor: Holly Thacker, MD and Belinda Udeh, PhD

Effectiveness of InTone™ and InToneMV™ Pelvic Floor Stimulation Therapy for Women Suffering from Urinary Incontinence and/or Fecal Incontinence

Sabrina Sahni, MD, NCMP

Objective: To assess the efficacy of two well-known pelvic floor stimulating devices in the management of urinary incontinence (UI) and fecal incontinence (FI) in women.

Methods: This was a retrospective chart review of 64 women who purchased the InTone™ or InToneMV™ within the Cleveland Clinic Foundation with diagnosis of stress incontinence, urge incontinence, overactive bladder, mixed incontinence, fecal incontinence and fecal smearing. The primary aim is to assess the efficacy of the devices by measuring the frequency of urination, nocturia, and number of pads used, during baseline and follow-up assessment. Secondary aim included the efficacy of the device amongst several population subgroups including women on hormone therapy, history of pelvic floor surgery, and those on oral medications for incontinence.

Results: Fifty patients had used the device for UI**.** For UI outcomes, decrease of frequency of urination per day had median 1 (IQR: 0-3). For number of pads used per day, 19 (38.0%) unchanged, 13 (26.0%) had 1 pad decrease, 5 (10.0%) had 2 pads decrease and 8 (16.0%) had 3 to 4 pads decreases. Overall decrease of number of pads had median1 (IQR: 0-2) pads. For episodes of nocturia, 37 (74.0%) patients did not have change, 6 (12.0%) patients had 1 nocturia decrease. Wilcoxon signed-rank tests showed that all three outcomes had significant

decreases from the initial visit to follow-up at patient level ($P<0.001$). No significant difference of these three outcomes was noted among subgroups of history of pelvic floor surgery, hormone therapy (HT) or concomitant medications for UI.

Seven patients had used the device for FI. Among the six patients who had follow-up, 2 (33.3%) did not have change of BM/Fecal Smears per day, 3 (50.0%) patients had 1 smear decrease and 1 (16.7%) patient had 3 smear decrease.

Conclusions: This study measured the efficacy of two well known pelvic stimulating devices, InTone™ and InToneMV™ for urinary incontinence. Results show a significant improvement in episodes of daytime urination and decreased pad use over three months in those suffering urinary incontinence. Further studies are needed, however, to assess the long-term effects of this device and its role specifically in fecal incontinence.

Funding: N/A

Faculty Mentor: Holly Thacker, MD

PGY2 Obstetrics & Gynecology Residents

Poster Presentations

Feasibility and outcomes of opportunistic bilateral salpingectomy during vaginal hysterectomy in patients with traditional relative contraindications

Faculty Mentor: Rosanne Kho, MD

Anna Chichura, MD

Cervico-vaginal junction to anterior culdesac: measured distance during vaginal hysterectomy in patients with a history of cesarean section

Faculty Mentor: Rosanne Kho, MD

Alyssa Herrmann, MD

Correlation between clinical chorioamnionitis and histopathology: How can we better predict outcomes?

Faculty Mentor: Oluwatosin Goje, MD

Melanie Katz, MD

Antibiotic prophylaxis for surgical site infection at the time of hysterectomy in patients with reported penicillin allergy

Faculty Mentor: Katie Propst, MD

Lia Miceli, MD

Characterization of endometrial cancer in young patients diagnosed under the age of 40 years

Faculty Mentor: Mariam AlHilli, MD

Jessica Son, MD

PGY3 Obstetrics & Gynecology Residents

Oral Presentations

Understanding trends and risk factors for vaginal cuff dehiscence after laparoscopic hysterectomy

Dee Das, MD

Objective: The primary objective of the study was to identify the effect of the route of vaginal cuff closure on the incidence of vaginal cuff dehiscence in laparoscopic hysterectomy. The secondary aims were to identify the surgical and patient risk factors associated with vaginal cuff dehiscence, to assess the rate of intra- and perioperative complications (6 week complications) by route of vaginal cuff closure, and to investigate the impact of surgeon volume on intra- and perioperative complications.

Methods: We conducted a retrospective chart review of all hysterectomies performed at the Cleveland Clinic in 2016. CPT and ICD diagnostic codes were used to identify cases of women undergoing laparoscopic and robotic-assisted hysterectomy.

Results: 1277 patients underwent laparoscopic or robotic-assisted laparoscopic hysterectomy and met inclusion criteria. Hysterectomies were performed by 59 surgeons. 988 patients had laparoscopic cuff closure while 289 had vaginal cuff closure. No differences in baseline characteristics were identified between the two groups. 8 cases of vaginal cuff dehiscence were identified (0.6% incidence). Of the 8 cases, 7 had laparoscopic cuff closure and 7 were performed by high volume surgeons (>30 hysterectomies per year). Higher volume surgeons were more likely to perform laparoscopic closure and use barbed suture ($p<0.001$). However, the overall rate of intra- and perioperative complications did not vary by route of cuff closure or by surgeon volume.

Conclusions: Vaginal cuff dehiscence is a rare but serious complication of laparoscopic hysterectomy. Although route of closure has been shown to affect cuff complications, we did not find a significant difference in vaginal cuff dehiscence or intra- and perioperative complications by route of cuff closure. There was also no significant difference in complications by surgeon volume. Given the lack of evidence favoring one route of cuff closure, we recommend that surgeons employ the cuff closure technique they are best accustomed with to optimize patient outcomes.

Funding: None

Faculty Mentor: Chad Michener, MD
Discussant: Kate Woodburn, MD

Is immediate post-abortion LARC placement at time of elective termination effective at reducing rates of repeat abortion?

Sarah Hershman, MD

Objective: To examine whether immediate no-cost post-abortion LARC placement is associated with decreased chance of having a repeat abortion, compared to similar patients who did not opt for immediate LARC.

Methods: We conducted a retrospective cohort study using medical records from the highest-volume abortion provider in Northeast Ohio, during a period when no-cost post-abortion LARCs were available to all patients. We reviewed the charts of patients who had a surgical abortion between September and December 2015 (LARC cohort, n=90; no-LARC cohort, n=83), and assessed the rate at which they returned for repeat abortion at the same facility within 3 years. We are continuing to review charts from 2016 and 2017, and our expected final sample size is approximately 500 patients in each study arm.

Results: During the 3-year rolling follow-up period, of the LARC group (n=90), 14 patients (15.6%) returned for a total of 18 abortions, compared with the no-LARC groups (n=83), who had 24 patients (28.9%) return for a total of 45 abortions. The relative risk of any repeat abortion within 3 years was 0.59 for the LARC group (95% CI 0.30 – 0.97).

Conclusions: Placement of immediate post-abortion LARC is associated with significantly lower rate of presentation for repeat abortion within the next 3 years. Immediate post-abortion LARC should be discussed and offered to all patients undergoing elective surgical abortion.

Funding: None

Faculty Mentor: Mitchell Reider, MD
Discussant: Chelsea Fortin, MD

Association Between Hemoglobin A1C and Hypertensive Disorders in Type 2 Diabetics

Emily Holthaus, MD

Objective: To examine the association between hemoglobin A1c and hypertensive disorders, including gestational hypertension, preeclampsia, and eclampsia, in patients with pre-gestational type 2 diabetes.

Methods: This is a retrospective cohort study examining patients with pre-gestational type 2 diabetes who delivered within the Cleveland Clinic system between 2012 and 2018. Type 2 diabetics were identified using ICD code extraction from pregnancy episodes. IRB approval was obtained. We examined the association between gestational hemoglobin A1c (HbA1c) and a pooled hypertension outcome which included gestational hypertension, preeclampsia with and without severe features, eclampsia, and pregnancy induced hypertension. Odds ratios with 95% confidence intervals were calculated for first, second, and third trimester HbA1c values.

Results: We identified 611 pregnancy episodes with pre-gestational diabetes diagnoses. No differences in age, race, BMI, or parity were found between the two groups. Increased first trimester HbA1c was more likely to result in the pooled hypertension outcome (Odds ratio 1.25, 95% CI 1.03 – 1.52), while second trimester HbA1c (OR 1.25, 95% CI 0.97 – 1.61) and third trimester HbA1c (OR 1.23, 95% CI 0.96 – 1.57) were not found to have statistically significant associations with the pooled outcome.

Conclusions: Our analysis show a positive association between first trimester HbA1c and our pooled hypertension outcome. Utilizing HbA1c may be of benefit in our rapidly growing patient population of type 2 diabetics, particularly in those presenting late to care or those diagnosed in early screening.

Funding: None

Faculty Mentor: Katherine Singh, MD
Discussant: Jesse Muñoz, MD, PhD

Thickened endometrium in post-menopausal women with an initial biopsy of limited, benign, surface endometrium: Clinical outcome and subsequent pathologic diagnosis

Christine Hur, MD

Objective: To address the clinical outcome and subsequent pathologic diagnoses in postmenopausal women who received an initial diagnosis of Limited, Benign, Surface Endometrium.

Methods: Study design: Retrospective chart review

Participants: All cases of endometrial biopsies from 2012-2015 in women aged 55 years or older whose clinical history on the pathology requisition states "thickened endometrium" with a pathologic diagnosis of "limited/scant benign surface endometrium".

Outcome Measures: Initial clinical presentation, body mass index (BMI), endometrial thickness on TVUS, presence of concurrent or intercurrent gynecologic malignancies, and clinical follow-up diagnoses and treatment. We also reviewed their pathologic records for any follow-up endometrial sampling (biopsy or curetting), hysterectomies or other surgical resections, and subsequent histopathologic diagnoses.

Results: Among a total of 370 endometrial biopsy or curetting between 2012 and 2015, 192 (52%) were diagnosed as limited benign surface endometrial epithelium. The women ranged in age from 55 to 91 yr old. Their clinical presentations primarily included postmenopausal bleeding, pelvic pain, and enlarged uterus.

108 of cases (57%) had no subsequent follow-up. Women with an increased endometrial thickness were more likely to receive repeat evaluation. Among the 84 women who underwent follow-up endometrial sampling, 6 (7%) had hyperplasia with atypia or malignancy, 21 (25%) had a repeat diagnosis of limited surface sample, 4 (5%) had insufficient materials, and 53 (63%) had other benign findings. Among the subset of women who did receive subsequent follow-up, endometrial atypia or malignancies are more likely found in those with increased body mass index.

Conclusions: In conclusion, a slight majority of women with postmenopausal bleeding and/or thickened endometrium had an initial limited surface endometrial sample. Most had no subsequent endometrial sampling. Among those with subsequent follow-up, the majority had benign findings. The study highlights the inconsistencies in adequacy criteria for endometrial sampling and the lack of standardization of subsequent management.

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Gynecology Oncology physician barriers and perceptions of palliative care and hospice services

Erica Newlin, MD

Objective: Determine barriers to hospice and palliative care as perceived by gynecology oncology physicians. Correlate personal and professional experiences with perceptions of hospice and palliative care services across the United States

Methods: A 60 question cross sectional descriptive survey was sent to all full, associate, fellow in training, and candidate physician members of SGO.

Results: 1410 SGO members were invited to participate and 176 (12.5%) responded. Participants were asked to rank reasons to refer patients to hospice as well as barriers to hospice referral. The highest ranked reason for hospice referral was “pain or symptom control” (mean score 3.50 on 1-4 scale), followed by “assistance through the dying process” (mean 3.42). Attendings were more likely than fellows place importance on hospice referral for “nursing support” ($p=0.015$) and “prevention of readmission” ($p=0.014$). The highest ranked barriers to hospice referral were “difficulty predicting patient death within 6 months” (mean score 3.40 on 1-4 scale) and “physician desire to pursue additional lines of chemotherapy” (mean 2.97), which were both more likely to be ranked higher by fellows than attending physicians ($p=0.0103$, 0.0345 respectively). Respondents were also asked to describe the primary role of palliative care at their institution choosing

from pain management (31%), goals of care (18%), transition to hospice (22%), and other symptom management (29%). Respondents were more likely to associated palliative care with pain and symptom management if they were fellow physicians ($p=0.024$) or had received end of life care training ($p=0.026$). Likert scale data also differed by the fellow-attending divide, as fellows were more likely to agree that palliative care physicians were better communicators than gynecologic oncology physicians ($p=0.01$).

Conclusions: Based on survey data, many perceptions of palliative care and hospice services differ along a fellow attending divide. Whether this difference is due to increased experience in practice or differing generational perceptions of the role of palliative care is unclear from the survey. 30% of respondents felt the primary role of palliative care to be goals of care and hospice transition, highlighting a potential trend in this respondent population to late involvement of palliative care services.

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2017–2018

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