

Obstetrics, Gynecology & Women's Health Institute

5TH ANNUAL

Research Day

May 13, 2020



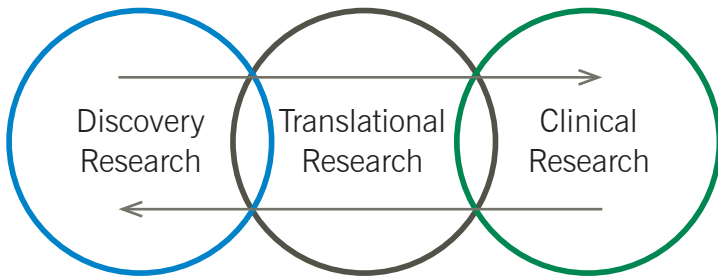
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Obstetrics,
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Women's Health Institute

RESEARCH DAY

May 13, 2020





Key Note Address & Lecture

Victoria L. Handa, MD, MHS
Professor, Department of Gynecology and Obstetrics
John's Hopkins University School of Medicine

Judges (Oral Presentations)

Victoria L. Handa, MD, MHS
Rosanne M. Kho, MD
Roberto Vargas, MD
Katie A. Propst, MD
Ashley Brant, DO

Judges (Poster Presentations)

Cara King, DO
Marie Fidela Paraiso, MD
Cecile Ferrando, MD, MPH
Miriam Cremer, MD, MPH
Haider Mahdi, MD, MPH



Agenda

7:30–7:35 am

Welcome

Beri Ridgeway, MD

7:35–7:40 am

Introduction

Ruth Farrell, MD, MA

7:40–8:25 am

Key Note Address

Childbirth and Female Pelvic Floor Disorders

Victoria L. Handa, MD, MHS

Professor, Department of Ob/Gyn

Johns Hopkins University

8:25–8:40 am

Q&A

8:45–9:45 am

Graduating Fellow Oral Presentations

8:45 am

*Pretreatment with LCK Inhibitors Chemosensitizes
Cisplatin Resistant Endometrioid Ovarian Tumors*

Katie Crean-Tate, MD

Fellow, Gynecologic Oncology

8:55 am

Q&A

9:00 am

*Same-day Discharge should be Implemented after
Minimally Invasive Sacrocolpopexy*

Lisa Hickman, MD

Fellow, Female Pelvic Medicine & Reconstructive Surgery

9:10 am

Q&A

9:15 am

*CD55 Attenuates Lesion Establishment of Donor
Endometrium in a Minimally Invasive Mouse Model of
Endometriosis*

Elliott Richards, MD

Fellow, Reproductive Endocrinology & Infertility

9:25 am

Q&A

9:30 am ***Comparison of Patient Adherence to Zoledronic Acid Verses Denosumab***
Taryn Smith, MD
Clinical Fellow, Specialized Women's Health

9:40 am Q&A

9:45–10:00 am Break

10:00–11:10 am Poster Presentations

10:00 am ***A Comparison of Misoprostol to Dinoprostone Vaginal Insert for Cervical Ripening in Labor Induction***
Carrie Bennett, MD
PGY2 Resident

10:07 am Q&A

10:10 am ***Role of Blood Management in Optimizing Perioperative Outcomes in Patients with Secondary Anemia Undergoing Hysterectomy or Myomectomy for Abnormal Uterine Bleeding: A Randomized Control Trial***
Morgan Gruner, MD
PGY2 Resident

10:17 am Q&A

10:20 am ***Longitudinal Change in Mammographic Density Among Premenopausal Patients Using Hormonal Contraception***
Jonathan Hunt, MD, MBA
PGY2 Resident

10:27 am Q&A

10:30 am ***How do Endometrial Biopsy Results Correlate with Hysteroscopic Findings in Women Presenting with Abnormal and Postmenopausal Uterine Bleeding?***
Kate Lintel, MD
PGY2 Resident

10:37 am Q&A

- 10:40 am ***Opportunistic Bilateral Salpingo-Oophorectomy at Time of Vaginal Hysterectomy For Prolapse: Is Motivation a Factor?***
Cory Messingschlager, MD
PGY2 Resident
- 10:47 am Q&A
- 10:50 am ***Association between fear of Cancer Recurrence, Quality of Life, and Healthcare System Utilization in Patients with Ovarian Cancer following Primary Therapy***
Molly Morton, MD
PGY2 Resident
- 10:57 am Q&A
- 11:00 am ***Prenatal Hemoglobinopathy Screening amongst Nulliparous Black Women in a Resident Clinic Population***
Rebecca Omosigho, MD
PGY2 Resident
- 11:07 am Q&A

11:10–11:15 am Break

**11:15 am–
12:30 pm PGY3 Resident Oral Presentations**

- 11:15 am ***Complications following Lumpectomy and Mastectomy in Women with Pregnancy Associated Breast Cancer***
Anna Chichura, MD
PGY3 Resident
- 11:25 am Discussant Sarah Hershman,, MD and Q&A
- 11:30 am ***Distance of Cervico-vaginal Junction to Anterior Cul-de-sac Measured during Vaginal Hysterectomy in Patients with and without a History of Cesarean Section***
Alyssa Herrmann, MD
PGY3 Resident
- 11:40 am Discussant Christine Hur, MD and Q&A

11:45 am	<i>Identifying Risk Factors for Postpartum Hypertension Readmission</i> Melanie Katz, MD PGY3 Resident
11:55 am	Discussant Christine, Hur MD and Q&A
12:00 pm	<i>Adjuvant Treatment Improves Overall Survival in Women with High Intermediate Risk Early Stage Endometrial Cancer with Lymphovascular Space Invasion</i> Jessica Son, MD PGY3 Resident
12:10 pm	Discussant Erica Newlin, MD and Q&A
12:15 pm	<i>Antimicrobial Stewardship in Patients with Penicillin Allergy Undergoing Hysterectomy</i> Lia Miceli, MD PGY3 Resident
12:25 pm	Discussant Dee Das, MD and Q&A
12:30–12:45 am	Break

12:45–1:45 pm Innovations in Ob/Gyn Lecture

12:45 pm	<i>What Shoes Are You Wearing? Do They Fit?</i> Linda Bradley, MD Staff, Subspecialty Care for Women's Health
1:30 pm	Q&A
1:45 pm	Announcement of Award Winners & Closing Remarks Ruth Farrell, MD, MA

Past Research Day Award Winners

Resident Poster Presentation – 1st Place

2019	Ji “Jessica” Son, MD
2018	Sarah Hershman, MD
2017	Caitlin Carr, MD
2016	Laura Moulton, DO

Resident Oral Presentation – 1st Place

2019	Emily Holthaus, MD
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

2019	Elizabeth Conner, MD
2018	Tonya Nikki Thomas, MD
2017	Kathryn Maurer, MD
2016	Linnea Goodman, MD

Key Note Address & Lecture

Victoria L. Handa, MD, MHS

Division Director and Professor
Female Pelvic Medicine and
Reconstructive Surgery
Department of Gynecology and Obstetrics
John's Hopkins University School of Medicine



Victoria L. Handa, MD, MHS attended the University of Pennsylvania School of Medicine and ob/gyn residency at the University of California San Francisco. Her first academic appointment was at Duke University, followed by fellowship in Urogynecology at UC Irvine. After 6 years on the faculty of the University of California Davis, she joined Johns Hopkins in 2001. She is currently professor of Gyn/Ob, the Deputy Director for Gyn/Ob at Johns Hopkins School of Medicine, and the Gyn/Ob department chair at Johns Hopkins Bayview Medical Center.

Her clinical practice focuses on pelvic floor disorders, including incontinence and pelvic organ prolapse. At the Johns Hopkins *Women's Center for Pelvic Health*, she leads an interdisciplinary team in Urogynecology, Urology, Colorectal Surgery, and Physical Therapy.

She served as the FPRMS Fellowship Director at Johns Hopkins until 2014. Dr. Handa is the recipient of several teaching awards, including a CREOG National Faculty Award for Excellence and several institutional awards for teaching and mentorship.

Dr. Handa's research has been supported by NIH funding for almost 15 years. Her current research focus on the long-term impact of childbirth on the later development of pelvic floor disorders. This research has led to more than a dozen publications, a 2011 Pitkin Prize from ACOG, the 2007 President's Award from the Society for Gynecologic Surgeons, a 2011 award from the American Urogynecologic Society, and the 2015 American Journal of Ob/Gyn Impact Award.

Judges (Oral Presentations)



Victoria L. Handa, MD, MHS

Division Director and Professor
Female Pelvic Medicine and
Reconstructive Surgery
Department of Gynecology and Obstetrics
John's Hopkins University School of Medicine



Katie A. Propst, MD

Assistant Professor of Surgery
Associate Staff, Subspecialty Care for
Women's Health
Female Pelvic Medicine & Reconstructive Surgery
Obstetrics, Gynecology & Women's Health Institute
Cleveland Clinic



Rosanne M. Kho, MD

Clinical Assistant Professor of Surgery
Section Head, Benign Gynecology
Obstetrics, Gynecology & Women's Health
Institute
Cleveland Clinic



Ashley Brant, DO

Assistant Professor of Surgery
Staff, Obstetrics & Gynecology
Obstetrics, Gynecology &
Women's Health Institute
Cleveland Clinic



Roberto Vargas, MD

Clinical Assistant Professor of Ob-Gyn &
Reproductive Biology
Associate Staff, Subspecialty Care for Women's Health
Gynecologic Oncology
Obstetrics, Gynecology & Women's Health Institute
Cleveland Clinic

Judges (Poster Presentation)



Cara King, DO

Associate Staff, Subspecialty Care for
Women's Health
Minimally Invasive Gynecologic Surgery
Obstetrics, Gynecology & Women's Health
Institute
Cleveland Clinic



Miriam Cremer, MD, MPH

Associate Professor of Ob-Gyn &
Reproductive Biology
Staff, Subspecialty Care for Women's Health
Obstetrics, Gynecology & Women's Health
Institute
Cleveland Clinic



Marie Fidela Paraiso, MD

Professor of Surgery
Staff, Subspecialty Care for Women's Health
Female Pelvic Medicine & Reconstructive Surgery
Obstetrics, Gynecology & Women's Health Institute
Cleveland Clinic



Haider Mahdi, MD, MPH

Staff, Subspecialty Care for
Women's Health
Gynecologic Oncology
Obstetrics, Gynecology &
Women's Health Institute
Cleveland Clinic



Cecile Ferrando, MD, MPH

Assistant Professor of Surgery
Director, Transgender Surgical Program
Staff, Subspecialty Care for Women's Health
Female Pelvic Medicine & Reconstructive Surgery
Obstetrics, Gynecology &
Women's Health Institute
Cleveland Clinic



Obstetrics, Gynecology & Women's Health Institute
Graduating Fellows

Oral Presentations

LCK Inhibitors chemosensitize cisplatin resistant endometrioid ovarian tumors



Katie Crean-Tate, MD

Objective: To evaluate LCK inhibitors (LCKi) as chemosensitizing agents for platinum-resistant endometrioid ovarian carcinoma.

Methods: KM Plotter survival data was obtained for endometrioid ovarian cancer based on CD55 and LCK mRNA expression. Cisplatin resistant endometrioid ovarian carcinoma cell lines were cultured and pre-treated with LCKi or vehicle, then incubated with LCKi and cisplatin. Cell proliferation was assessed via CellTiter-Glo, and apoptosis with Caspase 3/7 Assay. Protein lysates obtained, and RNA isolated from cells from appropriate experiments. Gamma-H2AX, BRCA1, BRCA2, and RAD51 were assessed in control and LCKi treated cells. For statistical analysis, numerical values were calculated by one-way ANOVA to assess statistical significance. For proliferation assays, IC_{50} was calculated using nonparametric values set to nonlinear fit curve performed with GraphPad Prism.

Results: Per KM plotter data of endometrioid ovarian cancer, LCK expression is associated with significantly worse median progression-free survival (HR 3.19, $p=0.02$), and a trend toward decreased overall survival in tumors with elevated LCK expression (HR 2.45, $p=0.41$). In vitro, cisplatin resistant ovarian endometrioid cells pretreated with an LCK inhibitor followed by cisplatin treatment showed greater sensitivity compared to control treated cells, with decreased cell proliferation and increased apoptosis. We found upregulation of DNA repair enzymes BRCA1, BRCA2 and CHAF1a with cisplatin application, with significant decrease in expression of CHAF1A when pretreated with saracatinib, and a nonsignificant trend toward reduction in BRCA1 and BRCA2. Immunoblot studies revealed overexpression of LCK led to increased expression of BRCA1, BRCA2 and RAD51. In contrast, inhibition of LCK led to decreased expression of BRCA1 and BRCA2, as well as increased expression of Gamma-H2AX.

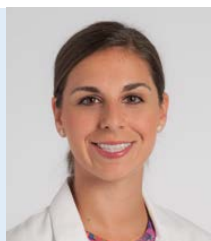
Conclusions: In summary, we identified a targetable pathway for chemosensitization of platinum resistant endometrioid ovarian cancer. We found that pretreatment with LCK inhibitors followed by co-treatment with cisplatin leads to decreased cell proliferation and increased apoptosis in vitro. This is associated with increased DNA adduct formation and decreased DNA repair enzyme expression. Further in

vivo studies are needed to assess LCKi as adjunctive therapy in platinum resistant endometrioid ovarian cancer.

Funding: Velosano Bike to Cure Impact Award

Research Mentor: Ofer Reizes, PhD

Same-day discharge should be implemented after minimally invasive sacrocolpopexy



Lisa Hickman, MD

Lisa C. Hickman, MD¹, Marie Fidela Paraíso, MD¹, Howard B. Goldman, MD², Katie Propst, MD¹, Cecile A. Ferrando, MD, MPH¹

(1) Center of Urogynecology and Pelvic Floor Disorders; Obstetrics/Gynecology and Women's Health Institute at the Cleveland Clinic, Cleveland, Ohio USA; (2) Glickman Urologic and Kidney Institute at the Cleveland Clinic, Cleveland, Ohio USA

Introduction/Background: Little research exists to support same-day discharge (SDD) after minimally-invasive sacrocolpopexy. The objectives of this study were to compare the incidence of adverse events and post-operative healthcare resource utilization, as well as to determine satisfaction in patients following a SDD protocol as compared to those discharged on post-operative day 1 (routine care).

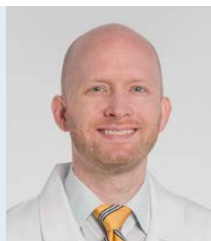
Materials/Methods: This is a prospective cohort study of SDD after minimally-invasive sacrocolpopexy. Eligibility criteria included age <80 years, ASA grade I or II, caretaker present for ≥24 hours post-operatively, and surgical start before 1PM. All patients needed to meet routine post-operative milestones before SDD. Perioperative data (phone calls, unscheduled office visits, emergency department visits, hospital readmission and adverse events <6 weeks) was obtained through the EMR and direct patient inquiry. A satisfaction survey was administered at the post-operative visit. A historical control group, who underwent sacrocolpopexy as part of a randomized trial, was utilized to compare outcomes.

Results: 47 women met eligibility criteria. Mean age was 62 (± 9 years). The majority were Caucasian (95.7%), overweight (BMI $27.7 \pm 5.5 \text{ m/kg}^2$), and had stage 3 prolapse (63.8%). SDD was achieved for 37 patients (78.7%). Indications for overnight observation included not meeting post-operative milestones ($n=5$), conversion to an open procedure ($n=2$), intraoperative bladder injury ($n=2$), and late case completion time ($n=1$). Patient characteristics of the SDD cohort were similar to the routine care cohort, with the exception of previous hysterectomy (57.5% vs 85.3%, $p=0.001$) and ASA score (2 [1-2] vs 2 [1-3], $p=0.002$). There were no significant differences in the number of post-operative phone calls, unscheduled office visits, emergency department visits, and hospital readmissions. Adverse events did not differ between the groups. The SDD cohort reported high satisfaction with their overall surgical experience. The majority of patients would recommend SDD to family/friends, independent of whether or not SDD was achieved (91.9% vs 80.0%, $p=0.29$)

Conclusions: Nearly 80% of women undergoing minimally-invasive sacrocolpopexy on a SDD protocol went home as planned. Compared to routine care, there was no increase in adverse events or post-operative healthcare resource utilization. Patient satisfaction in the SDD cohort was high regardless of whether or not SDD was achieved.

Research Mentor: Marie Fidela Paraiso, MD & Cecile Ferrando, MD, MPH

CD55 attenuates lesion establishment of donor endometrium in a minimally invasive mouse model of endometriosis



Elliott Richards, MD

Objective: To interrogate the role of CD55 (a GPI-anchored membrane protein that protects cells from complement-mediated attack) in endometriosis via expression analysis and murine models, given that complement pathways are dysregulated in endometriosis and CD55 has been observed to be upregulated in cancer and embryo implantation.

Methods: Immunohistochemistry was performed on a tissue microarray (TMA) of eutopic and ectopic endometrium. Immunoreactivity scores were given by two blinded reviewers. A minimally invasive, syngeneic mouse model of endometriosis was utilized. Endometrium was harvested from gonadotropin-stimulated donor mice, fragmented, and injected intraperitoneally into recipient mice with intact ovaries; after three weeks, recipient mice were euthanized; a standardized survey was used to calculate an aggregate lesion size per mouse; lesions were confirmed histologically and quantified microscopically. CD55 null and wildtype mice (KO and WT; both C57BL/6) were used as donors and/or recipients and compared to saline-injected controls (10 per group). Student's t and Kruskal-Wallis tests were used for statistical analyses.

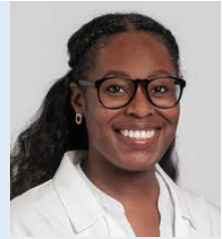
Results: CD55 staining was significantly greater in the apical epithelium of secretory phase samples compared to proliferative phase, consistent with prior reports. Average staining intensity and distribution in endometriosis was likewise higher (Fig 1A). In murine experiments, endometrial fragments from CD55 null mice exhibited significantly greater lesion burden when injected into either WT or KO recipients (8.9 ± 4.6 , 7.1 ± 4.5 respectively) as compared to WT-to-WT or WT-to-KO (2.4 ± 1.9 , 1.8 ± 0.7 respectively; $p < 0.001$; Fig 1B).

Conclusions: CD55 suppresses lesion formation in a murine model of endometriosis, whereas loss of CD55 expression supports lesion formation. As CD55 is an inhibitor of inflammatory damage caused by autologous complement lysis, this surprising finding suggests that the inflammatory sequelae of low CD55 is more critical to lesion establishment than any "benefit" for lesion of complement escape. This may have therapeutic implications for the development of new strategies to prevent disease recurrence following excisional surgery of endometriosis.

Funding source: Cleveland Clinic Research Program Committee grant

Research Mentor: Ofer Reizes, PhD

Comparison of patient adherence to Zoledronic Acid versus Denosumab



Taryn Smith, MD

Objective: Women are more likely to experience an osteoporotic fracture compared to men. As a women's health specialist it is imperative to identify women at increased risk of osteoporotic fracture and ensure that they receive the proper treatment. Several antiresorptive therapies have proven efficacy in preventing osteoporotic fractures in women however, efficacy and fracture risk reduction are dependent on patient adherence to treatment regimen. The primary objective of this study is to determine if treatment regimen affects patient adherence rates among patients with osteoporosis receiving yearly zoledronic acid infusions versus biannual denosumab injections in the Center for Specialized Women's Health.

Methods: The electronic medical record system, Epic, was used to conduct a retrospective chart review. Women ages 50-80 with documented osteoporosis who received their first infusion of zoledronic acid or denosumab between January 2010 and July 2016 were included in the study. Adherence rates were monitored from the time of initial infusion until July 2018. Non-adherence is defined as failure to receive treatment within 30 days of scheduled dose unless otherwise instructed by the prescribing physician. For patients with two or more DXA scans performed on the same machine during the study period changes in bone mineral density (BMD) were documented.

Results: This study included 65 women with postmenopausal bone loss, 29 received zoledronic acid and 36 received denosumab. Of patients receiving denosumab 61.1% were compliant with treatment regimen compared to only 31.0% of patients receiving zoledronic acid ($P=0.002$). After adjusting for BMI and age, there were no significant differences between the two treatments on BMD change at the spine ($P=0.33$) or the femoral neck ($P=0.12$).

Conclusions: In this cohort, treatment regimen significantly affected patient adherence but overall compliance was low. Quality improvement studies are needed to identify barriers to medication adherence and improve compliance rates in women with osteoporosis.

Funding source: N/A

Research Mentor: Holly Thacker, MD

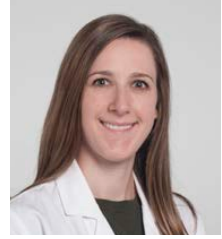


PGY2 Obstetrics & Gynecology Residents

Poster Presentations

A comparison of misoprostol to dinoprostone vaginal insert for cervical ripening in labor induction

Research Mentor: Oluwatosin Goje, MD



Carrie Bennett, MD

Role of blood management in optimizing perioperative outcomes in patients with secondary anemia undergoing hysterectomy or myomectomy for abnormal uterine bleeding: A randomized control trial

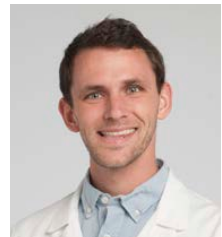
Research Mentor: Rosanne Kho, MD



Morgan Gruner, MD

Longitudinal change in mammographic density among premenopausal patients using hormonal contraception

Research Mentor: Cecile Ferrando, MD



Jonathan Hunt, MD

How do endometrial biopsy results correlate with hysteroscopic findings in women presenting with abnormal and postmenopausal uterine bleeding?

Research Mentor: Cecile Ferrando, MD



Kate Lintel, MD

Opportunistic bilateral salpingo-oophorectomy at time of vaginal hysterectomy for prolapse: Is motivation a factor?

Research Mentor: Cecile Ferrando, MD



Cory Messingschlager, MD

Association between fear of cancer recurrence, quality of life, and healthcare system utilization in patients with ovarian cancer following primary therapy

Research Mentor: Chad Michener, MD



Molly Morton, MD

**Prenatal hemoglobinopathy screening amongst
nulliparous black women in a resident clinic population**

Research Mentor: Jeffrey Goldberg, MD



Rebecca Omosigho, MD



PGY3 Obstetrics & Gynecology Residents

Oral Presentations

Complications following Lumpectomy and Mastectomy in Women with Pregnancy Associated Breast Cancer



Anna Chichura, MD

Objective: To compare the incidence of postoperative complications by timing of diagnosis following lumpectomy and mastectomy for Pregnancy Associated Breast Cancer (PABC)

Methods: This is a retrospective study of women with stage 0-4 PABC treated with surgery between 1/1/2000-2/1/2020. Patients were considered eligible for the study if they had a biopsy proven breast malignancy during pregnancy or within one year after delivery. Patient demographics, tumor characteristics, surgical procedure and 30-day post-operative complications (POC) were collected. Data were analyzed using Wilcoxin Rank Sum tests, Pearson's chi-square tests, or Fisher's Exact tests as appropriate using SAS.

Results: We identified 55 patients with PABC. Mean age at diagnosis was 34.7 ± 4 years. Twenty-one patients (38%) were diagnosed and treated during pregnancy and 34 (61%) after pregnancy. In gravid patients, the median gestational age at diagnosis was 25.9 weeks and at surgery was 33.7 weeks. The clinical stage distribution at diagnosis was: Stage 0, 5.5%; 1, 16.6%; 2, 46.3%; 3, 24.1%; and IV, 7.4%. There were no significant differences in the rate of neoadjuvant chemotherapy (NAC) administration (40.0% vs 57.1%, $p=0.22$) or in the rate of pathologic complete response following NAC (35% vs 30%, $p=0.99$) for pregnant or postpartum patients. There were also no significant differences in the rate of lumpectomy (30.0% vs 25.74%, $p=0.73$), mastectomy (70.0% vs 74.3%, $p=0.73$), sentinel lymph node biopsy (45.0% vs 57.1%, $p=0.39$), or immediate reconstruction (35.0% vs 48.6%, $p=0.323$) performed in gravid & postpartum patients, respectively. Of those undergoing immediate reconstruction, the majority (90.9%) had a tissue expander placed. The pathologic stage distribution following surgery was: Stage 0, 20.4%; 1, 22.2%; 2, 35.2%; 3, 14.8%; and IV, 7.4%.

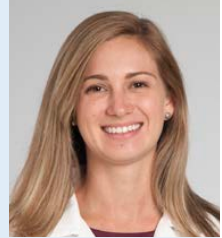
Most ($n=46$, 83.6%) patients did not experience POC after lumpectomy or mastectomy. Seroma was the most commonly observed POC ($n=5$, 9.1%). The 30-day reoperation rate for POC was 7.3% ($n=4$). No milk duct fistulas were observed despite 10.9% of patients having lactating breast tissue on biopsy and 40.0% on partial mastectomy.

Conclusions: Both lumpectomy and mastectomy have a low POC rate in gravid and postpartum patients and can be considered in either population within the appropriate oncologic setting.

Funding source: N/A

Research Mentor: Mariam AlHilli, MD

Distance of Cervico-vaginal Junction to Anterior Cul-de-sac Measured During Vaginal Hysterectomy in Patients With and Without a History of Cesarean Section



Alyssa Herrmann, MD

Alyssa Herrmann MD, Cecile Ferrando MD, Meng Yao, and Rosanne Kho, MD

Introduction and Objective: Entry into the anterior cul-de-sac (AC) is traditionally thought to be the most challenging part of performing a vaginal hysterectomy (VH). The knowledge of this anatomic landmark is critical for both the learner and the teacher because incomplete dissection can lead to entering into an incorrect plane and possible injury to the bladder. Patients with a history of cesarean section (C/S) can have extensive scarring at the level of the bladder and the lower uterine segment, making entry into the AC difficult during VH. In a study by Balglobin et al, the anterior peritoneal fold is described to be at a median distance 3.4 cm from the initial cervico-vaginal (CV) incision in patients without previous cesarean section. The distance of the initial CV incision to the AC in patients with previous C/S has never been described. Therefore, the aim of this study is to objectively quantify the mean distance between the initial CV incision to the AC during VH in women with a history of C/S and to compare this distance to those who have not had C/S.

Design: This is a prospective cohort study of all patients who have undergone VH for benign indications in the MIGS and urogynecology departments. Patients were excluded for gynecologic malignancy, prior vaginal or pelvic radiation, and presence of lower anterior uterine segment myoma that could distort the lower uterine anatomy. We measured the distance from the external cervical os to the initial incision at the CV junction. The distance was then measured from this incision to the initial peritoneal entry into the AC. Finally we measured the distance from the AC entry point to the uterine fundus. Measurements were tabulated and compared between patients who had a history of previous C/S and those who did not. We determined that 40 total patients, 20 C/S and 20 vaginal delivery only, were needed.

Results: In light of the COVID19 pandemic and the postponement of all elective procedures, target accrual of patients is as yet incomplete. The data presented here is therefore preliminary. Of the 35 patients with complete data, 23 (62.1%) had vaginal delivery(ies) only, 12 (32.4%) had at least one C/S. Patient characteristics in both groups, including the number and location of fibroids and presence of and stage of pelvic organ prolapse, were similar. The mean distance from the CV junction incision to the anterior peritoneal entry in all patients was 5.0 (1.55) cm. The mean distances in patients without C/S and with C/S were 4.79 (1.31) cm and 5.4 (1.92) cm, respectively ($p=0.27$). The mean distance of the anterior peritoneal entry to the fundus was longer in patients without a history of C/S compared to those with a prior C/S (6.48cm vs 4.49cm, $p=0.01$). This finding remained statistically significant when both uterine length and weight were controlled for on logistical regression.

Conclusion: Our preliminary data suggests that the mean distance from the initial colpotomy (CVJ) incision to the peritoneal AC entry in patients with and without prior C/S was 5.0 cm with no significant difference between patients who underwent C/S and those who did not.

Research Mentor: Rosanne Kho, MD

Identifying Risk Factors for Postpartum Hypertension Readmission



Melanie Katz, MD

Background: Hypertension in pregnancy is the cause of 10.7% of all maternal morbidity.¹ Overall readmission risk estimated to be about 2.16% in 2011.² However, those with hypertensive disorders have an increased risk of readmission in many studies (2.5% with gHTN and 4.6% with preeclampsia/eclampsia).³

Objective: To determine if characteristics such as severe hypertension increased the rate of readmission for postpartum hypertensive disorders.

Study design: Interim analysis of retrospective cohort study of women with hypertensive diagnosis comparing readmission rates within 2 weeks of delivery between

women with severely elevated blood pressure compared to those without severely elevated BP during parturient admissions between 2016-2019.

Result: In this interim analysis, 402 patients with hypertensive disorders of pregnancy parturient admissions were reviewed. Of these patients, 183 (45.5%) patients had severely elevated blood pressures (systolic blood pressure >160 and/or diastolic blood pressure >110 twice in 15 minutes or 4 hours apart) and 220 (54.5%) did not. 49 patients were readmitted, 21 (11.5%) of the severe hypertension cohort and 28 (12.7%) of the mild hypertension group ($p=0.70$). Women with severely elevated blood pressure were more likely to undergo a primary cesarean section (35.5% vs 23.6% $p<0.001$) and less likely to have a spontaneous vaginal delivery (38.8% vs 50.9% $p<0.001$). Those with severe hypertension were more likely to have elevated blood pressure in the immediate postpartum period (systolic blood pressure >150 and/or diastolic blood pressure >100 twice, 4 hours apart) compared to those with mild hypertension (64.5% vs 11.8% $p<0.001$) and had a longer postpartum stay (3 days vs 2 days $p<0.001$). There was no difference in readmission rates for those who received intravenous antihypertensives during their admission, had postpartum hypertension, were discharged with oral antihypertensives, received diuretics prior to discharge or had longer postpartum stay.

Conclusion: Patients with severe hypertension during delivery admission are not more likely to be readmitted in the postpartum period compared to those with mild hypertension. This was true regardless of if patients received intravenous antihypertensives, had postpartum hypertension, were discharged with oral antihypertensives, received diuretics prior to discharge or had longer postpartum stay. Patients with severe hypertension were more likely to be delivered via primary cesarean section and more likely to have hypertension in the immediate postpartum period.

References

1. Ozimek JA¹, Eddins RM², Greene N³, Karagyozyan D⁴, Pak S², Wong M³, Zakowski M⁴, Kilpatrick SJ³. Opportunities for improvement in care among women with severe maternal morbidity. *Am J Obstet Gynecol*. 2016 Oct;215(4):509.e1-6. doi: 10.1016/j.ajog.2016.05.022. Epub 2016 May 19.
2. Clapp MA¹, Little SE², Zheng J³, Robinson JN². A multi-state analysis of postpartum readmissions in the United States. *Am J Obstet Gynecol*. 2016 Jul;215(1):113.e1-113.e10. doi: 10.1016/j.ajog.2016.01.174.
3. Mogos MF¹, Salemi JL², Spooner KK², McFarlin BL¹, Salihu HH². Hypertensive disorders of pregnancy and postpartum readmission in the United States: national surveillance of the revolving door. *J Hypertens*. 2018 Mar;36(3):608-618. doi: 10.1097/HJH.0000000000001594.

Faculty Mentor: Kathleen Berkowitz, MD

Antimicrobial stewardship in patients with penicillin allergy undergoing hysterectomy



Lia Miceli, MD

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 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.

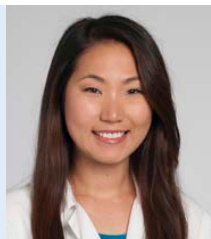
In 2018, a total of 230 patients with penicillin allergy underwent a hysterectomy for benign indications. The most common self-reported allergic reaction to penicillin was hives (n=68, 29.6%) followed by rash (n=66, 28.7%) and unspecified (n=42, 18.3%). Appropriate antibiotics were administered in 42.2% (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).

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.

Research Mentor: Katie Propst, MD

Adjuvant treatment improves overall survival in women with high intermediate risk early stage endometrial cancer with lymphovascular space invasion



Jessica Son, MD

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Objective: To determine whether adjuvant treatment impacts oncologic outcomes in women with high intermediate risk early stage endometrial cancer with lymphovascular space invasion.

Methods: A multicenter retrospective study was conducted in women with stage IA, IB, and II endometrial cancer with lymphovascular space invasion who met criteria for high intermediate risk by Gynecologic Oncology Group (GOG) 99. Patients were stratified by the type of adjuvant treatment received. Clinical and pathologic features were abstracted. Progression-free and overall survival were evaluated using multivariable analysis.

Results: 405 patients were included with the median age of 67 years. 75.0% of the patients had full staging with lymphadenectomy, and 8.6% had sentinel lymph node biopsy (total 83.6%). After surgery, 24.9% of the patients underwent observation and 75.1% received adjuvant therapy, which included external beam radiation therapy (15.1%), vaginal brachytherapy (45.4%), and combined brachytherapy+chemotherapy (19.1%). Overall, adjuvant treatment resulted in improved oncologic outcomes for both five-year progression-free survival (77.2% vs. 69.6%, HR 0.55, $p=0.01$) and overall survival (81.5% vs. 60.2%, HR 0.42, $p<0.001$). After adjusting for stage, grade 2/3, and age, improved progression-free survival and overall survival were observed for the following adjuvant subgroups compared to observation: external beam radiation (overall survival HR 0.47, $p=0.047$, progression-free survival not significant), vaginal brachytherapy (overall survival HR 0.35, $p<0.001$; progression-free survival HR 0.42, $p=0.003$), and brachytherapy+chemotherapy (overall survival HR 0.30 $p=0.002$; progression-free survival HR 0.35, $p=0.006$). Compared with vaginal brachytherapy alone, external beam radiation or the addition of chemotherapy did not further improve progression-free survival ($p=0.80$, $p=0.65$, respectively) or overall survival ($p=0.47$, $p=0.74$, respectively).

Conclusion: Adjuvant therapy improves both progression-free survival and overall survival in women with early stage endometrial cancer meeting high intermediate risk criteria with lymphovascular space invasion. External beam radiation or adding chemotherapy did not confer additional survival advantage compared to vaginal brachytherapy alone.

Research Mentor: Mariam AlHilli, MD



2019

Resident and Fellow Publications

Farrell RM, Michie M, Scott CT, Flyckt R, LaPlante M. Prioritizing Women's Health in Germline Editing Research. *AMA J Ethics*. 2019 Dec 1;21(12):E1071-1078. doi: 10.1001/amajethics.2019.1071. PubMed PMID: 31876472.

Menefee S, Richter HE, Myers D, Weidner A, Moalli P, Harvie H, Rahn D, Jeppson P, Paraiso M, Thomas S, Mazloomdoost D; NICHHD Pelvic Floor Disorders Network. Design of a 3-Arm Randomized Trial for Posthysterectomy Vault Prolapse Involving Sacral Colpopexy, Transvaginal Mesh, and Native Tissue Apical Repair: The Apical Suspension Repair for Vault Prolapse in a Three-Arm Randomized Trial. *Female Pelvic Med Reconstr Surg*. 2019 Dec 19. doi: 10.1097/SPV.0000000000000803. [Epub ahead of print] PubMed PMID: 31860566.

Tough DeSapri K, Batur P. Osteoporosis Management. *J Womens Health* (Larchmt). 2019 Dec 13. doi: 10.1089/jwh.2019.8195. [Epub ahead of print] PubMed PMID: 31834855.

Hickman LC, Tran MC, Davidson ERW, Walters MD, Ferrando CA. Pelvic organ prolapse recurrence in young women undergoing vaginal and abdominal colpopexy. *Int Urogynecol J*. 2019 Dec 11. doi: 10.1007/s00192-019-04139-w. [Epub ahead of print] PubMed PMID: 31828397.

Chichura AM, Yao M, Bretschneider CE, Ridgeway B, Kho RM. Feasibility and Outcomes of Opportunistic Bilateral Salpingectomy in Patients with Traditional Relative Contraindications to Vaginal Hysterectomy. *J Minim Invasive Gynecol*. 2019 Dec 5. pii: S1553-4650(19)31336-6. doi: 10.1016/j.jmig.2019.12.002. [Epub ahead of print] PubMed PMID: 31812614.

Abbott JA, Kho R. An Abundance of Studies But Dearth of Evidence regarding Endometriosis and Adenomyosis. *J Minim Invasive Gynecol*. 2020 Feb;27(2):241-243. doi: 10.1016/j.jmig.2019.12.003. Epub 2019 Dec 5. PubMed PMID: 31812611.

Campos NG, Alfaro K, Maza M, Sy S, Melendez M, Masch R, Soler M, Conzuelo-Rodriguez G, Gage JC, Alonzo TA, Castle PE, Felix JC, Cremer M, Kim JJ. The cost-effectiveness of human papillomavirus self-collection among cervical cancer screening non-attenders in El Salvador. *Prev Med*. 2020 Feb;131:105931. doi: 10.1016/j.ypmed.2019.105931. Epub 2019 Nov 23. PubMed PMID: 31765712.

Feldman MK, Hunter SA, Perni UC, Liu P, Quintini C, Tzakis AG, Flyckt R. New Frontier: Role of the Radiologist in Uterine Transplantation. *Radiographics*. 2020 Jan-Feb;40(1):291-302. doi: 10.1148/rg.2020190123. Epub 2019 Nov 22. PubMed PMID:31756124.

Harvie HS, Amundsen CL, Neuwahl SJ, Honeycutt AA, Lukacz ES, Sung VW, Rogers RG, Ellington D, Ferrando CA, Chermansky CJ, Mazloomdoost D, Thomas S. Cost-Effectiveness of Sacral Neuromodulation versus OnabotulinumtoxinA for Refractory Urgency Urinary Incontinence: Results of the ROSETTA Randomized Trial. *J Urol*. 2019 Nov 18; 101097JU00000000000000656. doi: 10.1097/JU.0000000000000656. [Epub ahead of print] PubMed PMID: 31738113.

Connor EV, Saygin C, Braley C, Wiechert AC, Karunanithi S, Crean-Tate K, Abdul-Karim FW, Michener CM, Rose PG, Lathia JD, Reizes O. Thy-1 predicts poor prognosis and is associated with self-renewal in ovarian cancer. *J Ovarian Res*. 2019 Nov 17;12(1):112. doi: 10.1186/s13048-019-0590-5. PubMed PMID: 31735168; PubMed Central PMCID: PMC6858973.

Bradley LD, Pasic RP, Miller LE. Clinical Performance of Radiofrequency Ablation for Treatment of Uterine Fibroids: Systematic Review and Meta-Analysis of Prospective Studies. *J Laparoendosc Adv Surg Tech A*. 2019 Dec;29(12):1507-1517. doi: 10.1089/lap.2019.0550. Epub 2019 Nov 8. PubMed PMID:31702440.

Expert Panel on Women's Imaging Panel, Dudiak KM, Maturen KE, Akin EA, Bell M, Bhosale PR, Kang SK, Kilcoyne A, Lakhman Y, Nicola R, Pandharipande PV, Paspulati R, Reinhold C, Ricci S, Shinagare AB, Vargas HA, Whitcomb BP, Glanc P. ACR Appropriateness Criteria® Gestational Trophoblastic Disease. *J Am Coll Radiol*. 2019 Nov;16(11S):S348-S363. doi: 10.1016/j.jacr.2019.05.015. PubMed PMID:31685103.

Farrell RM, Agatista PK, Michie MM, Greene A, Ford PJ. The personal utility of cfDNA screening: Pregnant patients' experiences with cfDNA screening and views on expanded cfDNA panels. *J Genet Couns*. 2020 Feb;29(1):88-96. doi: 10.1002/jgc4.1183. Epub 2019 Nov 3. PubMed PMID: 31680382.

Bassi MA, Andres MP, Bassi CM, Neto JS, Kho RM, Abrão MS. Postoperative Bowel Symptoms Improve over Time after Rectosigmoidectomy for Endometriosis. *J Minim Invasive Gynecol*. 2019 Oct 24. pii: S1553-4650(19)31261-0. doi: 10.1016/j.jmig.2019.10.009. [Epub ahead of print] PubMed PMID: 31669552.

Rose PG, Sierk A. Treatment of neuroendocrine carcinoma of the cervix with a PARP inhibitor based on next generation sequencing. *Gynecol Oncol Rep*. 2019 Sep 12;30:100499. doi: 10.1016/j.gore.2019.100499. eCollection 2019 Nov. PubMed PMID: 31649992; PubMed Central PMCID: PMC6804835.

- Wagner BG, Cleland K, Batur P, Wu J, Rothberg MB. Emergency contraception: Links between providers' counseling choices, prescribing behaviors, and sociopolitical context. *Soc Sci Med*. 2019 Dec;242:112588. doi: 10.1016/j.socscimed.2019.112588. Epub 2019 Oct 4. PubMed PMID: 31630008.
- Wilson JR, Falcone T. The JMIG Issues New Guidelines on Statistical Reporting and p-values. *J Minim Invasive Gynecol*. 2020 Jan;27(1):1-3. doi: 10.1016/j.jmig.2019.10.006. Epub 2019 Oct 17. PubMed PMID: 31629795.
- Andres MP, Arcoverde FVL, Souza CCC, Fernandes LFC, Abrão MS, Kho RM. Extrapelvic Endometriosis: A Systematic Review. *J Minim Invasive Gynecol*. 2020 Feb;27(2):373-389. doi: 10.1016/j.jmig.2019.10.004. Epub 2019 Oct 13. Review. PubMed PMID: 31618674.
- Moreno AC, Goje O, Piliang MP, Batur P. Vulvar and gluteal manifestations of Crohn disease. *Cleve Clin J Med*. 2019 Oct;86(10):645-646. doi: 10.3949/ccjm.86a.19062. PubMed PMID: 31597081.
- Chambers LM, Son J, Radeva M, DeBernardo R. Evaluation of non-completion of intraperitoneal chemotherapy in patients with advanced epithelial ovarian cancer. *J Gynecol Oncol*. 2019 Nov;30(6):e93. doi: 10.3802/jgo.2019.30.e93. PubMed PMID: 31576687; PubMed Central PMCID: PMC6779617.
- Reed VR, Emery J, Farrell RM, Jelovsek JE. Tracking-A Flexible Obstetrics and Gynecology Residency Curriculum. *Obstet Gynecol*. 2019 Oct;134 Suppl 1:29S-33S. doi: 10.1097/AOG.0000000000003464. PubMed PMID: 31568038.
- Nager CW, Visco AG, Richter HE, Rardin CR, Rogers RG, Harvie HS, Zyczynski HM, Paraiso MFR, Mazloomdoost D, Grey S, Sridhar A, Wallace D; NICHHD Pelvic Floor Disorders Network. Effect of Vaginal Mesh Hysteropexy vs Vaginal Hysterectomy With Uterosacral Ligament Suspension on Treatment Failure in Women With Uterovaginal Prolapse: A Randomized Clinical Trial. *JAMA*. 2019 Sep 17;322(11):1054-1065. doi: 10.1001/jama.2019.12812. PubMed PMID: 31529008; PubMed Central PMCID: PMC6749543.
- Sung VW, Borello-France D, Newman DK, Richter HE, Lukacz ES, Moalli P, Weidner AC, Smith AL, Dunivan G, Ridgeway B, Nguyen JN, Mazloomdoost D, Carper B, Gantz MG; NICHHD Pelvic Floor Disorders Network. Effect of Behavioral and Pelvic Floor Muscle Therapy Combined With Surgery vs Surgery Alone on Incontinence Symptoms Among Women With Mixed Urinary Incontinence: The ESTEEM Randomized Clinical Trial. *JAMA*. 2019 Sep 17;322(11):1066-1076. doi: 10.1001/jama.2019.12467. PubMed PMID: 31529007; PubMed Central PMCID: PMC6749544.

Llarena NC, Falcone T, Flyckt RL. Fertility Preservation in Women With Endometriosis. *Clin Med Insights Reprod Health*. 2019 Sep 3;13:1179558119873386. doi: 10.1177/1179558119873386. eCollection 2019. Review. PubMed PMID: 31516316; PubMed Central PMCID: PMC6724494.

Munoz JL, Bishop E, Reider M, Radeva M, Singh K. Antenatal ultrasound compared to MRI evaluation of fetal myelomeningocele: a prenatal and postnatal evaluation. *J Perinat Med*. 2019 Sep 25;47(7):771-774. doi: 10.1515/jpm-2019-0177. PubMed PMID: 31487264.

Nock NL, Dimitropoulos A, Zanotti KM, Waggoner S, Nagel C, Golubic M, Michener CM, Kirwan JP, Alberts J. Sleep, quality of life, and depression in endometrial cancer survivors with obesity seeking weight loss. *Support Care Cancer*. 2019 Sep 2. doi: 10.1007/s00520-019-05051-1. [Epub ahead of print] PubMed PMID: 31478164.

Crean-Tate KK, Faubion SS, Pederson HJ, Vencill JA, Batur P. Management of genitourinary syndrome of menopause in female cancer patients: a focus on vaginal hormonal therapy. *Am J Obstet Gynecol*. 2020 Feb;222(2):103-113. doi: 10.1016/j.ajog.2019.08.043. Epub 2019 Aug 29. Review. PubMed PMID: 31473229.

Goldberg JM, Falcone T, Diamond MP. Current controversies in tubal disease, endometriosis, and pelvic adhesion. *Fertil Steril*. 2019 Sep;112(3):417-425. doi: 10.1016/j.fertnstert.2019.06.021. PubMed PMID: 31446901.

Feldman MK, VanBuren WM, Barnard H, Taffel MT, Kho RM. Systematic interpretation and structured reporting for pelvic magnetic resonance imaging studies in patients with endometriosis: value added for improved patient care. *Abdom Radiol (NY)*. 2019 Aug 24. doi: 10.1007/s00261-019-02182-1. [Epub ahead of print] Review. PubMed PMID: 31446452.

AlHilli M, Elson P, Rybicki L, Amarnath S, Yang B, Michener CM, Rose PG. Undifferentiated endometrial carcinoma: a National Cancer Database analysis of prognostic factors and treatment outcomes. *Int J Gynecol Cancer*. 2019 Sep;29(7):1126-1133. doi: 10.1136/ijgc-2019-000465. Epub 2019 Aug 17. PubMed PMID: 31422353.

Komesu YM, Dinwiddie DL, Richter HE, Lukacz ES, Sung VW, Siddiqui NY, Zyczynski HM, Ridgeway B, Rogers RG, Arya LA, Mazloomdoost D, Levy J, Carper B, Gantz MG; Eunice Kennedy Shriver National Institute of Child Health and Human Development Pelvic Floor Disorders Network. Defining the relationship between vaginal and urinary microbiomes. *Am J Obstet Gynecol*. 2020 Feb;222(2):154.e1-154.e10. doi: 10.1016/j.ajog.2019.08.011.

Epub 2019 Aug 14. PubMed PMID: 31421123; PubMed Central PMCID: PMC6995424.

Gorgun E, Cengiz TB, Aytac E, Aiello A, da Silva G, Goldberg JM, Holubar SD, Stocchi L, Wexner SD, Steele SR, Hull TL. Does laparoscopic ileal pouch-anal anastomosis reduce infertility compared with open approach? *Surgery*. 2019 Oct;166(4):670-677. doi: 10.1016/j.surg.2019.04.045. Epub 2019 Aug 14. PubMed PMID: 31420214.

Graziano SC, Page-Ramsey SM, Buery-Joyner SD, Bliss S, Craig LB, Forstein DA, Hampton BS, Hopkins L, McKenzie ML, Morgan H, Pradhan A, Everett EN; Undergraduate Medical Education Committee, Association of Professors of Gynecology and Obstetrics. Developing as an Academic Medical Educator in Obstetrics and Gynecology. *Obstet Gynecol*. 2019 Sep;134(3):621-627. doi: 10.1097/AOG.0000000000003417. PubMed PMID: 31403603.

Armstrong DK, Alvarez RD, Bakkum-Gamez JN, Barroilhet L, Behbakht K, Berchuck A, Berek JS, Chen LM, Cristea M, DeRosa M, ElNaggar AC, Gershenson DM, Gray HJ, Hakam A, Jain A, Johnston C, Leath CA III, Liu J, Mahdi H, Matei D, McHale M, McLean K, O'Malley DM, Penson RT, Percac-Lima S, Ratner E, Remmenga SW, Sabbatini P, Werner TL, Zsiros E, Burns JL, Engh AM. NCCN Guidelines Insights: Ovarian Cancer, Version 1.2019. *J Natl Compr Canc Netw*. 2019 Aug 1;17(8):896-909. doi: 10.6004/jnccn.2019.0039. PubMed PMID: 31390583.

Nielsen C, Batur P. Running in place: The uncertain future of primary care internal medicine. *Cleve Clin J Med*. 2019 Aug;86(8):530-534. doi: 10.3949/ccjm.86a.19075. PubMed PMID: 31385788.

Munoz JL, Bishop Cnm E, Reider M, Radeva M, Hsich G, Singh K. Fetal myelomeningocele diagnosed in the antenatal period: Maternal-fetal characteristics and their relationship with pregnancy decision-making. *J Neonatal Perinatal Med*. 2019;12(4):399-403. doi: 10.3233/NPM-180208. PubMed PMID: 31381533.

Marques ALS, Andres MP, Kho RM, Abrão MS. Is High-intensity Focused Ultrasound Effective for the Treatment of Adenomyosis? A Systematic Review and Meta-analysis. *J Minim Invasive Gynecol*. 2020 Feb;27(2):332-343. doi: 10.1016/j.jmig.2019.07.029. Epub 2019 Aug 1. Review. PubMed PMID: 31377454.

Ridgeway B. The Balance of Parenting and Professional Life Among Gynecologic Subspecialists: A Unicorn? *J Minim Invasive Gynecol*. 2019 Sep – Oct;26(6):991-992. doi: 10.1016/j.jmig.2019.07.012. Epub 2019 Jul 24. PubMed PMID: 31351223.

- Rehmer JM, Flyckt RL, Goodman LR, Falcone T. Management of Endometriomas. *Obstet Gynecol Surv.* 2019 Apr;74(4):232-240. doi: 10.1097/OGX.0000000000000660. PubMed PMID: 31344251.
- Sussman TA, Kruse ML, Thacker HL, Abraham J. Managing Genitourinary Syndrome of Menopause in Breast Cancer Survivors Receiving Endocrine Therapy. *J Oncol Pract.* 2019 Jul;15(7):363-370. doi: 10.1200/JOP.18.00710. PubMed PMID: 31291563.
- Flyckt R, Falcone T. Infertility: A practical framework. *Cleve Clin J Med.* 2019 Jul;86(7):473-482. doi: 10.3949/ccjm.86a.18068. Review. PubMed PMID:31291181.
- Cadish LA, Ridgeway BM, Shepherd JP. Reply. *Am J Obstet Gynecol.* 2019 Sep;221(3):289-290. doi: 10.1016/j.ajog.2019.05.052. Epub 2019 Jun 7. PubMed PMID: 31280839.
- Chang OH, Paraiso MFR. Reply. *Am J Obstet Gynecol.* 2019 Sep;221(3):292-293. doi: 10.1016/j.ajog.2019.06.017. Epub 2019 Jun 15. PubMed PMID: 31279445.
- Chambers LM, Michener CM, Falcone T. Authors' reply re: Plagiarism and data falsification are the most common reasons for retracted publications in obstetrics and gynaecology. *BJOG.* 2019 Sep;126(10):1289-1290. doi: 10.1111/1471-0528.15828. Epub 2019 Jul 2. PubMed PMID: 31267670.
- Ahmad MU, Farrell RM, Weise KL. Neonatal organ donation: Ethical insights and policy implications. *J Neonatal Perinatal Med.* 2019;12(4):369-377. doi: 10.3233/NPM-1850. PubMed PMID: 31256079.
- Abrão MS, Andres MP, Barbosa RN, Bassi MA, Kho RM. Optimizing Perioperative Outcomes with Selective Bowel Resection Following an Algorithm Based on Preoperative Imaging for Bowel Endometriosis. *J Minim Invasive Gynecol.* 2019 Jun 22. pii: S1553-4650(19)30288-2. doi: 10.1016/j.jmig.2019.06.010. [Epub ahead of print] PubMed PMID: 31238150.
- Nothnick WB, Swan K, Flyckt R, Falcone T, Graham A. Human endometriotic lesion expression of the miR-144-3p/miR-451a cluster, its correlation with markers of cell survival and origin of lesion content. *Sci Rep.* 2019 Jun 19;9(1):8823. doi: 10.1038/s41598-019-45243-7. PubMed PMID: 31217548; PubMed Central PMCID: PMC6584560.

Moreno AC, Sahni SK, Smith TL, Batur P. Women's health 2019: Osteoporosis, breast cancer, contraception, and hormone therapy. *Cleve Clin J Med*. 2019 Jun;86(6):400-406. doi: 10.3949/ccjm.86a.18130. Review. PubMed PMID: 31204979.

Hopkins L, Morgan H, Buery-Joyner SD, Craig LB, Everett EN, Forstein DA, Graziano SC, Hampton BS, McKenzie ML, Page-Ramsey SM, Pradhan A, Bliss S; Undergraduate Medical Education Committee, Association of Professors of Gynecology and Obstetrics. To the Point: a prescription for well-being in medical education. *Am J Obstet Gynecol*. 2019 Dec;221(6):542-548. doi: 10.1016/j.ajog.2019.05.012. Epub 2019 Jun 7. Review. PubMed PMID: 31181180.

Abrao MS, Myung LHJ, Averbach M, Kho RM. Neuroendocrine Tumor or Endometriosis of the Appendix: Which Is Which? *J Minim Invasive Gynecol*. 2020 Jan;27(1):15-16. doi: 10.1016/j.jmig.2019.05.007. Epub 2019 May 21. PubMed PMID: 31121310.

Fortin CN, Hur C, Radeva M, Falcone T. Effects of myomas and myomectomy on assisted reproductive technology outcomes. *J Gynecol Obstet Hum Reprod*. 2019 Nov;48(9):751-755. doi: 10.1016/j.jogoh.2019.05.001. Epub 2019 May 8. PubMed PMID: 31077869.

Chambers LM, Carr C, Freeman L, Jernigan AM, Michener CM. Does surgical platform impact recurrence and survival? A study of utilization of multiport, single-port, and robotic-assisted laparoscopy in endometrial cancer surgery. *Am J Obstet Gynecol*. 2019 Sep;221(3):243.e1-243.e11. doi: 10.1016/j.ajog.2019.04.038. Epub 2019 May 7. PubMed PMID: 31075245.

Zhang S, Batur P. In reply: Human papillomavirus. *Cleve Clin J Med*. 2019 May;86(5):300-301. doi: 10.3949/ccjm.86c.05002. PubMed PMID: 31066670.

Cremer M, Alfaro K, Garai J, Salinas M, Maza M, Zevallos A, Taxa L, Diaz AC, Castle P, Alonzo TA, Masch R, Soler M, Conzuelo-Rodriguez G, Gage JC, Felix JC. Evaluation of two alternative ablation treatments for cervical pre-cancer against standard gas-based cryotherapy: a randomized non-inferiority study. *Int J Gynecol Cancer*. 2019 May 3. pii: ijgc-2018-000148. doi: 10.1136/ijgc-2018-000148. [Epub ahead of print] PubMed PMID: 31055452.

Woodburn KL, Tran MC, Casas-Puig V, Ninivaggio CS, Ferrando CA. Compliance With Pelvic Floor Physical Therapy in Patients Diagnosed With High-Tone Pelvic Floor Disorders. *Female Pelvic Med Reconstr Surg*. 2019 Apr 30. doi: 10.1097/SPV.0000000000000732. [Epub ahead of print] PubMed PMID: 31045618.

Flyckt RL. Setting the focus on patient selection for minimally invasive myomectomy: operating times and surgical morbidity in a large database study. *Fertil Steril*. 2019 Jun;111(6):1127-1128. doi: 10.1016/j.fertnstert.2019.03.031. Epub 2019 Apr 28. PubMed PMID: 31043231.

Mabel H, Altinay M, Ferrando CA. The Role of the Ethicist in an Interdisciplinary Transgender Health Care Team. *Transgend Health*. 2019 Apr 26;4(1):136-142. doi: 10.1089/trgh.2018.0058. eCollection 2019. PubMed PMID: 31041401; PubMed Central PMCID: PMC6487737.

Gingold JA, Chichura A, Harnegie MP, Kho RM. Perioperative Interventions to Minimize Blood Loss at the Time of Hysterectomy for Uterine Leiomyomas: A Systematic Review and Meta-analysis. *J Minim Invasive Gynecol*. 2019 Nov-Dec;26(7):1234-1252.e1. doi: 10.1016/j.jmig.2019.04.021. Epub 2019 Apr 27. PubMed PMID: 31039407.

Pradhan A, Buery-Joyner SD, Page-Ramsey S, Bliss S, Craig LB, Everett E, Forstein DA, Graziano S, Hopkins L, McKenzie M, Morgan H, Hampton BS. To the point: undergraduate medical education learner mistreatment issues on the learning environment in the United States. *Am J Obstet Gynecol*. 2019 Nov;221(5):377-382. doi: 10.1016/j.ajog.2019.04.021. Epub 2019 Apr 25. Review. PubMed PMID: 31029660.

Hur C, Rehmer J, Flyckt R, Falcone T. Uterine Factor Infertility: A Clinical Review. *Clin Obstet Gynecol*. 2019 un;62(2):257-270. doi: 10.1097/GRF.0000000000000448. PubMed PMID: 31021928.

Walker JL, Brady MF, Wenzel L, Fleming GF, Huang HQ, DiSilvestro PA, Fujiwara K, Alberts DS, Zheng W, Tewari KS, Cohn DE, Powell MA, Van Le L, Davidson SA, Gray HJ, Rose PG, Aghajanian C, Myers T, Alvarez Secord A, Rubin SC, Mannel RS. Randomized Trial of Intravenous Versus Intraperitoneal Chemotherapy Plus Bevacizumab in Advanced Ovarian Carcinoma: An NRG Oncology/Gynecologic Oncology Group Study. *J Clin Oncol*. 2019 Jun 1;37(16):1380-1390. doi: 10.1200/JCO.18.01568. Epub 2019 Apr 19. Erratum in: *J Clin Oncol*. 2019 Sep 1;37(25):2299. PubMed PMID: 31002578; PubMed Central PMCID: PMC6544459.

AlHilli MM, Elson P, Rybicki L, Khorana AA, Rose PG. Time to surgery and its impact on survival in patients with endometrial cancer: A National cancer database study. *Gynecol Oncol*. 2019 Jun;153(3):511-516. doi: 10.1016/j.ygyno.2019.03.244. Epub 2019 Apr 15. PubMed PMID: 31000472.

Desai N, Gill P. Blastomere cleavage plane orientation and the tetrahedral formation are associated with increased probability of a good-quality blastocyst for cryopreservation or transfer: a time-lapse study. *Fertil Steril*. 2019 Jun;111(6):1159-1168.e1. doi: 10.1016/j.fertnstert.2019.02.019. Epub 2019 Apr 12. PubMed PMID: 30982605.

Rose PG, Purpura D, Petersen L. Reduction in skin and mucosal toxicity with pegylated liposomal doxorubicin utilizing every 2-week dosing. *Anticancer Drugs*. 2019 Jul;30(6):636-639. doi: 10.1097/CAD.0000000000000795. PubMed PMID: 30973518.

Bretschneider CE, Casas-Puig V, Sheyn D, Hijaz A, Ferrando CA. Delayed recognition of lower urinary tract injuries following hysterectomy for benign indications: A NSQIP-based study. *Am J Obstet Gynecol*. 2019 Aug;221(2):132.e1-132.e13. doi: 10.1016/j.ajog.2019.03.015. Epub 2019 Mar 26. PubMed PMID: 30926265.

Alas A, Martin L, Devakumar H, Frank L, Vaish S, Chandrasekaran N, Davila GW, Hurtado E. Anesthetics' role in postoperative urinary retention after pelvic organ prolapse surgery with concomitant midurethral slings: a randomized clinical trial. *Int Urogynecol J*. 2020 Jan;31(1):205-213. doi: 10.1007/s00192-019-03917-w. Epub 2019 Mar 23. PubMed PMID: 30904934.

Chambers LM, Michener CM, Falcone T. Plagiarism and data falsification are the most common reasons for retracted publications in obstetrics and gynaecology. *BJOG*. 2019 Aug;126(9):1134-1140. doi: 10.1111/1471-0528.15689. Epub 2019 Apr 21. PubMed PMID: 30903641.

Kumari M, Kovach T, Sheehy B, Zabell A, Morales R, Moodley SJ, Shah YG, Maroo PV, Maroo AP, Tang WHW. Circulating NT-proBNP but not soluble corin levels were associated with preeclampsia in pregnancy-associated hypertension. *Clin Biochem*. 2019 May;67:12-15. doi: 10.1016/j.clinbiochem.2019.03.005. Epub 2019 Mar 16. PubMed PMID: 30890412; PubMed Central PMCID: PMC6475478.

Chambers LM, Vargas R, Michener CM. Sentinel lymph node mapping in endometrial and cervical cancer: a survey of practices and attitudes in gynecologic oncologists. *J Gynecol Oncol*. 2019 May;30(3):e35. doi: 10.3802/jgo.2019.30.e35. PubMed PMID: 30887757; PubMed Central PMCID: PMC6424853.

Brown J, Drury L, Raub K, Levy B, Brantner P, Krivak TC, Bradley L, Naumann RW. Workplace Harassment and Discrimination in Gynecology: Results of the AAGL Member Survey. *J Minim Invasive Gynecol*. 2019 Jul - Aug;26(5):838-846. doi: 10.1016/j.jmig.2019.03.004. Epub 2019 Mar 13. PubMed PMID: 30878643.

Richards EG, Agatista PK, Davis AC, Flyckt R, Mabel H, Falcone T, Tzakis A, Farrell RM. Framing the diagnosis and treatment of absolute uterine factor infertility: Insights from in-depth interviews with uterus transplant trial participants. *AJOB Empir Bioeth*. 2019 Jan-Mar;10(1):23-35. doi: 10.1080/23294515.2019.1572672. Epub 2019 Mar 11. PubMed PMID: 30855220.

Mattos LA, Goncalves MO, Andres MP, Young SW, Feldman M, Abrão MS, Kho RM. Structured Ultrasound and Magnetic Resonance Imaging Reports for Patients with Suspected Endometriosis: Guide for Imagers and Clinicians. *J Minim Invasive Gynecol*. 2019 Sep - Oct;26(6):1016-1025. doi: 10.1016/j.jmig.2019.02.017. Epub 2019 Mar 6. PubMed PMID: 30849475.

Zhang S, Batur P. Human papillomavirus in 2019: An update on cervical cancer prevention and screening guidelines. *Cleve Clin J Med*. 2019 Mar;86(3):173-178. doi: 10.3949/ccjm.86a.18018. Review. PubMed PMID: 30849035.

Davidson ERW, Casas-Puig V, Paraiso MFR, Ridgeway B, Ferrando CA. Pelvic Organ Prolapse Recurrence and Patient-Centered Outcomes Following Minimally Invasive Abdominal Uterosacral Ligament and Mesh-Augmented Sacrohysteropexy. *Female Pelvic Med Reconstr Surg*. 2019 Mar 6. doi: 10.1097/SPV.0000000000000710. [Epub ahead of print] PubMed PMID: 30845072.

Alas A, Hidalgo R, Espaillat L, Devakumar H, Davila GW, Hurtado E. Does spinal anesthesia lead to postoperative urinary retention in same-day urogynecology surgery? A retrospective review. *Int Urogynecol J*. 2019 Aug;30(8):1283-1289. doi: 10.1007/s00192-019-03893-1. Epub 2019 Feb 27. PubMed PMID: 30810782.

Casas-Puig V, Bretschneider CE, Ferrando CA. Perioperative Adverse Events in Women Undergoing Concurrent Hemorrhoidectomy at the Time of Urogynecologic Surgery. *Female Pelvic Med Reconstr Surg*. 2019 Mar/ Apr;25(2):88-92. doi: 10.1097/SPV.0000000000000663. PubMed PMID: 30807406.

Ferrando CA, Paraiso MFR. A Prospective Randomized Trial Comparing Restorelle Y Mesh and Flat Mesh for Laparoscopic and Robotic-Assisted Laparoscopic Sacrocolpopexy. *Female Pelvic Med Reconstr Surg*. 2019 Mar/Apr;25(2):83-87. doi: 10.1097/SPV.0000000000000655. PubMed PMID: 30807405.

Campos NG, Maza M, Alfaro K, Gage JC, Castle PE, Felix JC, Masch R, Cremer M, Kim JJ. The cost-effectiveness of implementing HPV testing for cervical cancer screening in El Salvador. *Int J Gynaecol Obstet*. 2019 Apr;145(1):40-46. doi: 10.1002/ijgo.12773. PubMed PMID: 30702142; PubMed Central PMCID: PMC6988124.

Everett EN, Forstein DA, Bliss S, Buery-Joyner SD, Craig LB, Graziano SC, Hampton BS, Hopkins L, McKenzie ML, Morgan H, Pradhan A, Page-Ramsey SM; Undergraduate Medical Education Committee, Association of Professors of Gynecology and Obstetrics, Crofton, MD. To the Point: The expanding role of simulation in obstetrics and gynecology medical student education. *Am J Obstet Gynecol*. 2019 Feb;220(2):129-141. doi: 10.1016/j.ajog.2018.10.029. Epub 2018 Oct 25. Review. PubMed PMID: 30696555.

Cadish LA, Ridgeway BM, Shepherd JP. Cystoscopy at the time of benign hysterectomy: a decision analysis. *Am J Obstet Gynecol*. 2019 Apr;220(4):369.e1-369.e7. doi: 10.1016/j.ajog.2019.01.217. Epub 2019 Jan 24. PubMed PMID: 30685289.

Rose PG, Java JJ, Salani R, Geller MA, Secord AA, Tewari KS, Bender DP, Mutch DG, Friedlander ML, Van Le L, Method MW, Hamilton CA, Lee RB, Wenham RM, Guntupalli SR, Markman M, Muggia FM, Armstrong DK, Bookman MA, Burger RA, Copeland LJ. Nomogram for Predicting Individual Survival After Recurrence of Advanced-Stage, High-Grade Ovarian Carcinoma. *Obstet Gynecol*. 2019 Feb;133(2):245-254. doi: 10.1097/AOG.0000000000003086. Erratum in: *Obstet Gynecol*. 2019 Apr;133(4):830. PubMed PMID: 30633128; PubMed Central PMCID: PMC6551603.

Baird RC, Li S, Wang H, Naga Prasad SV, Majdalany D, Perni U, Wu Q. Pregnancy-Associated Cardiac Hypertrophy in Corin-Deficient Mice: Observations in a Transgenic Model of Preeclampsia. *Can J Cardiol*. 2019 Jan;35(1):68-76. doi: 10.1016/j.cjca.2018.11.001. Epub 2018 Nov 14. PubMed PMID: 30595185; PubMed Central PMCID: PMC6314216.

Chang OH, Paraiso MFR. Revitalizing research in genitourinary syndrome of menopause. *Am J Obstet Gynecol*. 2019 Mar;220(3):246.e1-246.e4. doi: 10.1016/j.ajog.2018.12.032. Epub 2018 Dec 23. PubMed PMID: 30586548.

Grimstad FW, Fowler KG, New EP, Ferrando CA, Pollard RR, Chapman G, Gomez-Lobo V, Gray M. Uterine pathology in transmasculine persons on testosterone: a retrospective multicenter case series. *Am J Obstet Gynecol*. 2019 Mar;220(3):257.e1-257.e7. doi: 10.1016/j.ajog.2018.12.021. Epub 2018 Dec 21. PubMed PMID: 30579875.

Christ J, Falcone T. Response to "Reproductive Function Abnormalities and Bariatric Surgery: is a Matter of Time?" *Obes Surg*. 2019 Jan;29(1):320-321. doi: 10.1007/s11695-018-3588-y. PubMed PMID: 30552548.

Bradley LD, Singh SS, Simon J, Gemzell-Danielsson K, Petersdorf K, Groettrup-Wolfers E, Ren X, Zvolanek M, Seitz C. Vilaprisan in women with uterine fibroids: the randomized phase 2b ASTEROID 1 study. *Fertil Steril*. 2019 Feb;111(2):240-248. doi: 10.1016/j.fertnstert.2018.10.012. Epub 2018 Dec 7. PubMed PMID: 30527839.

Kho RM. Wading Through the Quagmire of Data with Systematic Reviews. *J Minim Invasive Gynecol*. 2019 Feb;26(2):185. doi: 10.1016/j.jmig.2018.11.014. Epub 2018 Nov 30. PubMed PMID: 30503758.

Sheyn D, Bretschneider CE, Mahajan ST, Ridgeway B, Davenport A, Pollard R. Incidence and risk factors of early postoperative small bowel obstruction in patients undergoing hysterectomy for benign indications. *Am J Obstet Gynecol*. 2019 Mar;220(3):251.e1-251.e9. doi: 10.1016/j.ajog.2018.11.1095. Epub 2018 Nov 22. PubMed PMID: 30471258.

Whiteside JL, Kaeser CT, Ridgeway B. Achieving high value in the surgical approach to hysterectomy. *Am J Obstet Gynecol*. 2019 Mar;220(3):242-245. doi: 10.1016/j.ajog.2018.11.124. Epub 2018 Nov 9. PubMed PMID: 30419200.

Davidson ERW, Thomas TN, Lampert EJ, Paraiso MFR, Ferrando CA. Route of hysterectomy during minimally invasive sacrocolpopexy does not affect postoperative outcomes. *Int Urogynecol J*. 2019 Apr;30(4):649-655. doi: 10.1007/s00192-018-3790-4. Epub 2018 Oct 18. PubMed PMID: 30338370.

Davidson ERW, Woodburn K, AlHilli M, Ferrando CA. Perioperative adverse events in women undergoing concurrent urogynecologic and gynecologic oncology surgeries for suspected malignancy. *Int Urogynecol J*. 2019 Jul;30(7):1195-1201. doi: 10.1007/s00192-018-3772-6. Epub 2018 Oct 2. PubMed PMID: 30280203.

Arcoverde FVL, Andres MP, Borrelli GM, Barbosa PA, Abrão MS, Kho RM. Surgery for Endometriosis Improves Major Domains of Quality of Life: A Systematic Review and Meta-Analysis. *J Minim Invasive Gynecol*. 2019 Feb;26(2):266-278. doi:10.1016/j.jmig.2018.09.774. Epub 2018 Sep 20. PubMed PMID: 30244153.

AlHilli MM, Al-Hilli Z. Perioperative Management of Women Undergoing Risk-reducing Surgery for Hereditary Breast and Ovarian Cancer. *J Minim Invasive Gynecol*. 2019 Feb;26(2):253-265. doi: 10.1016/j.jmig.2018.09.767. Epub 2018 Sep 19. Review. PubMed PMID: 30240898.

Farrell RM, Mercer M, Agatista PK, Coleridge MB. Balancing Needs and Autonomy: The Involvement of Pregnant Women's Partners in Decisions About cfDNA. *Qual Health Res*. 2019 Jan;29(2):211-221. doi: 10.1177/1049732318796833. Epub 2018 Sep 5. PubMed PMID: 30182811.

Das D, Propst K, Wechter ME, Kho RM. Evaluation of Positioning Devices for Optimization of Outcomes in Laparoscopic and Robotic-Assisted Gynecologic Surgery. *J Minim Invasive Gynecol*. 2019 Feb;26(2):244-252.e1. doi: 10.1016/j.jmig.2018.08.027. Epub 2018 Sep 1. PubMed PMID: 30176363.

Fortin C, Hur C, Falcone T. Impact of Laparoscopic Hysterectomy on Quality of Life. *J Minim Invasive Gynecol*. 2019 Feb;26(2):219-232. doi: 10.1016/j.jmig.2018.08.019. Epub 2018 Sep 1. PubMed PMID: 30176360.

Dermawan JKT, Hur C, Uberti MG, Flyckt R, Falcone T, Brainard J, Abdul-Karim FW. Thickened Endometrium in Postmenopausal Women With an Initial Biopsy of Limited, Benign, Surface Endometrium: Clinical Outcome and Subsequent Pathologic Diagnosis. *Int J Gynecol Pathol*. 2019 Jul;38(4):310-317. doi:10.1097/PGP.0000000000000525. PubMed PMID: 29750705.

Davidson ERW, Kho R. Use of Vessel-Sealing Devices during Vaginal Hysterectomy. *J Minim Invasive Gynecol*. 2019 Feb;26(2):362. doi: 10.1016/j.jmig.2018.04.018. Epub 2018 Apr 26. PubMed PMID: 29705060.

Peterson TV, Pinto RA, Davila GW, Nahas SC, Baracat EC, Haddad JM. Validation of the Brazilian Portuguese version of the pelvic floor bother questionnaire. *Int Urogynecol J*. 2019 Jan;30(1):81-88. doi:10.1007/s00192-018-3627-1. Epub 2018 Mar 16. PubMed PMID: 29549393.

