Cleveland Clinic

Obstetrics, Gynecology & Women's Health Institute

5TH ANNUAL

Research Day

May 13, 2020

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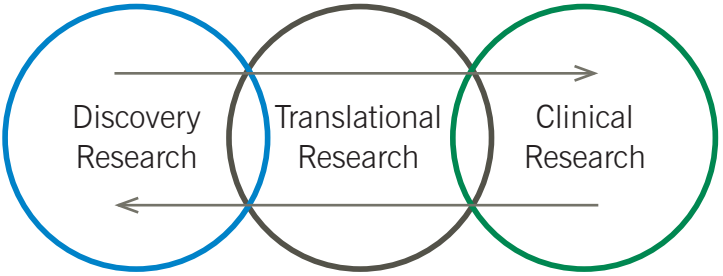

Key Note Address & Lecture

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 Mode 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	***Identifying Risk Factors for Postpartum Hypertension Readmission*** Melanie Katz, MD PGY3 Resident
11:55 am	Discussant Christine, Hur MD and Q&A
12:00 pm	***Adjuvant Treatment Improves Overall Survival in Women with High Intermediate Risk Early Stage Endometrial Cancer with Lymphovascular Space Invasion*** Jessica Son, MD PGY3 Resident
12:10 pm	Discussant Erica Newlin, MD and Q&A
12:15 pm	***Antimicrobial Stewardship in Patients with Penicillin Allergy Undergoing Hysterectomy*** 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	***What Shoes Are You Wearing? Do They Fit?*** 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
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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
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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
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Haider Mahdi, MD, MPH
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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.

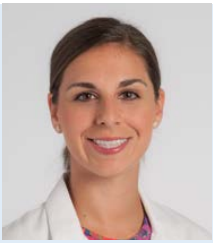
Conclusions: In summary, we identified a targetable pathway for chemosensitization of platinum resistant endometrioid ovarian cancer. We found that pretreatment with LCK inhibitors followed by co-treatment with cisplatin leads to decreased cell proliferation and increased apoptosis in vitro. This is 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, MD[1], Marie Fidela Paraiso, MD[1], Howard B. Goldman, MD[2], Katie Propst, MD[1], Cecile A. Ferrando, MD, MPH[1]

(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).

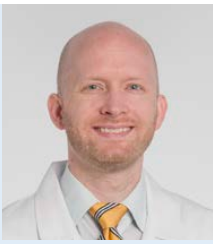
Materials/Methods: This is a prospective cohort study of SDD after minimally-invasive sacrocolpopexy. Eligibility criteria included age <80 years, ASA grade I or II, caretaker present for ≥24 hours post-operatively, and surgical start before 1PM. All patients needed to meet routine post-operative milestones 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±5.5m/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 verses 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 verses 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 need to identify barriers to medication adherence and improve compliance rates in women with osteoporosis.

Funding source: N/A

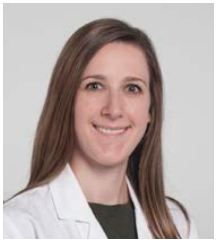
Research Mentor: Holly Thacker, MD

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

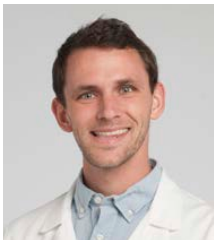
Role of blood management in optimizing perioperative outcomes in patients with secondary anemia undergoing hysterectomy or myomectomy for abnormal uterine bleeding: A randomized control trial

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%.

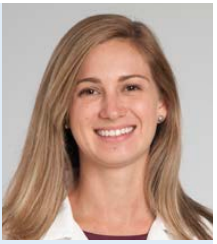
Most (n=46, 83.6%) patients did not experience POC after lumpectomy or mastectomy. Seroma was the most commonly observed POC (n=5, 9.1%). The 30-day reoperation rate for POC was 7.3% (n=4). No milk duct fistulas were observed despite 10.9% of patients having lactating breast tissue on biopsy and 40.0%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

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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

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