



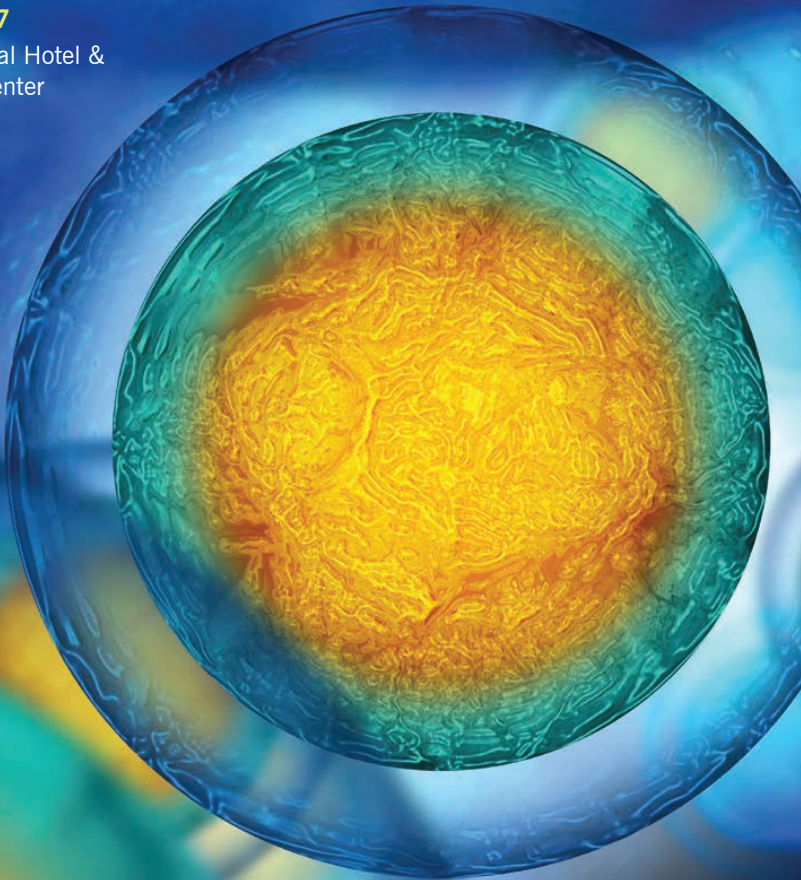
Obstetrics, Gynecology & Women's Health Institute

2ND ANNUAL

Research Day

May 24, 2017

Intercontinental Hotel &
Conference Center



2ND ANNUAL

Obstetrics,
Gynecology &
Women's Health Institute

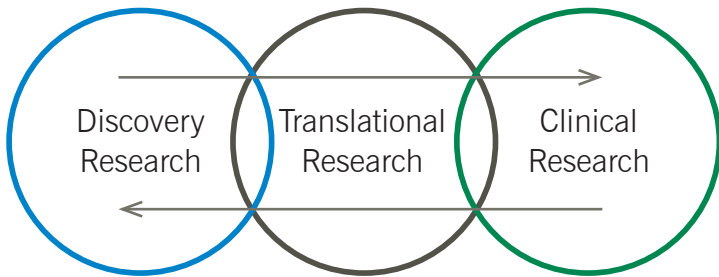
RESEARCH DAY

May 24, 2017

Intercontinental Hotel & Conference Center

Ballroom A & B





Key Note Address & Lecture

Linda Brubaker, MD, MS
Professor, Department of Reproductive Medicine
University of California – San Diego

Judges (Oral Presentations)

Natalie Bowersox, MD

Linda Brubaker, MD, MS

Uma Perni, MD

Beri Ridgeway, MD

Peter Rose, MD

Judges (Poster Presentations)

Miriam Al-Hilli, MD

Jerome Belinson, MD

Oluwatosin Goje, MD

Jules Moodley, MD



Agenda

- 7–7:20 am** **Registration and Continental Breakfast**
- 7:20–7:30 am** **Introduction & Welcome**
Ruth Farrell, MD, MA and Tommaso, Falcone, MD
- 7:30–8:30 am** **Key Note Address**
Everyday Scholarship
Linda Brubaker, MD, MS

8:30–9:45 am PGY3 Resident Oral Presentations

- 8:30 am *Assessing the effect of surgery on pre-and-post-operative inflammatory cytokine levels in patients with pelvic pain with and without endometriosis*
Alexandr Kotlyar, MD
- 8:45 am *Cost value of laparoscopic versus robotic surgery for endometriosis (LAROSE), a secondary analysis of the LAROSE study: a prospective randomized controlled trial*
Thanh Ha Luu, MD
- 9:00 am *A model to predict risk of postpartum infection after cesarean delivery*
Laura Moulton, DO
- 9:15 am *Does iron supplementation adequately treat anemia in pregnancy following bariatric surgery?*
Emily Nancy, MD
- 9:30 am *Experience and understanding surrounding obstetric perineal trauma in primiparous women: A qualitative study*
Sarah Steele, MD

9:45–10:15 am

Ballroom
Foyer

Refreshment Break &
PGY2 Resident Poster Presentations

Predictors of Lynch Syndrome and clinical outcomes among universally screened endometrial cancer patients
Caitlin Carr, MD

Why do patients call after surgery? Reasons and risk factors for seeking unscheduled medical advice in the postoperative period
Chelsea Fortin, MD

Use of cell salvage in preventing transfusion at the time of abdominal myomectomy
Julian Gingold, MD, PhD

Is nutritional risk index (NRI) an independent predictive factor for the development of surgical site infection (SSI) after abdominal hysterectomy?
Natalia Llarena, MD

Is nutritional risk index (NRI) an independent predictive factor for the development of surgical site infection (SSI) after abdominal hysterectomy?
Jessian Munoz, MD, PhD

Endometrial polyp recurrence in postmenopausal women based on type of resection
Katherine Woodburn, MD

10:15–11:15 am

Graduating Resident Oral Presentations

10:15 am

Versican proteolysis by ADAMTS proteases and its influence on sex steroid receptor expression in uterine leiomyoma
Ndeye-Aicha Gueye, MD
Fellow, Reproductive Endocrinology & Infertility

- 10:27 am *Breakdown of perineal laceration repair following vaginal delivery: A case-control study*
Karl Jallad, MD
Fellow, Female Pelvic Medicine & Reconstructive Surgery
- 10:39 am *Evaluation of a new solid media specimen transport card for high risk HPV detection and cervical cancer prevention*
Kathryn Maurer, MD
Fellow, Gynecologic Oncology
- 10:51 am *Intraoperative evaluation of urinary tract injuries at the time of pelvic surgery: A systematic review*
Lauren Siff, MD
Fellow, Female Pelvic Medicine & Reconstructive Surgery
- 11:03 am *Cisplatin induces stemness in ovarian cancer*
Andrew Wiechert, MD
Fellow, Gynecologic Oncology

11:15 am – 12:15 pm Ballroom Innovations in Ob/Gyn Lecture A & B

- 11:15 am–12:15 pm *Integrating transgender surgery into a urogynecology practice*
Cecile Unger, MD, MPH
- 12:15 pm Presentation of Certificate to Linda Brubaker, MD, MS
- 12:15 pm Group Picture – The following please join us in the **Foyer** for a group photo: presenters, mentors, judges, discussants, Drs. Farrell and Falcone.
- 12:30 pm Adjourn

Key Note Address & Lecture

Linda Brubaker, MD, MS

Professor, Department of Reproductive Medicine
University of California San Diego



Linda Brubaker, MD, MS is a well-known reconstructive pelvic surgeon and board-certified specialist in Female Pelvic Medicine and Reconstructive Surgery who has served as the president (and program chairs) of both the American Urogynecologic Society as well as the Society of Gynecologic Surgeons. She serves as the Director for the subspecialty division in Female Pelvic Medicine and Reconstructive Surgery for the American Board of Obstetrics and Gynecology. She is also the Editor in Chief for the Journal of Female Pelvic Medicine and Reconstructive Surgery.

Dr. Brubaker is a prolific researcher with multiple NIH awards including a recently awarded R01 and a PI within the recently formed NIDDK PLUS network. She has over 300 publications. In addition she has chaired committees on Pelvic Organ Prolapse (2006, 2009) and Research (2012, 2016) for the International Consultations on Incontinence.

Dr. Brubaker earned a BA, with honors, from the University of Illinois at Chicago and a Master of Science degree (2004) in Clinical Research Design and Statistical Analysis from the University of Michigan. She received her medical degree and completed her medical training (medical school, residency and fellowship) at Rush University where she established the first Division of Female Pelvic Medicine and Reconstructive Surgery in the Midwest. Currently, she is a tenured professor in the Department of Obstetrics and Gynecology,

(continued)

with a conjoint appointment in the Department of Urology. The Loyola Female Pelvic Medicine and Reconstructive Surgery unit is well known for high-quality clinical care, NIH-funded research productivity, educational contributions and administrative expertise. Dr. Brubaker served as the Dean of the Loyola University Chicago Stritch School of Medicine for the past 5–1/2 years. She recently relocated to San Diego where she is a Professor in the Department of Reproductive Medicine.

Dr. Brubaker has received multiple awards which include induction into AOA (2013), Alpha Sigma Nu, the Jesuit Honor Society, the 2007 APGO Excellence in Teaching Award, the 2003 Rush Medical College Distinguished Alumnus Award and the various Faculty Teaching Awards.

Oral and Poster Presentation Judges

Judges (Oral Presentations)



Natalie Bowersox, MD
Clinical Assistant,
Professor of Surgery & Faculty,
Obstetrics & Gynecology



Linda Brubaker, MD
Professor, Department of
Reproductive Medicine
University of California –
San Diego



Uma Perni, MD, MPH
Associate Professor
of Surgery
Staff, Maternal
Fetal Medicine
Obstetrics, Gynecology
& Women's Health
Institute
Cleveland Clinic



Beri Ridgeway, MD
Assistant Professor,
Surgery & Vice Chair,
Regional Ob/Gyn
Cleveland Clinic



Peter Rose, MD
Section Head,
Gyneologic Oncology
Obstetrics, Gynecology
& Women's Health
Institute
Cleveland Clinic

Oral and Poster Presentation Judges

Judges (Poster Presentations)



Miriam Al-Hilli, MD
Faculty,
Gynecologic Oncology



Oluwatosin Goje, MD
Staff
Obstetrics, Gynecology &
Women's Health Institute
Cleveland Clinic



Jerome Belinson, MD
CEO Medworks
Professor of Surgery,
Cleveland Clinic
Lerner College of Medicine



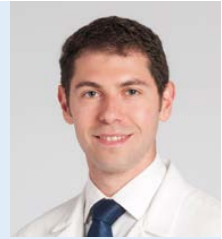
Jules Moodley, MD
Clinical Assistant
Professor & Chair,
Obstetrics & Gynecology,
Fairview Hospital



PGY3 Obstetrics & Gynecology Residents

Oral Presentations

Assessing the effect of surgery on pre-and-post-operative inflammatory cytokine levels in patients with pelvic pain with and without endometriosis



Alexandr Kotylar, MD

Objective: In this study, we sought to determine the differences between the pre-operative and 6-week post-operative pro-inflammatory cytokine levels in women with and without endometriosis/endometrioma and pelvic pain/infertility.

Methods: Plasma samples were collected from 39 female patients between 18 and 43, that have undergone surgery for pelvic pain and/or infertility for presumed endometriosis or endometrioma. Patients were divided into those without endometriosis ($n = 7$), and those with confirmed endometriosis ($n = 5$) or endometrioma ($n = 27$). Patients were excluded if they had any history of a rheumatic disease, treatment with any other immune suppressive agent such as chemotherapy for malignancy or anti-rheumatic drug, have ever undergone a transplant, that had undergone radiation therapy or that ever had an immune deficiency. Cytokines levels were measured using a commercially-available human inflammatory cytokine ELISA kit. Mean cytokine levels were compared over a single time point using unpaired T-tests and one-way ANOVA and pre- and post- operative samples were compared using paired T-tests. P-values of <0.05 were considered significant.

Results: The patients did not differ significantly in demographic data or in AMH levels as outlined in table 1:

	Control	Endometriosis	Endometrioma	p-value
N	7	8	24	
Age	31.5 ± 6.8	34.8 ± 5.1	31.9 ± 6.2	ns
BMI	27.8 ± 6.4	28.6 ± 9.1	27.2 ± 5.6	Ns
Stage	0	2	3	N/A

Table 1: Patient Demographics

The levels of pre-operative levels of IL-1A, IL1B, IL-2, IL-4, IL-6, IL-8, IL-10, IL-12, IL-17A, IFN γ , TNF α , and GM-CSF did not differ among the controls and the patients with peritoneal endometriosis. Post-operative levels of IL-1B, IL-12 and TNF α were significantly increased in the patient with endometriomas

($p < 0.05$). In addition, the level of post-operative IL-8 was significantly increased in patients with endometriosis and those with an endometrioma ($p < 0.05$).

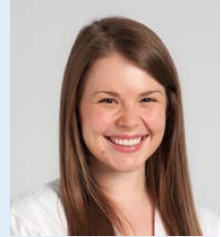
Conclusions: This initial analysis shows that excision of an endometrioma does significantly alter the levels of circulating pro-inflammatory cytokines. This leads to an increase in cytokines which can activate a diffuse inflammatory response which could have potential negative implications on ovarian function and egg quantity.

Funding: None

Faculty Mentor: Tommaso Falcone, MD

Discussant: Suejin Kim, MD

A model to predict risk of postpartum infection after cesarean delivery



Laura Moulton, DO

Objective: To build and validate a statistical model to predict infection after Cesarean delivery (CD).

Methods: Patient and surgical variables within 30 days of CD were collected on 2419 women. Postpartum infection included surgical site infection, urinary tract infection, endomyometritis and pneumonia. The data were split into model development and internal validation (Jan 1-Aug 31; N=1641) and temporal validation subsets (Sept 1-Dec 31; N=778). Logistic regression models were fit to the data with concordance index and calibration curves used to assess accuracy. Internal validation was performed with bootstrapping correcting for bias.

Results: Post-operative infection occurred in 8% (95% CI 7.3-9.9), with 5% meeting CDC criteria for SSI (95% CI 4.1-5.8). Eight variables were predictive for infection: increasing BMI, higher number of prior Cesarean deliveries, emergent Cesarean delivery, Cesarean for failure to progress, skin closure using stainless steel staples, chorioamnionitis, maternal asthma and lower gestational age. The model discriminated between women with and without infection on internal validation (concordance index = 0.71 95% CI 0.67-0.76) and temporal validation (concordance index = 0.70, 95% CI 0.62, 0.78).

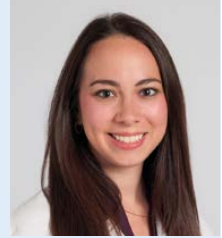
Conclusions: Our model accurately predicts risk of infection after CD. Identification of patients at risk for postoperative infection allows for individualized patient care and counseling.

Funding Source: None

Faculty Mentor: Oluwatosin Goje, MD and J.Eric Jelovsek, MD, MMED

Disscussant: Roberto Vargas, MD

Does iron supplementation adequately treat anemia in pregnancy following bariatric surgery



Emily Nancy, MD

Objective: 1. To determine the rate of anemia in pregnant women who have undergone Roux-En-Y gastric bypass or sleeve gastrectomy procedures in the Cleveland Clinic Health System compared to BMI matched controls. 2. To determine whether oral iron supplementation for anemia in pregnancy in women who have undergone restrictive bariatric procedures is successful in elevating hemoglobin to greater than or equal to 11g/dL at the time of delivery.

Methods: Retrospective cohort study comparing rates of anemia in pregnancy in women who have undergone restrictive bariatric procedures and BMI-matched control counterparts. Hematocrit and hematologic indices are compared in women with documented anemia from the time of diagnosis and before delivery. The route of treatment, whether oral iron supplementation or IV iron therapy is evaluated.

Results: A total of 83 pregnancies following restrictive bariatric procedures are reviewed. 47/83 (56.6%) of these pregnancies had a diagnosis of anemia. 36/47 (43.4%) were treated with oral iron supplementation. 12/47 (26.1%) were treated with IV iron supplementation.

Of patients treated with oral iron, 17/36 (47%) saw an increase in their hemoglobin from time of diagnosis to time of delivery. Across all patients treated with oral iron supplementation, the average change in hemoglobin from time of diagnosis to time of delivery was - 4.97%.

Of patients treated with IV iron, 9/12 (75%) saw an increase in their hemoglobin from time of diagnosis to time of delivery. Across all patients treated with IV iron

supplementation, the average change in hemoglobin from the time of diagnosis to time of delivery was 12.32%

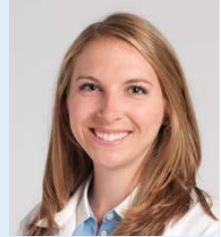
At the time of submission of the abstract, control group data is still being collected and final statistics are not yet available.

Conclusions: At the time of submission, control group data are not yet available to analyze for definitive conclusions. However, preliminary data from the subject group indicate a mixed response to oral iron supplementation in women who have had a restrictive bariatric procedure. The subgroup treated with IV iron supplementation appears to have had a more robust response, with an overall increase in hemoglobin. As this is a retrospective review, further study is needed to control for confounders such as adherence rates to prescribed medications, as well as clinical outcomes such as the number of women who needed post-delivery treatment of acute blood-loss anemia.

Funding Source: None

Faculty Mentor: M. Jean Uy-Kroh, MD
Discussant, Cynthia Arvizo, MD

Experience and understanding
surrounding obstetric perineal
trauma in primiparous women:
A qualitative study



Sarah Steele, MD

Objective: To characterize primiparous women's experience after perineal laceration in the immediate postpartum period and determine the role of interventions to improve outcomes. Secondary objectives were to characterize pain and bowel function in postpartum primiparous women.

Methods: This is a prospective mixed-methods study employing in-depth interviews in conjunction with validated survey instruments. Eligibility criteria included healthy primiparous women recently postpartum who experienced a perineal laceration following a spontaneous vaginal delivery or operative vaginal delivery at term. Telephone interviews were conducted to examine pain and function as related to perineal injury in the immediate postpartum period. Participants also completed a validated survey instrument to measure self-reported perineal pain (1-10 scale) and defecatory dysfunction (Colorectal-Anal Distress Inventory 8; CRADI-8).

Quantitative data were analyzed using non-parametric methods. Qualitative data were analyzed using an inductive process consistent with grounded theory. Sample size was determined using the principle of data saturation.

Results: In-depth interviews were conducted with 22 women. 22/45 (49%) eligible subjects completed the study. 32% (n=7) of subjects sustained a third or fourth degree laceration; 68% (n=15) sustained a first or second degree. Mean reported pain was 2/10 (± 2), with no difference in women with first or second degree laceration compared to those with OASIS. Median CRADI-8 score was 14/100 (IQ, 6.25-38.2), with significantly higher scores in subjects with OASIS as compared to those with first or second degree laceration (12.5 v. 28, $p=0.04$). Three major themes related to perineal injury emerged: maternal emphasis on newborn well-being, access to information pre- and post-discharge, and increased contact with healthcare providers. Participants reported prioritizing the newborn over themselves during admission and after discharge. Because of the events of delivery and hospital admission, participants noted the value of educational materials to access after discharge to supplement knowledge about wound care. Shorter-interval follow up (at 2 weeks rather than 6 weeks) was cited as a potential resource for education and support.

Conclusions: Participants with OASIS reported significantly more bothersome bowel symptoms than women with lower-order perineal laceration. At the same time, women reported barriers to accessing information and support regarding the management of the laceration. This study suggests a need for specific educational interventions to supplement the perineal healing of postpartum primiparous women after perineal laceration.

Funding Source: None

Faculty Mentor: Matthew Barber, MD, MHS and Ruth Farrell, MD
Discussant: Emily Davidson, MD

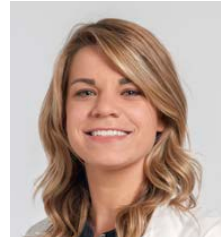


PGY2 Obstetrics & Gynecology Residents

Poster Presentations

Predictors of lynch syndrome and clinical outcomes among universally screened endometrial cancer patients

Faculty Mentor: Mariam AlHilli, MD



Caitlin Carr, MD

Why do patients call after surgery? Reasons and risk factors for seeking unscheduled medical advice in the postoperative period

Faculty Mentor: Matthew Barber, MD, MHS



Chelsea Fortin, MD

Use of cell salvage in preventing transfusion at the time of abdominal myomectomy

Faculty Mentors: Tommaso Falcone, MD and
Nina Desai, PhD, HCLD



Julian Gingold, MD, PhD

Endometrial fluid profiling as a noninvasive diagnostic approach to endometriosis

Faculty Mentor: Rebecca Flyckt, MD



Natalia Llarena, MD

Is nutritional risk index (NRI) an independent predictive factor for the development of surgical site infection (SSI) after abdominal hysterectomy?

Faculty Mentor: Oluwatosin Goje, MD



Jessian Munoz, MD, PhD

Endometrial polyp recurrence in postmenopausal women based on type of resection

Faculty Mentor: Margaret McKenzie, MD



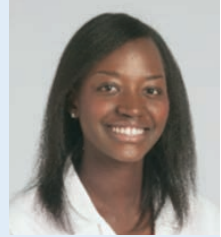
Katherine Woodburn, MD



Obstetrics & Gynecology Residency
Graduating Residents

Oral Presentations

Versican Proteolysis by ADAMTS proteases and its influence on sex steroid receptor expression in uterine leiomyoma



Ndeye-Aicha Gueye, MD

Objective: Leiomyomas have abundant extracellular matrix (ECM), with upregulation of versican, a large proteoglycan. We investigated ADAMTS (a disintegrin-like and metalloprotease with thrombospondin type 1 motifs) protease-mediated versican cleavage in myometrium and leiomyoma and the effect of versican knockdown in leiomyoma cells.

Methods: We used quantitative reverse transcription polymerase chain reaction (qRT-PCR), western blotting, immunohistochemistry, and RNA in situ hybridization for analysis of myometrium, leiomyoma from symptomatic and asymptomatic women as well as in immortalized myometrium and leiomyoma cells. Short interfering RNA (siRNA) was used to knockdown versican in leiomyoma cells and examined the effect of VCAN siRNA on smooth muscle differentiation and the expression of estrogen and progesterone receptors.

Results: The women in the symptomatic group ($n = 7$) had larger leiomyoma ($P = 0.01$), heavy menstrual bleeding ($P, 0.01$), and lower hemoglobin levels ($P = 0.02$) compared with the asymptomatic group ($n = 7$), but were similar in age and menopausal status. Versican V0 and V1 isoforms were upregulated in the leiomyomas of symptomatic versus asymptomatic women ($P = 0.03$ and $P = 0.04$, respectively). Abundant cleaved versican was detected in leiomyoma and myometrium, as well as in myometrial and leiomyoma cell lines. ADAMTS4 ($P = 0.03$) and ADAMTS15 ($P = 0.04$) were upregulated in symptomatic leiomyomas. VCAN siRNA did not affect cell proliferation, apoptosis, or smooth muscle markers, but reduced ESR1 and PR-A expression ($P = 0.001$ and $P = 0.002$, respectively).

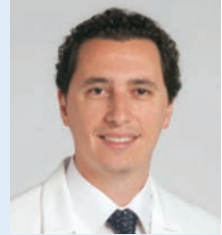
Conclusions: Versican in myometrium, leiomyomas and in the corresponding immortalized cells is cleaved by ADAMTS proteases. VCAN siRNA suppresses production of estrogen receptor 1 and progesterone receptor-A. These findings have implications for leiomyoma growth.

Funding Source: Cleveland Clinic Department of Obstetrics and Gynecology and Women's Health Institute.

National Institutes of Health National Heart, Lung, and Blood Institute Program of Excellence in Glycosciences.

Faculty Mentor: Suneel Apte, MBBS, DPhil

Breakdown of perineal laceration repair following vaginal delivery: A case-control study



Karl Jallad, MD

Objective: To primary objective was to assess whether use of episiotomy is associated with breakdown of perineal laceration repair after vaginal delivery. We hypothesized that episiotomy is associated with increased breakdown of perineal laceration repair following vaginal delivery when compared to repair after spontaneous laceration. The secondary objective is to identify additional risk factors associated with breakdown of perineal laceration repair after vaginal delivery.

Methods: This is a case-control study of women who sustained a breakdown of perineal laceration repair following vaginal delivery between 2002 and 2015. Cases were patients who sustained a perineal wound breakdown following vaginal delivery and repair of a second-, third- or fourth-degree laceration. Controls, matched 1:1, were patients who either sustained a second-, third- or fourth-degree perineal laceration and repair without evidence of breakdown and who delivered on the same day and institution as the case.

Results: 104,301 deliveries were assessed for breakdown of perineal laceration. 144 met the inclusion criteria. These were matched with 144 controls. Logistic regression analysis demonstrated that presence of episiotomy at time of delivery is associated with increased risk for breakdown of perineal laceration (Adj. OR 11.1; 95% CI 2.9-48.8) compared to repair after spontaneous laceration. Additionally, third- or fourth- degree laceration (Adj. OR 4.0; 95% CI 1.1-15.7), smoking (Adj. OR 6.4; 95% CI 1.2-38.5), operative delivery (Adj. OR 3.4; 95% CI 1.2-10.3), midwife performing the laceration repair (Adj. OR 4.7; 95% CI 1.5-15.8) and use of chromic suture (Adj. OR 3.9; 95% CI 1.6-9.8) were independent risk factors for breakdown of perineal laceration, while a previous vaginal delivery is protective (Adj. OR 0.14; 95% CI 0.05-0.3). On average, patients presented with a breakdown of perineal laceration 22 days (SD + 18.6) following delivery and required a

median of 2 (range, 1-14) interventions. At 6 months follow-up, 5 (1.7%) patients complained of fecal incontinence, 19 (6.6%) reported dyspareunia and 2 (0.7%) developed a rectovaginal fistula requiring surgery.

Conclusions: Episiotomy, smoking, nulliparity, operative delivery, third- or fourth-degree laceration, repair by a midwife and use of chromic suture are independent risk factors for breakdown of perineal laceration repair after vaginal delivery.

Funding Source: None

Faculty Mentor: Matthew Barber, MD, MHS

Evaluation of a new solid media specimen transport card for high risk HPV detection and cervical cancer prevention



Kathryn Maurer, MD

Objective: To develop and evaluate a solid media transport card for use in high-risk human papillomavirus detection (HR-HPV).

Methods: The Preventative Oncology International (POI) card was constructed using PK 226 paper treated with cell-lysing solution and indicating dye. Vaginal samples were applied to the POI card and the indicating FTA (iFTA) elute card. A cervical sample was placed in liquid media. All specimens were tested for HR-HPV. Color change was assessed at sample application and at card processing. Stability of the POI card and iFTA elute card was tested at humidity.

Results: 319 women were enrolled. Twelve women had at least one insufficient sample with no difference between media ($p=0.36$). Compared to liquid samples, there was good agreement for HR-HPV detection with kappa of 0.81 (95% CI 0.74-0.88) and 0.71 (95% CI 0.62-0.79) for the POI and iFTA elute card respectively. Sensitivity for \geq CIN2 was 100% (CI 100-100%), 95.1% (CI 92.7-97.6%), and 93.5% (CI 90.7-96.3%) for the HR-HPV test from the liquid media, POI card, and iFTA elute card respectively. There was no color change of the POI card noted in humidity but the iFTA elute card changed color at 90% humidity.

Conclusion: The POI card is suitable for DNA transport and HR-HPV testing. This card has the potential to make cervical cancer screening programs more affordable worldwide.

Funding Source: None

Faculty Mentor: Jerome Belinson, MD

Intraoperative evaluation of urinary tract injuries at the time of pelvic surgery: A systematic review



Lauren Siff, MD

Objective: To determine the safety and efficacy of multiple methods for intraoperative evaluation of urinary tract (UT) injury at the time of pelvic surgery compared to indigo carmine.

Methods: In the framework of the PRISMA and MOOSE guidelines, in cooperation with a medical librarian, PubMed, Embase, CINAHL, Web of Science, Scopus, ProQuest, the Cochrane Library databases, and clinicaltrials.gov were searched from 1947 to October 2016. Eligible articles included manuscripts or abstracts describing the routine use of diagnostic methods to determine UT injury during pelvic surgery in adults. There were no restrictions on study design or languages included. Studies were excluded if the indication for surgery was UT anomaly, stones or malignancy. Three investigators used a standardized abstraction form to independently extract data in duplicate. Outcome variables included; diagnostic method used, study design and quality, risk of bias, surgery type, subjective assessments (satisfaction/visualization), intraoperative and postoperative (delayed) diagnoses of UT injuries, cost and complications. Prevalence of UT injuries, sensitivity, specificity, likelihood ratios and predictive values were calculated using weighted averages for each method. We hypothesized that the efficacy of alternative methods for intraoperative UT evaluation is not different than that of indigo carmine.

Results: 66 articles met inclusion criteria and were analyzed. Methods reported to evaluate the UT were: cystoscopy using saline, dextrose or “not otherwise specified”, oral phenazopyridine and vitamin B, IV methylene blue, sodium fluorescein,

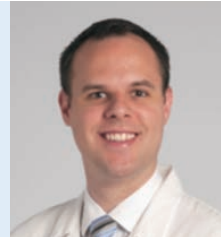
furosemide and indigo carmine, as well as prophylactic retrograde ureteral stents, and transabdominal doppler ultrasound. Prevalence of UT injury ranged from 0.23% to 2.44%. Sensitivity ranged from 80 to 91% and specificity from 99.6% to 100% with no significant difference in diagnostic accuracy between methods (Table). Sodium fluorescein, furosemide, methylene blue, vitamin B, and doppler ultrasound did not report sufficient data of UT injuries to analyze.

Conclusion: All evaluable methods of UT assessment at the time of pelvic surgery were safe and effective with specificity >99% and low rates of complications that were no different than indigo carmine. Larger studies are required to evaluate the diagnostic accuracy of some newly described methods.

Funding Source: None

Faculty Mentor: Matthew Barber, MD, MHS

Cisplatin induces stemness in ovarian cancer



Andrew Wiechert, MD

Objective: To generate a dynamic model for tracking the cancer stem cell state within a population of ovarian cancer cells, and to determine the impact of treatment with cisplatin on the cancer stem cell biology.

Methods: We utilized an established GFP reporter coupled to NANOG expression to enrich populations of ovarian cancer cells with cancer stem cells (CSC). We performed in vitro and in vivo experiments to confirm our enrichment of cancer stem cells. We compared cell surface marker expression between CSC and non-CSC in both cisplatin-naïve and cisplatin-resistant populations to identify novel surface markers for CSC in ovarian cancer. We treated both naïve and previously cisplatin-exposed populations of CSC and non-CSC to increasing doses of cisplatin, and observed the differences in cell viability after treatment with chemotherapy.

Results: After transducing our reporter into cisplatin-naïve and –resistant cells, we found that GFP-high cisplatin-naïve cells demonstrated CSC features, including increased expression of CD 133, CD 117, and CD24, as well increased NANOG, SOX-2 and OCT-4 mRNA, increased self-renewal in vitro, and increased tumorigenicity in mice. Cisplatin-exposed cells demonstrated higher baseline expression of CSC markers, and the reporter system struggled to further enrich a CSC population. When treated with cisplatin, GFP-low cells were induced to express increased GFP signal intensity and NANOG expression.

Conclusion: The NANOG-GFP reporter can be a useful strategy to enrich CSC within a population, and dynamically monitor the stem cell state in real time. Cisplatin-treated cells express higher levels of CSC-associated transcription factors and it is difficult to further enrich CSC from this population using the reporter. Treatment with cisplatin appears to induce regulation of the CSC state within non-CSC cells, suggesting a possible mechanism for chemo-resistance and evasion.

Funding Source: None

Faculty Mentor: Ofer Reizes, MD, MHS



Resident and Fellow Publications

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Resident/Fellow Presentations

Elizabeth Connor

Presentations

Connor EV, Moulton LJ, Michener CM, AlHilli MM. Experiences and attitudes toward gastrointestinal surgery skills training in gynecologic oncology fellowship: A survey of current and former gynecologic oncology fellows. [Featured Poster Presentation at the Society of Gynecologic Oncology 48th Annual Meeting on Women's Cancer, National Harbor, MD, March 2017]

Connor EV, Saygin C, Karunanithi S, Wiechert A, Lathia JD, Reizes O. Thy-1 is associated with self-renewal and predicts poor prognosis in ovarian cancer. [Oral presentation at the Cleveland Society of Obstetricians and Gynecologists Research Day, May 2017]

Connor EV, Newlin EM, Jelovsek JE, AlHilli MM. Predicting non-home discharge in epithelial ovarian cancer patients: external validation of a predictive model. [Poster Presentation at the Western Association of Gynecologic Oncologists Annual Meeting, Rancho Mirage, CA, June 2017]

Karl Jallad

Video Presentations

2017 Best video: Society of Gynecologic Surgeons, SGS 43rd Annual Scientific Meeting, San Antonio, TX

2016 Best video: Society of Gynecologic Surgeons, SGS 42nd Annual Scientific Meeting, Palm Springs, CA

Sarah Steele

Oral presentation

Steele SE, Hill AJ, Unger CA. "Patient Reported Urinary Symptoms Following Repeat Midurethral Sling for the Treatment of Recurrent Stress Urinary Incontinence: Does Primary Sling Excision Matter?" Oral poster presentation, 27th Annual Pelvic Floor Disorders Week, American Urogynecologic Society Annual Meeting; September 27-October 1, 2016; Denver. CO.

Poster Presentations

Steele SE, Barber MD, Farrell R. Experience and understanding surrounding obstetric perineal trauma in primiparous women: a qualitative study. Cleveland Clinic Ob/Gyn and Women's Health Institute First Annual Research Day, May 25, 2016; Cleveland, OH.

Submitted to the 2017 Pelvic Floor Disorders Week: **Steele SE**, Barber MD, Farrell R. Experience and understanding surrounding obstetric perineal trauma in primiparous women: a qualitative study.

Andrew Wiechert

Poster Presentations

March 2016 "The Impact of Obesity on the 30-day Morbidity and Mortality After Surgery For Ovarian Cancer." Mahdi H, Alhassani AA, Lockhart D, Al-Fatlawi H, **Wiechert A**. Society of Gynecologic Oncology (SGO) Annual Meeting on Women's Cancer, San Diego, CA.

"Cisplatin Induces Stemness in Ovarian Cancer." **Wiechert A**, Saygin C, Thiagarajan PS, Rao VS, Hale JS, Gupta N, Hitomi M, Nagaraj AB, DiFeo A, Lathia JD, Reizes O. Society of Gynecologic Oncology (SGO) Annual Meeting on Women's Cancer.

