THE DEPARTMENT OF OBSTETRICS AND GYNECOLOGY
PRESENTS:

Resident Research Day

2020

KEYNOTE SPEAKER

E. Albert Reece, MD, PhD, MBA, FACOG

Executive Vice President for Medical Affairs,
University of Maryland, The John Z. and Akiko K. Bowers
Distinguished Professor and Dean, School of Medicine

Monday, June 1, 2020
8:00 AM—1:00 PM

INOVA
CME Continuing Medical Education

Program Schedule

Welcome
S. Abbas Shobeiri MD, Vice Chair
8:00 AM—8:05 AM

Keynote
E. Albert Reece, MD, PhD, MBA, FACOG
Diabetes-Associated Complications & Pregnancy Management:
From Cell Signaling to Clinical Care

8:05 AM—8:50 AM

Resident Research Presentations
9:00 AM—10:50 AM
10:50 AM—11:00 AM Break
11:00 AM—12:40 PM

Awards, Closing Remarks
12:40 PM—1:00 PM

G. Larry Maxwell, MD
Chairman

S. Abbas Shobeiri, MD
Vice Chair

Samantha Buery-Joyner, MD
Residency Program Director

Research Presentations

Each presentation is 8 minutes with 2 minutes for questions.

1	**Allison Heiden, MD** 9:00 –9:10am	A Four Step Strategy for Robot Assisted Abdominal Cerclage Placement Prior to Pregnancy *(pre-recorded PPT presentation)*
2	**Angela Nolin, MD** 9:10-9:20am	Evaluation of Emergency Department Utilization within Thirty Days of Same Day Gynecologic Surgery at a Mid-Atlantic Teaching Hospital
3	**Aisat Okanlawon, MD** 9:20 -9:30am	Preoperative Glycemic Monitoring in Colorectal and Hysterectomy Patients: Establishing a Perioperative Protocol to Ascertain Undiagnosed Diabetics and De-crease Surgical Site Infections
4	**Marina Guirguis, MD** 9:30-9:40am	Robotic Myomectomy with Intraoperative Ultrasound Guidance
5	**Karl Seif, MD** 9:40-9:50am	Identification of Proteomic Changes Associated with Morbidly Adherent Placenta
6	**Leah Allbright, MD** 9:50-10:00am	Promoting Vaginal Births Through Teamwork and Simulation
7	**Sara Hamade, MD** 10:00-10:10am	Evaluation of the American College of Surgeons National Surgical Quality Improvement Program Risk Calculator to Predict Outcomes for Hysterectomies Performed by Gynecologic Surgeons
8	**Graham Nelsen, MD** 10:10-10:20am	Immediate Postpartum Intrauterine Contraception: Breaking Down the Barriers
9	**Carmen Proctor, MD** 10:20-10:30am	Fostering Wellness in Residency: The Essential Role of a Wellness Curriculum
10	**Ashley Bonamer, DO** 10:30-10:40am	Postpartum Counseling: Empowering Women and Clinicians to Take Charge of the Fourth Trimester
11	**Marie Nakhoul, MD** 10:40-10:50am	The Effect of Art Therapy on Pregnant Women's Mental Health during the COVID-19 Pandemic: A Virtual Interactive Session

Research Presentations

Each presentation is 8 minutes with 2 minutes for questions.

	10:50-11:00am	**BREAK**
12	**Cassandra Presti, MD** 11:00-11:10am	Improving the Evaluation and Management of Bladder Injury in Gynecologic Surgery with Cadaver Surgical Skills Curriculum
13	**Masooma Raza, MD** 11:10-11:20am	Cesarean Scar Pregnancy: Optimizing Treatment for this Rare Disease
14	**Conway Xu, MD** 11:20-11:30am	Lower Urinary Tract Injury in Gynecologic Surgery: A Risk Based Analysis of Surgical Volumes
15	**Mira Henien, MD** 11:30-11:40am	Simulation-Based Training on Adolescent Gynecology Counseling and the Rights of Minors
16	**Meredith Hoover, MD** 11:40-11:50am	An Unusual Case of Left Lower Quadrant Pain and Mass in an Adolescent
17	**Ellen Murrin, DO** 11:50-12:00pm	Isolated Leukocytosis as a Presentation of HELLP Syndrome
18	**Anh Nguyen, MD** 12:00-12:10pm	Vaginal Cellular Angiofibroma with Heavy Bleeding
19	**Shannon Osborne, MD** 12:10-12:20am	Decidual Cast Masquerading as an Aggressive Malignancy via Imaging in a Young Girl: A Case Report
20	**Araba Jackson, MD** 12:20-12:30pm	A Case Report of a Periurethral Smooth Muscle Tumor of Uncertain Malignant Potential *(pre-recorded PPT presentation)*
21	**Helen Shi, MD** 12:30-12:40am	Advanced Gastric Cancer in Pregnancy

A Four Step Strategy for Robot Assisted Abdominal Cerclage Placement Prior to Pregnancy

Allison Heiden, MD, Payam Katebi Kashi, MD, PhD,
G. Scott Rose, MD, Katherine Dengler, MD

Background: Cervical insufficiency affects approximately 1% of all pregnancies. Abdominal cerclage assists in optimizing pregnancy outcomes amongst women with recurrent pregnancy loss who have failed alternate modalities. This video demonstrates a four step strategy to optimize effective abdominal cerclage placement using robot-assisted technology.

Case: A 38yo G4P0220 with a history of repeated second trimester losses and a failed history-indicated transvaginal cerclage.

Conclusion: Abdominal cerclages significantly improve pregnancy and neonatal outcomes in women who have previously failed transvaginal cerclage. Robot assisted abdominal cerclage placement allows a minimally invasive approach with enhanced dexterity and better visualization for the surgeon over conventional laparoscopy or laparotomy. Furthermore, decreased pain and shorter recovery times have made this surgical technique a more favorable option for patients.

Teaching Points:

- Robot assisted abdominal cerclage is a safe, viable alternative to traditional abdominal cerclage via laparotomy.
- This four step minimally invasive approach will facilitate successful placement.

Evaluation of Emergency Department Utilization within Thirty Days of Same Day Gynecologic Surgery at a Mid-Atlantic Teaching Hospital

Angela Nolin, MD, Sushma Ahmad, MPH, S. Abbas Shobeiri, MD

Background/Objective: Hospital readmission rates and unscheduled patient contacts, such as in the emergency department (ED), are a frequently used quality measure for hospitals and surgical centers. ED visits are a cause of increased cost and utilization of the healthcare system. Previous studies have reported rates of presentation to the ED after gynecologic surgeries between 4 and 12.7%. The purpose of this study is to identify complaints leading patients to present to the ED within 30 days of their same day gynecologic surgery and identify possible interventions to decrease the rate of postoperative ED visits.

Methods: This was a retrospective chart review of all patients presenting the ED within 30 days of their same day gynecologic surgery. Data were collected regarding chief complaint(s), ED work up, management, and disposition. Chi-square test was used to determine significance of categorical variables.

Results: During the five-month study period 1880 same day gynecologic surgeries were performed with 65 patients subsequently presenting to the ED within thirty days, a presentation rate of 3.5%. The top five complaints were pain (including abdominal, pelvic, vaginal) (28%), subjective fevers/ chills (14%), vaginal bleeding (12%), urinary symptoms (subjective retention, dysuria, frequency) (7%), and shortness of breath (7%). There is a statistically significant difference in the rate of postoperative ED visits based on the category of gynecologic surgery as defined by this study ($p=0.03$).

Conclusion: Our hospital system overall had postoperative ED visits at a rate consistent with previously published data. Our study highlighted opportunity for improvement in specific areas such as improved postoperative pain management, interventions to improve urinary symptoms, and improved patient education around normal postoperative vaginal bleeding and improved communication of bleeding precautions.

Preoperative Glycemic Monitoring in Colorectal and Hysterectomy Patients: Establishing a Perioperative Protocol to Ascertain Undiagnosed Diabetics and Decrease Surgical Site Infections

Aisat Okanlawon, MD, Sushma Ahmad, MPH, S. Abbas Shobeiri, MD

Background/Objective: A surgical site infection is a superficial or deep infection arising after surgery in the part of the body involved in surgery. Hyperglycemia is one of the risk factors for the development of a surgical site infection (SSI). Additionally, it is estimated that as many as 25% of patients with an SSI are undiagnosed diabetics.

Methods: We implemented a pilot Insulin Protocol consisting of perioperative blood glucose testing and an algorithm for treatment with insulin in all patients undergoing colorectal or hysterectomy procedures over a three month time period. All patients were screened in the preoperative area. Based on the initial fasting blood glucose level, patients were placed into three categories: (i) no intervention (ii) perioperative blood glucose monitoring only (iii) treatment with insulin and monitoring of blood glucose with an endocrinology consult as needed. Patients in the latter categories were followed for development of SSI. Our primary objective was to maintain glycemic control with diabetic and non-diabetic patients during the perioperative period to prevent surgical site infections.

Results: A total of 650 patients, 492 hysterectomy and 158 colorectal procedures, qualified for the pilot. 10% of patients were identified in the final 2 categories and used for final data analysis. 25% of patients had a blood glucose level of >126mg/dL without a previous diagnosis of diabetes. Approximately 9% of total sample population had blood glucose levels ≥ 141mg/dL, None of these patients returned to the hospital with an SSI.

Conclusion: The introduction of preoperative blood glucose screening provided early identification and management of blood glucose, which favorably affected the rate of SSI at our institution.

Robotic Myomectomy with Intraoperative Ultrasound Guidance

Marina Guirguis, MD, Jonia Alshiek, MD, MSc, S. Abbas Shobeiri, MD

Background: Myomectomies are an effective way to improve bleeding and pelvic pain with uterine fibroids. With the rise of laparoscopy as a minimally invasive option, laparoscopic myomectomies have become more prevalent. One argument regarding robotic-assisted laparoscopic myomectomy is the loss of tactile sensation when attempting to detect deeper intramural fibroids.

Case: The patient is a 38-year-old G0 who presented with heavy menstrual bleeding and dysmenorrhea. She had a 12cm globular uterus with a class 2-5 fibroid measuring 6.19cm and a class 5 fibroid measuring 3.75cm on imaging. When the intramural fibroid was noted to be difficult to find, the BK Flex Focus 5000 with robotic ultrasound probe was introduced through a lateral port. The ultrasound probe was utilized to scan the uterus for the location, depth, and distance from the endometrial cavity of the fibroid. The fibroid was successfully accessed without entrance of the endometrial cavity. Removal of all fibroids was achieved, and the patient was noted to have normal menstrual cycles at the 3-month postoperative visit.

Conclusion: The utilization of intraoperative ultrasound guidance at the time of robotic myomectomy has been used in four cases at our institution. Three cases presented with heavy menstrual bleeding, and one case presented with dyspareunia due to a large posterior fibroid. Due to the novel nature of this process and the ACOG recommendation for interval prior to conception, no patients have conceived yet. Intraoperative ultrasound guidance is an effective method for localizing intramural fibroids that are difficult to palpate while avoiding the endometrial cavity.

Teaching points:

- When intramural fibroids are difficult to palpate, intraoperative ultrasound guidance is an effective method to locate the fibroids
- This method often can help minimize entry into the endometrial cavity and number of incisions made into the myometrium

Identification of Proteomic Changes Associated with Morbidly Adherent Placenta

Rebecca A. Keller, MD, Karl E. Seif, MD, Brian L. Hood, PhD, Guisong Wang, PhD, Nicholas W. Bateman, Julie Oliver, Melinda M. Sanders, Xiaohong Wang, Shad Deering, Kathleen M. Darcy, PhD, Chad A. Hamilton, MD, William A. Campbell, MD, Alfred Khoury, MD, Thomas P. Conrads, PhD, G. Larry Maxwell, MD

Background/Objective: Despite the increasing incidence of Morbidly Adherent Placenta (MAP), the molecular alterations associated with this morbid condition at the utero-placental interface are poorly understood. The objective of this study was to use proteomics to characterize myometrial and placental compartments among MAP patients.

Methods: We identified cesarean hysterectomy specimens from 97 MAP patients and 14 control patients with uterine atony. Uterine myometrial (n=99) and trophoblast (n=99) cells from MAP and control patients were discretely harvested by laser microdissection, digested, and analyzed by mass spectrometry. Protein abundances were estimated using spectral counting and significant differences in abundance from control specimens were determined. Multivariate and leave-one-out analyses were used to develop classifiers and assess performance for select comparisons.

Results: Proteomic data from 35 accreta, 44 increta, 18 percreta, and 14 control patients were compared. Unsupervised analysis demonstrated perfect clustering of proteomic data from myometrial vs placental compartments across the specimens. Comparison revealed 26 common placental proteins ($p<0.05$) and 136 common myometrial proteins ($p<0.05$), respectively, among MAP specimens. KRT7 and PRG2 are two notable myometrial proteins that were elevated >5-fold with $p<2x10^{-7}$. Pathway analysis of the 136 MAP-associated myometrial proteins revealed immune function and cellular motility as predominant categories of dysregulation.

Conclusion: Proteomic analysis revealed more differentially expressed proteins in the myometrial compartment compared to the placental tissue among patients with MAP. This inventory of proteins warrants future investigation for diagnostic and therapeutic applications.

Promoting Vaginal Births Through Teamwork and Simulation

Leah Allbright, MD, Emily Marko, MD, Colleen Kepner, MD, Alfred Khoury, MD, Helen Stacks, DNP, Meghan Semiao, BS, Veronica Peterkin, BSc, Craig Cheifetz, MD, G. Larry Maxwell, MD

Background/Objective: A simulation and educational program was designed to address multiple ways of promoting vaginal deliveries. These include addressing the following strategies: unit culture, prenatal care and triage visits, induction of labor, and management of the first and second stage of labor. The primary outcome measures will be the change in knowledge, skills and attitudes of labor and delivery personnel. The secondary outcome measure will be primary term C-Section rates.

Methods: This study was conducted in the Inova Center for Advanced Medical Simulation and the Women's Building of Inova Fairfax Hospital. Standardized patients and partial task trainers were used for the hybrid simulation program. Team-based performance checklists, pre and post knowledge tests, and culture surveys were used for assessment at the initiation of the program, and at 6 or 12 months.

Results: There were 224 participants in this interdisciplinary simulation-based program from 2017 to 2019. Pre and post knowledge tests showed a 36% increase ($p<0.0001$) and simulation performance evaluations improved 49.91% ($p<0.0001$). Respondents noted an improvement in regards to safety and culture ($p<0.0001$) post-simulation. The primary cesarean section rate was noted to decrease from 39% (2016) to 31% (2019).

Conclusion: Preliminary data results show that from 2017-2019, 229 OB providers underwent a simulation-based education program that was noted to increase the knowledge, performance, and perception of culture and safety of providers post- simulation. Although likely multifactorial, an 8% decrease in primigravid low-risk cesarean section rates were noted from 2016-2019 in concordance with the educational objectives of the simulation program.

Evaluation of the American College of Surgeons National Surgical Quality Improvement Program Risk Calculator to Predict Outcomes for Hysterectomies Performed by Gynecologic Surgeons

Sara Hamade, MD, Pouya Javadian, MD, Jonia Alshiek, MD, Sushma Ahmad, MPH, Francine McLeod, MD, S. Abbas Shobeiri, MD

Background/Objective: A comprehensive consent process that includes a personalized risk assessment is vital to an enhanced surgical milieu. Accurate estimation of perioperative morbidity will raise patient satisfaction and appropriately align goals and expectations from patients, families, and providers. The American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) has developed an internally validated risk prediction tool. Our objective was to evaluate the effectiveness of the ACS surgical risk calculator in predicting outcomes in gynecologic surgery.

Methods: We conducted a retrospective pilot study of hysterectomies performed at a single hospital from January 2019 to April 2019. We abstracted 21 preoperative criteria, surgical characteristics, and postoperative complications from the electronic medical record. The preoperative data was entered into the online ACS surgical risk calculator to determine a risk score. Logistical regression was used to determine the association between risk score and actual outcome in 13 categories. The prediction capability was analyzed with c-statistic, Hosmer-Lemeshow, and Brier score.

Results: 632 hysterectomies were performed during the study period. Patients in this cohort were predominantly 55 years old, white (53%), and overweight. 54 patients (8.5%) experienced complications with urinary tract infection being the most common. Predicted perioperative outcomes were significantly higher than actual outcomes across all domains. C-statistic for return to OR, renal failure, and readmission were 0.607(95% C-statistic index [CI] 0.370-0.845), 0.882 (95% CI 0.802-0.962), 0.637 (95% CI 0.524-0.750) respectively. Brier scores approached 1 in all categorical domains.

Conclusion: The ACS NSQIP surgical risk calculator does not accurately predict postoperative complications or length of stay for patients undergoing hysterectomy.

Immediate Postpartum Intrauterine Contraception: Breaking Down the Barriers

Graham Nelsen, MD, Angela Nolin, MD, Sira Perez-Visona, BA, Francine McLeod, MD, David Downing, MD

Background/Objective: In the United States, up to 45% of pregnancies are unintended, with the highest risk of unintended pregnancy in low socioeconomic status, young, and minority women. The IUD is a safe and effective form of contraception. Immediate postpartum placement can reduce the rates of unintended pregnancy. Our primary objective is to increase the number of immediate postpartum intrauterine devices inserted over 6 months at Inova Fairfax Hospital. Secondary objective is to increase awareness and receptiveness to immediate postpartum contraception.

Methods: This is a quality improvement study to implement a policy for postpartum intrauterine contraception. Surveys were distributed to assess the knowledge, perceptions and likelihood of utilization of postpartum intrauterine contraception. Three areas were identified as areas of improvement: institutional awareness, payment strategies, and availability of the device. Each barrier will be addressed in tandem.

Results: Of the 40 core faculty, 23 responded to the baseline questionnaire (57.5%). Almost half of respondents felt that postpartum IUDs would be valuable to their patient population and they would in fact place them if they were readily available (48%). The majority of providers were comfortable with both counseling and technical skills of IUD insertion (65%), but were unaware of billing procedures (70%). All residents showed improvement in knowledge ($p=0.0002$) and confidence ($p=0.0030$) after the postpartum intrauterine contraception workshop.

Conclusion: Our faculty and residents are receptive to learning the technical skills and billing involved with immediate postpartum IUD placement. The intrauterine contraception workshop was effective in training our residents. The device has many benefits in the immediate postpartum period, particularly in the underserved community.

Fostering Wellness in Residency: The Essential Role of a Wellness Curriculum

Jennifer A. Vaz, MD, Carmen Proctor, MD, Sira Perez-Visona, BA
Cecelia Sellars, BS, Francine McLeod, MD, Rolel Mbaidjol-Kabra, MD,
G. Larry Maxwell, MD, Samantha Buery-Joyner, MD

Background/Objective: Residency wellness is an important topic of discussion as burnout rates in young physicians are increasing. With data published on the high prevalence and relative consistency of burnout across young healthcare providers, residency programs should improve the resident experience to create healthier physicians. The purpose of this study is to develop a comprehensive wellness curriculum and assess its impact on resident lifestyle.

Methods: We conducted a prospective observational study over the span of one academic year. Participants were PGY 1 – 4 residents in the Ob/Gyn Residency Program at Inova Fairfax Hospital. A validated tool, 'The Physician Wellness Inventory' was utilized as an anonymous pre-test and post-test. The survey included 14 questions which analyzed career purpose, career satisfaction, joy in work, meaning in patient relationships, and spiritual purpose. A wellness committee was created to assist in the development and oversight of the wellness curriculum. The curriculum focused on the eight dimensions of wellness: emotional, financial, social, spiritual, occupational, physical, intellectual, and environment.

Results: 23 out of 24 residents volunteered to participate (19 females, 4 males). Participant demographic characteristics for the majority were non-smokers, non-type A personalities, had light caffeine use, and exercised weekly. Residents were from various cultural backgrounds. Average participation for the wellness events included 15 or more residents. Pre-post results from the Physician Wellness Inventory were compared both between and within PGY level.

Conclusion: Our findings suggest that young physicians benefit from a structured wellness curriculum. Additionally, high resident participation in the curriculum activities demonstrates the importance residents place on their own wellness.

Postpartum Counseling: Empowering Women and Clinicians to Take Charge of the Fourth Trimester

Ashley Bonamer, DO, Emily Marko, MD, Carolyn Davis, MD,
Sira Perez-Visona, BA, Meghan Semiao, BS

Background/Objective: Medical students receive limited exposure to postpartum care counseling through real-life observation during this critical time period, which has the potential to affect both the short-term and long-term health and well-being of both mother and baby. The objective of this study was to determine if a structured comprehensive postpartum care curriculum using simulation could significantly improve medical student competency in counseling real patients.

Methods: A pre-post single cohort study was designed to examine postpartum counseling performance among medical students during their OBGYN clerkship rotation following an intervention of simulated patient encounters with preceptor feedback. The study outcomes include pre-post differences in: (1) knowledge; (2) student confidence levels; and (3) performance assessment scores.

Results: Data collection indicated significantly higher post-knowledge tests (89.67% vs. 46.48%, $p<0.0001$). Student post-confidence levels in counseling demonstrated significant improvement in the following areas (1=high, 5=low): patient's risk for postpartum complications (1.38 vs. 3.57, $p<0.001$); pain management strategies to limit narcotic use (1.23 vs. 4.54, $p<0.0001$); breastfeeding continuation at home (1.33 vs. 4.68, $p<0.0001$); screen for postpartum depression (1.25 vs. 3.84, $p<0.0001$); contraception counseling (1.16 vs. 2.52, $p<0.001$). Student performance assessment scores also demonstrated significant improvement (85.67% vs 48.61%, $p<0.0001$).

Conclusion: The results from this study suggest that if medical students are taught comprehensive postpartum care counseling through a simulation-based curriculum, then they will achieve significantly higher post-instruction knowledge, confidence and competence scores, and that these skills could be transferred to increase real-life counseling skills.

The Effect of Art Therapy on Pregnant Women's Mental Health during the COVID-19 Pandemic: A Virtual Interactive Session

Marie Nakhoul, MD, S. Abbas Shobeiri, MD

Background/Objective: Women are particularly vulnerable to stress and anxiety in pregnancy. This does not only affect the pregnancy course but can also impact fetal development. The COVID-19 Pandemic has been an added stressor on pregnant women and has led to a detrimental increase in anxiety levels. The purpose of this study is to determine the effectiveness of a Mindfulness Art Therapy Intervention on depression and anxiety during pregnancy.

Methods: A Mindful Art Therapy session was prepared using a validated curriculum implemented by an Obstetrician Gynecologist who is also a certified Art Therapy Coach. Pregnant women of the Inova Health System participated interactively in this session that ran as a live workshop via Zoom. The session involved a guided Mandala Art workshop as well as a Cardboard expression exercise to help pregnant women express their emotions and reflect. The session also included home activities to be implemented on a regular basis. A survey utilizing validated questionnaires was given at the beginning and completion of the session to measure the stress/ anxiety level of pregnant women during this COVID-19 pandemic.

Expected Results: We expect that the integration of the virtual Mindful Art Therapy Session will reduce the stress and anxiety level of pregnant population during COVID-19 Pandemic and increase resilience.

Conclusion: Virtual Mindful Art Therapy program can help reduce the stress and anxiety during the pregnancy. It can be used as a tool to improve Mental Health among pregnant population. This warrants a controlled trial for further investigation and intervention.

Improving the Evaluation and Management of Bladder Injury in Gynecologic Surgery with Cadaver Surgical Skills Curriculum

Cassandra Presti, MD, Conway Xu, MD, Jennifer Vaz, MD, Chang Liu, PhD, Larry Walker, Francine McLeod, MD, Lauren Scott, MD

Background/Objective: Urologic injuries are a major complication of gynecologic surgery, occurring in 0.18-0.80% of procedures and most commonly involving the bladder. Appropriate identification, evaluation, treatment, repair, and follow-up by gynecologic surgeons are important to reduce the long-term morbidities associated with bladder injuries. The purpose of this study was to implement a comprehensive cadaver and simulation skills training curriculum in cystotomy repair for OBGYN residents.

Methods: This was a prospective observational study with pre/post cohort design including 10 OBGYN residents (PGY1-3) at Inova Fairfax Hospital. The curriculum consisted of a one-hour didactic lecture and one-hour hands-on surgical skills training with fresh frozen cadavers. Residents were evaluated in three domains: knowledge, confidence, and technical skills. The bladder model, derived from the ACOG Simulations Working Group, was used to evaluate surgical skills at baseline and at completion of the cystotomy curriculum. Similarly, knowledge and confidence were evaluated with pre- and post-surveys.

Results: Across all three PGY levels, statistically significant improvements were observed in knowledge, confidence, and global skills after didactic and cadaver education ($p = 0.001$, $p < 0.02$, and $p = 0.009$ respectively). The largest increases in confidence occurred in residents' ability to describe and perform cystotomy repairs. Additionally, residents consistently showed high satisfaction with the cystotomy curriculum.

Conclusion: Educating and training OBGYN residents to manage and repair cystotomies can be challenging with the low incidence of injury. The cadaver surgical skills curriculum was an effective training module. The cadaver lab remains an important component of skills training in conjunction with simulation and traditional didactic sessions.

Cesarean Scar Pregnancy: Optimizing Treatment for this Rare Disease

Masooma Raza, MD, Sebastian Nasrallah, MD,
Luis M. Gomez, MD, MScE, Francine McLeod, MD

Background/Objective: Cesarean Scar Pregnancy (CSP) is a rare complication involving the implantation of an embryo in the location of a prior hysterotomy scar. The incidence of CSP after a cesarean delivery ranges from 1/1,800 to 1/2,500 pregnancies and is correlated with increasing cesarean delivery rates. Our objective was to evaluate the effectiveness of different treatment modalities for CSP at a single tertiary care institution and formulate an optimal treatment plan.

Methods: Retrospective chart review of CSP cases at Inova Fairfax Hospital between 2012-2019 was conducted. We abstracted ultrasound reports, Beta human chorionic gonadotropin (BhCG) levels, treatment modality, complications, and follow up. The BhCG levels were trended to determine the rate of decline following treatment. Five treatment modalities were identified: (i) intra-gestational sac methotrexate (IS-MTX) alone; (ii) intramuscular MTX alone (IM-MTX); (iii) IM-MTX with simultaneous IS-MTX; (iv) IM-MTX with subsequent adjuvant IS-MTX; and (v) IM-MTX with uterine artery embolization (UAE). Treatment success was defined arbitrarily by BhCG decline to 5% of baseline by week 5 of treatment.

Results: Among 647 ectopic pregnancies treated during the study period, 17 CSP were identified (2.6%) of which 10 cases met inclusion criteria and were used for analyses. All groups differed in the rate of decline of BhCG levels ($p = 0.023$). The fastest rate of decline was seen in three groups: IM-MTX with IS-MTX, IS-MTX alone, and IM-MTX with UAE. IM-MTX with IS-MTX and IM-MTX with UAE treatment modalities were superior to IM-MTX alone ($p = 0.02$ and $p<0.001$; respectively).

Conclusion: IM-MTX combined with IS-MTX or UAE were superior treatment modalities for CSP, while IM-MTX alone did not yield adequate BhCG decline. This is supported by recent guidelines in the management of CSP.

Lower Urinary Tract Injury in Gynecologic Surgery: A Risk Based Analysis of Surgical Volumes

Conway Xu, MD, Cassandra Presti, MD, Francine McLeod, MD,
Lauren Scott, MD

Background/Objective: The relationship between surgical volume and patient outcomes has been well established throughout many surgical fields, including gynecology. Namely, operative mortality and complication rates are strongly and inversely related to a surgeon's volume. Our primary objective was to evaluate the risk of lower urinary tract (LUT) injury in gynecologic surgery at our institution based on surgeon volume.

Methods: This was a retrospective study of gynecologic surgeries performed at our hospital from January 2015 – December 2019. Data was abstracted for demographics, surgical variables, and location of injury. All participating generalist gynecologists were placed into two cohorts for analysis: low volume surgeons (LVS) ($\leq$ 1 hysterectomy per month) and high volume surgeons (HVS). Subspecialists were excluded (gynecology oncology, urogynecology). We compared the rate of lower urinary tract injuries and associated surgical variables between the two groups.

Results: Out of 7,498 hysterectomies performed during the study period, 1,967 were performed by generalist gynecologists (1,045 LVS, 922 HVS). 43 lower urinary tract injuries occurred with 20 of these attributed to generalists. 70 LVS and 11 HVS were classified. In the low-volume cohort, there were 14 LUT injuries: 13 bladder (1.24%), 1 ureteral (0.09%). In the high-volume cohort, we identified 6 LUT injuries: 4 bladder (0.43%), 2 ureteral (0.22%). There was no significant difference between the two cohorts in average length of stay (2.33, 3.42, $p=0.45$) or blood loss (504.17 cc, 524.64 cc, $p = 0.967$).

Conclusion: Overall, the rate of lower urinary tract injuries during hysterectomy was low at Inova Fairfax Hospital. Furthermore, postoperative morbidity (size of injury, length of stay, and blood loss) was overall low and not significantly different based on surgeon volume.

Simulation-Based Training on Adolescent Gynecology Counseling and the Rights of Minors

Mira Henien, MD, Carolyn Davis, MD,
Katarina Fleckenstein, BS, Emily Marko, MD

Background/Objective: Initial reproductive health care visits are an opportune time for healthcare providers to build trust and empower adolescents to advocate for their own reproductive health. Learning opportunities focused on adolescent gynecology are limited amongst medical schools as there are few training programs around the United States. In addition, the issues regarding the reproductive rights of minors as well as adolescent gynecology counseling is applicable to a wide range of specialties hence the importance of focusing on education regarding these topics during the core clinical rotations. Simulation-based training has been shown to improve the quality of healthcare. We hope to take a closer look at how our simulation-based comprehensive curriculum on adolescent gynecology counseling and the rights of minors advances the understanding and effectiveness of communication for third-year medical students.

Methods: A cohort study with groups of third year medical students will be designed to examine the baseline understanding and confidence of each student in regards to adolescent gynecology counseling scenarios and the rights of minors. Groups of three will go through each case during their OBGYN clerkship with preceptor feedback at the end. Medical students will rotate serving as the standardized patient. Our three scenarios focus on contraceptive counseling, STD screening and vaccine recommendations, and counseling on minority rights. We plan to give a pre and post assessment to evaluate the effect of our simulation on baseline knowledge through performance assessment scores and overall confidence levels.

Results/Conclusion: Data collection to begin 2020 academic year

An Unusual Case of Left Lower Quadrant Pain and Mass in an Adolescent

Meredith Hoover, MD, Allison Heiden, MD, Rachel Casey, MD,
Katherine Dengler, MD

Background: Herlyn-Werner-Wunderlich syndrome, also known as obstructed hemivagina and ipsilateral renal anomaly (OHVIRA) syndrome is a rare mullerian duct anomaly. This case report will discuss the classic presenting symptoms of this syndrome, dysmenorrhea and nonspecific abdominal pain, as well as a palpable left lower quadrant mass in a mpost-menarchal teenager.

Case: A 13 year old presented to the hospital due to lower abdominal pain, a “hardness” in her abdomen and weight loss associated with nausea and vomiting. Physical examination showed a firm tender mass in the left lower quadrant. Upon separation of the labia, a fluctuant pink mass was noted at the introitus. Abdominal ultrasound showed vagina and uterus markedly distended with complex fluid, likely blood. A second endometrial stripe and cavity without distension were seen. Bilateral ovaries were normal in size and appearance; however, the left fallopian appeared distended. Only a right-sided kidney was noted, with mild hydronephrosis. Herlyn-Werner-Wunderlich Syndrome, transverse vaginal septum and imperforate hymen were considered in the differential. Further imaging with MRI showed significantly distended vagina secondary to imperforate hymen. No vaginal septum was identified. The remaining MRI images were consistent with the ultrasound images. The patient was diagnosed with OHVIRA syndrome.

Conclusion: When evaluating a postmenarchal patient with abdominal pain and a lower quadrant mass, OHVIRA syndrome should be considered as a differential diagnosis. Obstruction of the hemivagina may lead to blood back up through the ipsilateral fallopian tube. The provider should consider this history as a possible cause for endometriosis in patients with previously diagnosed OHVIRA syndrome.

Teaching Points:

- Ultrasound along with MRI can be useful adjuncts in diagnosing Herlyn-Werner-Wunderlich syndrome
- Normal menstrual cycles does not preclude the diagnosis of Herlyn-Werner-Wunderlich syndrome
- Consideration for endometriosis secondary to extrusion of blood through the fallopian tubes on the ipsilateral side of the obstructed hemivagina is an important consideration in caring for patients with Herlyn-Werner-Wunderlich syndrome

Isolated Leukocytosis as a Presentation of HELLP Syndrome

Ellen M. Murrin, DO, Rolel Mbaidjol-Kabra, MD

Background: While a well-known complication of pregnancy, Hemolysis, Elevated Liver Enzymes, Low Platelets count (HELLP) Syndrome can be difficult to recognize due its varied clinical presentations and its overlapping signs and symptoms with other obstetric complications.

Case: A 38 year old primigravida with past medical history of gestational diabetes presented for elective cesarean section at 38 weeks gestation for dichorionic diamniotic twin gestation. On admission, an incidental leukocytosis of 24,500 was noted. She underwent surgery complicated by uterine atony requiring uterotonics with adequate perioperative resuscitation. In addition to her worsening leukocytosis that reached a zenith of 49,000, she was found to have oliguria and acute kidney injury with creatinine of 3.0. Through the course of her workup, she was found to have disseminated intravascular coagulopathy, thrombocytopenia, transaminitis, hemolysis, and proteinuria. Several days after admission, mild hypertension was noted. She required multiple blood products and consults from Nephrology, Medicine, and Hematology. Overall, her treatment included supportive care and empiric antibiotics for suspected infection. Her diagnosis was delayed, despite meeting all current variations of diagnostic criteria, including ACOG guidelines and the Tennessee Classification System. This is likely because she lacked classical symptoms of headache, right upper quadrant pain, nausea, vomiting, or hypertension.

Conclusion: The diagnosis of HELLP Syndrome was delayed in this patient due to her unusual presentation. However, her cumulative signs and symptoms were all consistent with known presentations of HELLP Syndrome, including transaminitis, thrombocytopenia, hemolysis, hypertension, proteinuria, as well as the less common findings of leukocytosis, oliguria, DIC, and malaise.

Teaching Points:

- Despite the common theory that HELLP Syndrome is a relative of preeclampsia, it can present with delayed or absent findings of preeclampsia (hypertension and proteinuria).
- Physicians should have a low threshold to check blood count, liver enzymes, and markers of hemolysis in patients with leukocytosis in the setting of third trimester pregnancy and any risk factors, in this case, twin gestation, diabetes, and advanced maternal age.

Vaginal Cellular Angiofibroma with Heavy Bleeding

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Background: Cellular angiofibroma is a rare mesenchymal tumor. In women, the most common presentation is as an asymptomatic well-circumscribed mass in the vulva. Very few cases have been found in the vagina and even fewer presented with vaginal bleeding.

Case: A 54-year-old female presented to the emergency department with five months of vaginal bleeding and symptomatic anemia requiring blood transfusion. Upon physical examination, she was found to have a firm 4.0 cm posterior vaginal mass, distinctly distal to the cervix. A gynecologic oncologist performed an exam under anesthesia and resection of the vaginal mass. Proctoscopy confirmed that the rectum was not entered and remained intact. The mass was diagnosed as a vaginal cellular angiofibroma on pathologic evaluation. The patient did well post operatively with recommended follow-up every six months at a gynecology oncology outpatient clinic.

The differential diagnosis for a bleeding vaginal mass includes leiomyoma, angiofibroblastoma, aggressive angiomyxoma, squamous cell carcinoma, and adenocarcinoma. In this case, the patient was diagnosed with a rare presentation of vaginal angiofibroma, unlike the typically identified vulvar location. Resection of the vaginal mass served as the definitive treatment for her symptomatic anemia and acute blood loss, and her diagnosis was achieved with tissue samples.

Conclusion: Cellular angiofibroma can present as a vaginal mass with heavy bleeding leading to severe anemia. Early involvement of gynecology oncology can help optimize patients' evaluation and management.

Teaching Points:

- Cellular angiofibroma rarely presents in the vagina.
- The differential diagnosis for a bleeding vaginal mass should include leiomyoma, angiomyofibroblastoma, aggressive angiomyxoma, squamous cell carcinoma, adenocarcinoma, and angiofibroma.
- Best practice involves early solicitation of gynecologic oncology to optimize patient care and improve surgical outcomes.

Decidual Cast Masquerading as an Aggressive Malignancy via Imaging in a Young Girl: A Case Report

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Background: Decidual cast formation is an uncommon phenomenon which typically presents as spontaneous expulsion of the endometrium in one large piece, maintaining the shape of the uterus. Most reports of decidual casts are seen in conjunction with either ectopic pregnancy or in patients receiving progesterone containing contraception. Imaging tends to be normal without the presence of pelvic mass.

Case: A 10-year-old girl presented with vaginal bleeding, abdominal pain, and a newly found uterine mass. Transabdominal with transvaginal ultrasound revealed an enlarged uterus (10.8 x 3.7 x 5.6 cm) with a markedly thickened heterogeneous lower endometrium extending into the endocervix, concerning for endometrial or cervical malignancy. Further delineation with CT imaging revealed a hypodense endocervical mass (4.0 x 2.9 x 7.0 cm) protruding out of the cervix. The patient had been taking oral contraceptive pills (0.03 mg ethinyl estradiol, 0.15 mg desogestrel) for approximately three months with discontinuation of contraceptive 1 week prio3r to presentation. Serum beta HCG was negative. The patient was ultimately taken for an examination under anesthesia, dilation and curettage, and hysteroscopy by a gynecologic oncologist given the suspicion for malignancy. Pathologic examination of the mass revealed decidual cast.

Conclusions: This case demonstrates a rare presentation of a decidual cast presenting as a uterine mass. Further study of the association between decidual cast formation and progesterone containing contraceptive therapy as well as endogenous progesterone is necessary.

Teaching Points:

- The pathogenesis of decidual cast formation is still unknown. Decidual cast passage has been reported in adolescents after use of different progesterone containing contraceptives and spontaneously without the use of contraceptive therapy.
- Clinicians should maintain a level of suspicion for this diagnosis in adolescents, especially those using progesterone containing contraceptives.

A Case Report of a Periurethral Smooth Muscle Tumor of Uncertain Malignant Potential

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Background: Smooth muscle tumors of uncertain malignant potential (STUMP) are a group of rare heterogeneous tumors, that cannot unequivocally be classified as benign or malignant. In the female genital tract, they are typically confined to the uterus. We present a distinctive case of a periurethral STUMP independent of the uterus. This case is unique because STUMP of the vagina or periurethral location have not been described in the literature.

Case: A 38-year-old with a two-year history of a periurethral mass presented to Urogynecology for evaluation. She described a bulge sensation that was worse at the end of the day, along with positional dyspareunia and mixed urinary incontinence. She denied having difficulty initiating a urine stream. Her preoperative evaluation included physical exam, magnetic resonance imaging (MRI), cystoscopy and biopsy. After careful surgical excision and referral to gynecology oncology, her five and fifteen month follow up MRIs did not reveal any recurrence or new pelvic masses.

Conclusion: Periurethral or vaginal STUMP are rare with limited discussion of presence or management in the literature. Uterine STUMP are typically managed with myomectomy or hysterectomy. Given the unique location of the tumor in this case, a new clinical approach was required. This case demonstrates a staged plan to diagnosis and a successful surgical technique for complete resection.

Teaching Points:

- This unusual case of a STUMP presenting as a periurethral mass signifies the importance of imaging and staged surgery if there is high suspicion of abnormality.
- This case also features a potential timeline for postoperative surveillance.

Advanced Gastric Cancer in Pregnancy

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Background: Gastric cancer during pregnancy is very rare and often found at advanced stages. Studies have shown a poor prognosis of gastric cancer in pregnancy. The 5-year survival ranges from 5.1% to 12.0% in the general population, with survival rates of 6.2% in young women less than forty years old. Estrogen generally has a protective effect on the development of gastric cancer since gastric cancer is more common in men and post-menopausal women.

Case: 35yo G3P2002 presented at 36w1d with a 1-month worsening history of back pain and upper extremity weakness. The patient was admitted to the High Risk Perinatal Unit for further evaluation and management. An MRI of the spine was obtained which showed compression fracture and signal abnormalities concerning for malignancy at the levels of T3, T6, T8 and T12. Patient was delivered via repeat cesarean section at 36w4d for fetal decelerations with concurrent periaortic lymph node biopsy obtained by general surgery. Biopsy resulted as poorly differentiated sheets of metastatic carcinoma with positive staining suggestive of upper gastrointestinal primary. EGD was performed which confirmed the diagnoses of gastric cancer with infiltrative adenocarcinoma occupying 25% of the greater curvature of the stomach. The patient received palliative radiation therapy during her hospitalization and was discharged to home hospice care.

Conclusion: Gastric cancer is a rare occurrence in pregnancy and often presents at a late stage because typical symptoms are masked by normal pregnancy. Pregnant patients with severe symptoms and unrelenting pain should be evaluated with imaging to rule out other causes of symptoms unrelated to pregnancy.

Teaching Points:

- Not all back pain in pregnancy is benign muscle strain. If patients have persistent symptoms, imaging should be undertaken.
- Gastric cancer in pregnancy is often missed because initial presentations of gastric cancer include nausea, vomiting, and epigastric pain that are all commonly associated with pregnancy.

To our residents, congratulations on your research!

To our faculty and staff, thank you for your continued guidance and support!