

The 39th Annual

EVMS
OBSTETRICS AND GYNECOLOGY
RESIDENT RESEARCH DAY

THURSDAY, JUNE 13, 2024
8 A.M. — 1:30 P.M.

BANK OF AMERICA AUDITORIUM
HOFHEIMER HALL

VIRTUALLY BROADCAST VIA ZOOM

<https://evms-edu.zoom.us/j/98587068828?pwd=cXVuVGxZdy9Sd0JWZlNaa2prck1WQT09>

Meeting ID: **985 8706 8828** --- Passcode: **585596**

Dial by your location: **+1 301 715 8592 US** (Washington DC);

+1 305 224 1968 US

2024 Mason C. Andrews, MD, Resident Research Day Schedule

- 8:00 – 8:10 am Opening Remarks
George Saade, MD
Chair, Department of Obstetrics and Gynecology
Eastern Virginia Medical School
- 8:10 – 9:00 am Sue Kelly Sayegh, MD, Memorial Lecture by
Katherine Laughon Grantz, MD, MPH
Senior Investigator, Epidemiology Branch, Division of Population Health Research,
Division of Intramural Research
Eunice Kennedy Shriver National Institute of Child Health and Human Development
National Institutes of Health
Bethesda, MD
- The Mason C. Andrews Endowed Lecture
**Defining Normal and Abnormal Fetal Growth:
Is the Hadlock Reference Obsolete?**
- 9:00 – 9:20 am Lauren Forbes, MD, PGY-3
Mentor: Peter Takacs, MD
***Cash Rules Everything Around Me? Impact of Financial Penalties on
Appointment Non-Adherence in Academic Obstetrics and Gynecology Clinic***
- 9:20 – 9:35 am Salimah Navaz Gangji, MD, PGY-1
Mentor: Tetsuya Kawakita, MD
***Case Report: First Documented Case of Recurrent Non-Immune Hydrops (NIH)
Attributable to TRAPPC11-Associated Congenital Glycosylation Disorder (CGD)***
- 9:35 – 9:55 am Lindsay Gould, MD, PGY-3
Mentor: Juliana Gevaerd Martins, MD
***Rate of Deterioration of Umbilical Artery Doppler Indices in Fetuses with
Severe Early-Onset Fetal Growth Restriction***
- 9:55 – 10:15 am Elizabeth Miller, MD, PGY-3
Mentors: Tetsuya Kawakita, MD,
 Rebecca Horgan, MD,
 Juliana Martins, MD,
***Third Trimester Fetal Growth Ultrasound in Obese Patients for the
Detection of Growth Abnormalities***
- 10:15 – 10:45 am BREAK

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- 10:45 – 11:05 am: Madison Seward, MD, PGY-3
Mentor: Tetsuya Kawakita, MD
Rates of Chorioamnionitis in Patients Undergoing Induction of Labor with Oxytocin versus Prostaglandin for Premature Rupture of Membranes
- 11:05 – 11:20 am Sarah Hinson, MD, PGY-1
Mentor: Jeffrey Woo, MD
Case Report: Surgical Management of a Cesarean Scar Ectopic Pregnancy
- 11:20 - 11:35 am Manasi Mahashabde, MD, PGY-1
Mentor: Kate Byron, MD
Case Report: Ureteral Injury Following Perforation by IUD
- 11:35 – 11:50 am Lea Nehme, MD, PGY-1
Mentor: Joseph Hudgens, MD
Case Report: Spontaneous Endometrioma in Disguise
- 11:50 – 12:05 pm Anita Pershad, MD, PGY-1
Mentor: Andrew Moore, MD
Case Report: Severe Fetal Growth Restriction Following Salpingo-Oophorectomy in Pregnancy
- 12:05 – 12:25 p.m. Closing Remarks & Adjournment

Grand Rounds Presentation The Mason C. Andrews Endowed Lecture



Katherine Laughon Grantz, MD

Katherine Laughon Grantz, MD, is a Senior Investigator with tenure in the Epidemiology Branch, DiPHR, DIR, NICHD, NIH; Professor of Obstetrics and Gynecology at Georgetown University Hospital; and Senior Maternal-Fetal Medicine Attending at MedStar Washington Hospital Center.

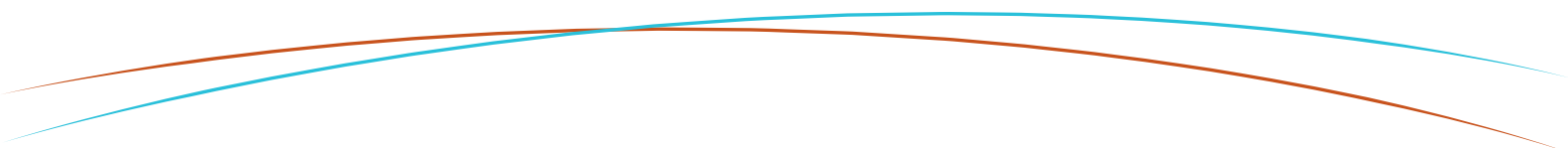
Dr. Grantz leads a research program on clinical management of pregnancy complications, including aberrant fetal growth, when to deliver a high-risk pregnancy, and labor and delivery management. Findings from her research have informed over 28 national and international clinical guidelines with evidence-based practice recommendations. An expert in the field of fetal growth, Dr. Grantz and her team were responsible for a multidisciplinary effort that generated fetal growth percentile charts in a diverse U.S population for clinical practice. She led development of a first ever fetal growth velocity calculator for clinical use as well as the development of twin fetal growth percentile charts. Her work addresses the clinical challenge of differentiating constitutionally small-for-gestational-age from fetal growth restriction that is associated with increased morbidity and mortality. An emerging area which uses 3-dimensional (3D) ultrasound that provides more detail than the standard 2D ultrasound in determining fetal fat and lean tissue volumes.

Dr. Grantz's group is among the first to have accumulated the largest collection of fetal 3D volumes from a racially/ethnically diverse pregnancy cohort with repeat ultrasounds spanning the length of gestation. Detection of fetal volume and body composition changes in fetuses that are growth restricted or growing excessively has potential to inform clinical management, such as increased antenatal monitoring to prevent stillbirth or changes in maternal nutrition to prevent excess fetal fat accumulation. Her team is also addressing labor and delivery management to prevent medically unnecessary cesarean deliveries, an issue declared as a national priority as cesarean delivery is a risk factor for severe maternal morbidity and mortality. More recently, she's leading a multi-center randomized clinical trial to determine the optimal timing of delivery for gestational diabetes complicated pregnancies to prevent neonatal complications.

Dr. Grantz received her medical degree from Virginia Commonwealth University School of Medicine. She completed her residency in Obstetrics and Gynecology at the University of North Carolina Hospitals and her Maternal-Fetal Medicine fellowship at the University of Pittsburgh.



**The following abstracts are
in order of presentation.**



TITLE: Cash Rules Everything Around Me? Impact of Financial Penalties on Appointment Non-Adherence in Academic Obstetrics and Gynecology Clinic

PRESENTER: Lauren Forbes, MD, PGY-3 Research Presentation

MENTOR: Peter Takacs, MD

Objective: To examine the impact of patient financial penalties on appointment non-adherence within a single academic institution's obstetrics and gynecology (OBGYN) outpatient clinics.

Methods: This retrospective policy effectiveness-implementation hybrid study included administrative data from all appointments at Eastern Virginia Medical School's (EVMS) OBGYN outpatient clinics from May 1, 2018 to April 30, 2022. The institution-wide patient financial penalty policy for appointment non-adherence was implemented on May 1, 2020. We conducted an interrupted time series analysis (ITS) stratified by clinic and insurance after adjusting for the effect of COVID-19.

Results: There were 414,006 OBGYN outpatient clinic appointments; 58,473 (14.1%) were not attended. The mean (standard deviation) per month was 8391 (727) appointments and 14.3% (1.48%) non-adherence rate. Medicare/Medicaid patients had a higher non-adherence rate (36,872/188,343 [19.6%]).

COVID-19 was a significant confounder across all clinics and insurances. Adjusted ITS models observed a significant sustained effect on number of non-adherent appointments per month (+0.18; $p < 0.01$). Stratified by clinic, maternal-fetal medicine (-1.47; $p = 0.01$), minimally invasive gynecology (+4.62; $p < 0.01$), and urogynecology (+4.42; $p = 0.01$), observed a significant immediate effect. Maternal-fetal medicine (+0.09; $p = 0.02$) and generalists (-0.33; $p < 0.01$) observed a significant sustained effect.

Stratified by insurance, publicly insured patients (-3.99; $p = 0.048$) observed a significant immediate effect. Publicly (+0.21; $p < 0.01$) and non-publicly (+0.09; $p = 0.03$) insured patients observed a significant sustained effect.

Conclusions: A clinically significant reduction in appointment non-adherence was not observed in EVMS OBGYN outpatient clinics after institutional implementation of patient financial penalties for appointment non-adherence. The impact of these penalties may differ based on clinic or patient insurance type.



TITLE: First Documented Case of Recurrent Non-Immune Hydrops (NIH) Attributable to TRAPPC11-Associated Congenital Glycosylation Disorder (CGD)

PRESENTER: Salimah Navaz Gangji, MD, PGY-1 Case Report

MENTORS: Camille Kanaan, MD
Tetsuya Kawakita, MD

Background: NIH is a heterogeneous disorder affecting approximately 1 in 4,000 pregnancies. Recurrence in consecutive pregnancies is exceedingly rare. CGD's represent a rare subset of metabolic genetic conditions that contribute to NIH.

Case: A 20-year-old G2P0100 previously experienced intrauterine fetal demise (IUFD) at 21 weeks due to NIH. In her subsequent pregnancy, the fetus was again diagnosed with NIH at 21 weeks, with minimal improvement in anemia despite intravenous immunoglobulin and percutaneous umbilical blood sampling (PUBS). Comprehensive evaluations ruled out infectious, viral, and hemoglobinopathy causes for both pregnancies. The G2 infant delivered via emergent cesarean section at 31 weeks due to terminal bradycardia following PUBS. Whole genome sequencing identified a pathogenic maternal TRAPPC11 gene mutation and a paternally inherited variant of uncertain significance (VUS) in the same gene. The VUS has been observed in a homozygous or compound heterozygous state in other affected individuals, suggesting its deleterious potential. The same TRAPPC11 variants were also found in the G1 infant as well. The G2 infant exhibited symptoms consistent with muscular dystrophy including global hypotonia, diminished hemidiaphragm movement, persistently elevated creatine phosphokinase, sustained dependence on respiratory support. Its cerebellar abnormalities and hypertrophic cardiomyopathy were also consistent with phenotypes observed in CGD-related NIH.

Conclusion: This case represents the first documented instance of recurrent NIH attributed to a compound heterozygous mutation in TRAPPC11, highlighting a novel genetic etiology for NIH associated with a glycosylation disorder and underscoring the importance of considering genetic contributions in recurrent NIH cases due to their effect on fetal development.



TITLE: Rate of Deterioration of Umbilical Artery Doppler Indices in Fetuses with Severe Early Onset Fetal Growth Restriction

PRESENTER: Lindsay Gould, MD, PGY-3 Research Presentation

MENTOR: Juliana Gevaerd Martins, MD

Objective: To examine risk factors for the development of absent or reversed end-diastolic velocity (A/REDV) in the umbilical artery (UA) and time intervals of deterioration from normal UA Doppler indices (systole/diastole ratio [S/D], pulsatility [PI], or resistance [RI]) to decreased (DEDV) and A/REDV.

Methods: Retrospective cohort study from 2005 to 2020, included all singleton pregnancies with severe (estimated fetal weight [EFW] below the third percentile) and early-onset (diagnosed between 20 to 32 weeks of gestation) fetal growth restriction (FGR). EFW and Doppler indices were reviewed longitudinally from diagnosis to delivery. Backward stepwise logistic regression was performed to calculate odds ratios with 95% confidence intervals.

Results: 985 patients were included, 79 (8%) progressed to A/REDV. Gestational age at diagnosis and chronic hypertension were associated with progression to A/REDV. Rates of progression with normal UA Doppler to A/REDV were significant after 4 weeks from diagnosis. Rate of progression from normal to abnormal S/D ratio compared to PI or RI was higher at 4 and 6 weeks. Deterioration from abnormal indices to A/REDV was shorter with abnormal RI and PI when compared with the S/D at 2, 4, and 6 weeks after diagnosis and at 6 weeks, respectively.

Conclusion: With normal Doppler indices, significant deterioration and progression to A/REDV is unlikely until 4 weeks after diagnosis. Abnormal S/D seems to appear first. However, abnormal PI or RI was associated with A/REDV.



TITLE: Third Trimester Fetal Growth Ultrasound in Obese Patients for the Detection of Growth Abnormalities

PRESENTER: Elizabeth Miller, MD, PGY-3 Research Presentation

MENTORS: Juliana Martins, MD
Tetsuya Kawakita, MD
Rebecca Horgan, MD

Objective: The rising prevalence of obesity among reproductive-age women in the United States poses significant public health challenges. The implications for fetal growth patterns, particularly in the absence of additional maternal health issues, remain poorly understood. The study aimed to evaluate the impact of maternal obesity on fetal growth patterns, specifically focusing on fetal growth restriction (FGR) and large-for-gestational-age (LGA) fetuses, utilizing ultrasound assessments in a population of obese pregnant women without other medical conditions.

Methods: This secondary analysis utilized data from the Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-be (nuMoM2b), involving 9023 participants across several U.S. centers. Our primary outcome was rates of fetal growth abnormalities on third-trimester ultrasound, defined as FGR or LGA among obese compared to non-obese women.

Results: 7,354 participants fulfilled our inclusion criteria and were categorized as obese (BMI ≥ 30 kg/m²) and non-obese (BMI < 30 kg/m²) based on early pregnancy BMI. Primary outcome analysis at the third-trimester ultrasound revealed that the prevalence of large for gestational age (LGA) infants was significantly higher among obese women compared to non-obese women (aRR of 1.66 [95% CI: 1.38-2.01, $p < 0.001$]). In contrast, the rates of FGR did not significantly differ between obese and non-obese women (aRR of 0.84 [95% CI: 0.67-1.05, $p = 0.89$]).

Conclusion: Maternal obesity is associated with an increased risk of LGA, while its relationship with FGR remains inconclusive in the absence of other medical complications.



TITLE: Rates of Chorioamnionitis in Patients Undergoing Induction of Labor with Oxytocin versus Prostaglandin for Premature Rupture of Membranes

PRESENTER: Madison Seward, MD, PGY-3 Research Presentation

MENTOR: Tetsuya Kawakita, MD

Objective: To examine the rates of chorioamnionitis in patients with term premature rupture of membranes (PROM) undergoing labor induction with oxytocin versus prostaglandin.

Methods: This was a secondary analysis of the Consortium on Safe Labor (CSL) from 2002 to 2008 across the US. The analysis was limited to individuals at term (37 weeks) with singleton pregnancies, cephalic presentation, and unfavorable cervix who underwent induction of labor for PROM. Individuals were categorized based on the induction methods (either oxytocin or prostaglandins). Our primary maternal outcome is the rate of intrapartum chorioamnionitis. Secondary outcomes included cesarean delivery and neonatal intensive care unit (NICU) admission. Multivariable logistic regression was used to calculate adjusted odds ratios (aOR) with 95% confidence intervals (95%CI), accounting for confounders and the clustering effect of sites.

Results: Of 1,250 individuals with term PROM, 133 underwent induction with prostaglandins and 1117 underwent induction with Oxytocin. Compared to induction with Oxytocin, prostaglandin was associated with lower odds of intrapartum chorioamnionitis (11.8% vs. 2.3%; aOR 0.24; 95%CI 0.14-0.39) and was associated with higher odds of cesarean delivery (22.5% vs. 33.8%; aOR 1.98; 95%CI 1.07-3.68). There was no significant difference in NICU admission (4.7% vs. 5.3%; aOR 1.06; 95% 0.40-2.82).

Conclusion: In individuals with term PROM, induction of labor by prostaglandins was associated with decreased odds of intrapartum chorioamnionitis but was associated with increased odds of cesarean delivery.



TITLE: Surgical Management of a Cesarean Scar Ectopic Pregnancy

PRESENTER: Sarah Hinson, MD, PGY-1 Case Report

MENTORS: Jeffrey Woo, MD

Background: Ectopic pregnancy is characterized by implantation of a fertilized egg outside of the uterine cavity. While most ectopic pregnancies occur in the fallopian tube, implantation can also occur in other locations such as the abdomen, cervix, ovary, or a cesarean scar. Management options include medical, surgical, or expectant management based on patient preference and clinical status.

Case: A 27-year-old G2P0101 with a history of one prior cesarean section presented to the emergency department with vaginal bleeding and a positive pregnancy test. Ultrasound revealed a gestational sac and fetal pole approximately 6 weeks 5 days gestation in the upper cervix/lower uterine segment, suggestive of a cesarean scar ectopic pregnancy. The patient opted for surgical management and underwent robot-assisted laparoscopic excision of the ectopic pregnancy.

In the operating room, the pregnancy was identified, and the vesico-vaginal space was developed. Uterine and ovarian arteries were clamped with Bulldog clamps, and vasopressin was injected adjacent to the pregnancy. Monopolar scissors were then used for excision. The lower uterine segment was reapproximated with 2-0 V-lock suture, and a uterine sound was utilized to ensure cervical canal patency. Minimal blood loss was observed during the procedure.

Conclusion: Ectopic pregnancies outside of the fallopian tube can present challenges due to delayed diagnosis and treatment. This case highlights the use of meticulous surgical techniques to minimize blood loss and intraoperative complications while preserving long-term fertility outcomes.



TITLE: Ureteral Injury Following Perforation by IUD

PRESENTER: Manasi Mahashabde, MD, PGY-1 Case Report

MENTOR: R. Kate Byron, MD

Background: Overall risk of uterine perforation is 0.3-2.6 per 1000 IUD insertions. Regardless of IUD type, the perforation risk is higher within one year postpartum, particularly within six weeks. The following case is one of few perforations in the literature involving severe renal compromise.

Case: A 32-year old G2P1011 previously healthy female presented to the emergency department reporting nausea/vomiting for 11 days and subjective fevers. Evaluation revealed tachycardia, leukocytosis, elevated lactate, and CT findings of left-sided hydronephrosis/ureter with transition point adjacent to an IUD protruding from the uterine fundus. The patient reported delayed postpartum IUD placement following cesarean delivery 7 years prior, with short interval ultrasound confirming placement. Interestingly, her strings were visible at the cervical os on admission exam. A pelvic ultrasound showed distal IUD arms protruding from the left myometrium with an adjacent tubular hypoechoic structure, resembling a dilated ureter. The patient was admitted for percutaneous nephrostomy tube (PCNT) placement and IV antibiotics. PCNT output was culture positive for *Citrobacter koseri*, supporting the diagnosis of urosepsis.

Although the patient had no underlying renal disease and normal creatinine, a nuclear renogram demonstrated no residual left kidney function. Urology recommended interval robotic left nephrectomy. Concurrent IUD removal is planned.

Conclusion: The CDC does not recommend routine exams following IUD insertion given lack of data demonstrating effectiveness in reducing complications of IUD malposition, including uterine perforation. The above case demonstrates the importance of imaging in the identification of IUD malposition, given the patient's normal pelvic exam.



TITLE: Spontaneous Endometrioma Rupture in Disguise

PRESENTER: Lea Nehme, MD, PGY-1 Case Report

MENTOR: Joseph Hudgens, MD

Background: Rupture of endometriotic ovarian cysts is a rare occurrence, affecting less than 3% of those diagnosed with endometriosis, its potential ramifications are severe, including acute peritonitis, sepsis, and septic shock. In this case series, we shed light on two instances of spontaneous endometrioma rupture emphasizing the critical importance of timely recognition and intervention.

Case: A 30-year-old woman presented to the emergency department with worsening pelvic pain. Vitals were stable except for tachycardia and her labs revealed a slightly elevated white blood cell count. CT scan reported an 11 cm complex tubular cystic structure in adnexa. Due to worsening clinical status with worsening pain, guarding, and rebound tenderness patient underwent a diagnostic laparoscopy for a suspected tubo-ovarian abscess. Upon entry, a spontaneously ruptured endometrioma of the right ovary was noted.

A 48-year-old woman presented to the emergency department with months of pelvic pain and a known history of endometriosis. Findings on the imaging were suggestive of advanced pelvic malignancy and progressive carcinomatosis. Patient was admitted for surgical planning and tissue sampling. CA-125 was 95. Interventional Radiology attempted to obtain a biopsy; however, results were inconclusive with few atypical cells. Patient then underwent a diagnostic laparoscopy. Upon inspection extensive adhesive disease was noted due to stage IV endometriosis. Pathology results and pelvic washings revealed no malignancy.

Conclusion: These cases highlight the ongoing challenges in diagnosing ruptured endometriomas and the necessity for comprehensive care to improve the overall well-being of individuals affected by this condition.



TITLE: Severe Fetal Growth Restriction Following Salpingo-Oophorectomy in Pregnancy

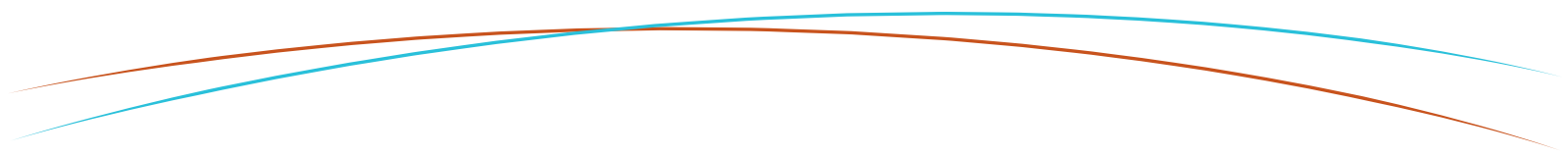
PRESENTER: Anita Pershad, MD, PGY-1 Case Report

MENTOR: Andrew Moore, MD

Background: Prior literature has shown that the corpus luteum makes progesterone in early pregnancy, until week 13, when the placenta takes over progesterone production for pregnancy support. Progesterone is thought to maintain a quiet, non-contractile uterus by virtue of its anti-inflammatory and immunosuppressive properties. Laparoscopic surgery in pregnancy is generally thought to be safe for mother and fetus, with minimal risks, and should not be delayed in emergent circumstances.

Case: An 18-year-old G1P0 with intrauterine pregnancy at 19 weeks and 6 days gestation presented with acute left lower quadrant abdominal pain in the setting of a 12 cm left ovarian cyst. She underwent a diagnostic laparoscopy with left ovarian cystectomy and left salpingo-oophorectomy. The surgery was uncomplicated, and pathology revealed benign fallopian tube, ovary, and cyst wall consistent with torsion. At her subsequent ultrasound, she was noted to have severe fetal growth restriction with estimated fetal weight <1%ile. Her pregnancy was otherwise uncomplicated with no maternal co-morbidity to explain the intrauterine growth restriction. Previous ultrasounds showed a normally grown fetus with estimated fetal weight measuring in the 29%ile. She underwent induction of labor at 38 weeks for severe fetal growth restriction and delivered a baby girl weighing 1995g.

Conclusion: This case suggests that the ovary and corpus luteum may play a role in progesterone production and placental support at a later gestational age than previously thought. We are not aware of any previously reported case of new onset of fetal growth restriction after unilateral salpingo-oophorectomy in pregnancy.



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