North American Proceedings in Gynecology and Obstetrics. 2024. "Central Association of Obstetricians and Gynecologists Conference Abstracts - 2023." *North American Proceedings in Gynecology & Obstetrics* 3 (3). https://doi.org/10.54053/001c.121160.

Conference Bulletin

Central Association of Obstetricians and Gynecologists Conference Abstracts - 2023

North American Proceedings in Gynecology and Obstetrics[1]

[1] Metrodora Publishing

Keywords: Obstetrics, Gynecology

https://doi.org/10.54053/001c.121160

North American Proceedings in Gynecology & Obstetrics

Vol. 3, Issue 3, 2024

The Central Association of Obstetricians and Gynecologists is a nonprofit organization of physicians that encourages and promotes the study of Obstetrics and Gynecology and Women's Health Care. Member physicians represent nearly 500 physicians from 43 states. Each year, the Central Association (CAOG) hosts an annual meeting that updates member physicians about current medical advances.

A1 FEMALE INFERTILITY AND OBESITY ACROSS THE UNITED STATES: A GEOGRAPHIC CROSS-SECTIONAL ANALYSIS

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DOI: 10.54053/001c.116270

Introduction: The CDC's "Adult Obesity Maps in 2022" suggests that the southern parts of the United States (US) have the highest prevalence rates of obesity. Similarly, the Health Resources and Services Administration identifies the Southern states as having the highest numbers of medically underserved areas.

The health implications of obesity are numerous, with some affecting reproductive ability in both genders. With infertility on the rise, studies have examined the numerous modalities that implicate obesity in female infertility. One such route associates the increased adipose tissue with reduced oocyte maturation by promoting functional hyperandrogenism and hypoestrogenism, which triggers anovulation.

This study was devised to investigate the landscape across the different regions in the US and detect correlations between female infertility and obesity. The hypothesis was that the southern region would have the highest correlation between female infertility and obesity compared to other regions across the US.

Methods: This cross-sectional study used the NIH's 'All of Us' Researcher Workbench to devise two cohorts of all ages, ethnicities, and races. The first group, the control cohort, included "female infertility" participants and excluded "sex assigned at birth – male" participants. The second group, the variable cohort, consisted of participants with both "obesity" and "female infertility" while excluding "sex assigned at birth – male" participants.

The US was divided into four regions based on zip code. The first three digits of each participant's zip code were logged and localized to the Midwest, Northeast, South, or West.

The participant's data was coded into the Python analysis software. Various data points were also recorded and analyzed. The number of participants with both female infertility and obesity was then compared to the number of females with infertility only and compared against each region to establish a correlation percentage.

Statistical analysis used Chi-Square and focused on identifying degrees of freedom.

Results: In the control group, the number of participants who qualified for infertile females was 2,754, with 1,182 participants from the Midwest, 1,062 from the Northeast, 279 from the South, and 231 from the West. For the variable cohort, 1,198 participants were concurrently infertile and obese females. This data was also sub-grouped based on region: the Midwest with 481 participants, the Northeast with 491 participants, the South had 133 participants, and the West had 93 participants. Each variable group number was subsequently divided by its respective control group's number of infertile female participants. The percentages for each region were: Midwest (28.9%), Northeast (31.6%), South (32.3%), and West (28.7%).

The results suggest that the Southern US region has the highest percentage of concurrently infertile and obese females compared to the rest of the country, while the lowest is the West. These findings were statistically significant (two-tailed P value < 0.0001).

Conclusion: Our study utilized the NIH 'All of Us' Researcher Workbench to demonstrate the variation among the different United States regions and their correlations between females who are both obese and infertile. Knowing that the southern region of the United States has (A) the highest rates of obesity, (B) the highest rates of medically unserved communities, in addition to (C) the highest rate of concurrent female infertility and obesity, this study serves as a platform to stress the need for increased awareness

of the implications of obesity. Increasing access to health education and medical care across the country, especially in the southern states, focusing on managing obesity may help improve infertility.

A2 COMPREHENSIVE CIRCULATING DNA PROFILING IN MATERNAL PLASMA ENABLED THE IDENTIFICATION OF A MOLECULAR SIGNATURE FOR THE DETECTION OF FETAL GROWTH DISORDERS AT THE FIRST PREGNANCY TRIMESTER

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Background: Early diagnosis, close follow-up and timely delivery constitute the main elements for the appropriate detection and management of pregnancies with fetal growth disorders (FGD). Besides the unprecedented technological development in screening of fetal growth abnormalities based on fetal biometry by ultrasound, inaccuracies still hinder FGD detection and assessment especially at early stage. Hence, there is an unmet need for reliable prenatal biomarkers of fetal growth, which can be assessed using low-invasive approaches. We hypothesize that the dysregulation of epigenetic mechanisms underly the etiology of FGD in infants impacting the shedding of genetic material into maternal blood. As a corollary, we propose that markers in circulating fetal DNA (cfDNA) in maternal blood can be used as early detection markers of FGDs.

Methods: 56 pregnant women were recruited in this study. Maternal blood sample was prospectively collected from each subject at first trimester and plasma circulating DNA (cirDNA) was isolated. The number of Small, Large and Adequate for Gestational Age (SGA n=11, LGA n=18, and AGA n=27, respectively) were determined at birth according to weight and gestational age. The total amount of plasma cirDNA in each subject was quantified using qPCR. cirDNA fragmentation was assessed using specific qPCR assays corresponding to intact, nucleosome-size, and fragmented DNA, respectively. The mitochondrial/nuclear cirDNA was calculated using specific qPCR assays. cirDNA methylation profiles were studied in 10 genes associated with placental homeostasis. Furthermore, machine learning approaches were applied to build a molecular signature for the prediction of LGA and SGA occurrence using first trimester samples. Prediction accuracy was assessed by Receiving-Operating Curve (ROC) analysis and Positive and Negative Predictive values (PPV and NPV, respectively) were calculated.

Results: We observed an increase in the total concentration of plasma cirDNA in SGA (mean cirDNA=9.40 ± 5.49 ng/mL) and LGA (mean cirDNA=12.36 ± 4.24 ng/mL) compared to AGA pregnancies (mean cirDNA=8.48 ± 3.16 ng/mL), although the differences were not statistically significant (p=0283; Kruskal Wallis test). The fraction of fragmented DNA was significantly increased (p=0.002) in SGA (mean DNA fragmentation index, DFI=2.38 ± 0.14), and SGA (mean DFI=2.47± 0.25) compared with AGA pregnancies (mean DFI=1.56 ± 0.15). Likewise, the ratio of mitochondrial/nuclear DNA was significantly increased (p=0.005) in LGA (mean FC=0.78 ± 0.31) and LGA (mean FC=1.20 ± 0.32 compared with AGA pregnancies (mean FC=0.23 ± 0.05). DNA methylation profiles also shown distinctive patterns. Out of the 10 selected loci, we detected 4 genes showing significant differential methylation differences ($p<0.05$) across the SGA, LGA and SGA samples at first trimester. Using a machine learning approach, we combined these molecular and epigenetic cirDNA markers in a single signature which discriminates between FGD and AGA pregnancies with high accuracy (AUC=0.93) In addition, the performance of the signature was further evaluated according to positive predictive and negative predictive values (PPV and NPV, respectively), achieving 93% PPV and 82% NPV.

Conclusions: Our findings demonstrate that cirDNA epigenetic variables in maternal blood cirDNA can serve as FGD markers. Our novel marker panels will enable accurate prediction of FGDs using a low invasive approach that can be implemented as early as the first gestational trimester. The application of these panels in a clinical setting holds the potential to enable a disruptive path toward precision medicine in FGD.

A3 IMPLEMENTATION OF AN OUTPATIENT CERVICAL RIPENING PROGRAM: OUTCOMES AND PROVIDER AND PATIENT PERSPECTIVES

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Purpose: The purpose of this study is to evaluate the implementation, outcomes, and patient/provider acceptance of an outpatient cervical ripening program for induction of labor (IOL) at a teaching hospital.

Methods: In an effort to reduce patient risk resulting from congestion in the Labor and Delivery (L&D) unit of a level III maternity hospital with 3400 annual births, our department promoted the use of outpatient cervical balloon ripening. Over the course of 5 months, educational materials were distributed, Grand Rounds were held, an appeal to use outpatient cervical ripening was issued, and providers received written personal requests to consider outpatient balloons for each of their upcoming eligible scheduled inductions. Despite these efforts, uptake was minimal, as determined by a manual review over a 1-month period. Beginning in September 2022, new workflows were mandated: all patients needing cervical ripening and not meeting a defined list of exclusions were required to have outpatient balloons placed 6-18 hours prior to IOL in L&D, or to be scheduled for IOL over the weekend. Routine practice for inpatient balloons included planned removal after 6 hours and use of a ripening agent (vaginal misoprostol 25 ug every 3 hours for 1-2 doses or intravenous oxytocin). The

institution's Data Warehouse was queried to obtain clinical outcomes for all IOL requiring cervical ripening occurring over a 3-month period beginning one month after implementation of the new workflow (October-December 2022). A survey was distributed to all L&D providers 1 month prior to and 5 months following initiation of the mandatory outpatient cervical ripening program. Providers were asked their perception on benefits, risks, barriers, and likeliness to recommend outpatient cervical ripening. Patients who delivered following IOL over the same 3-month period were contacted via telephone and/or email and consented to complete a survey regarding their delivery experience. Outcomes were compared using chi square and t-test

Results: Outpatient cervical balloon utilization increased to 27.7% of eligible patients during the 3-month auditing period after implementation of mandatory outpatient cervical ripening from 7.2% at baseline. Among 141 subjects with inpatient and 54 with outpatient cervical balloons, there were no significant differences between groups in the rates of cesarean delivery (24.8% vs 18.5%, p=0.35), operative vaginal delivery (6.4% vs 11.1%, p=0.27), chorioamnionitis (12.1% vs 16.7%, p=0.40), postpartum hemorrhage (17.0% vs 13.0%, p=0.49), or NICU admission (12.1% vs 9.3%, p=0.58). Length of stay in L&D was significantly less in the outpatient group (1606 minutes vs 1366, p=0.02).

Fifty-three providers responded to the pre-implementation survey. Perceived benefits to outpatient ripening included less time in the hospital (94.3% of respondents), and patient comfort (37.7%). There were 34 respondents to the post-implementation survey. Decreased time in the hospital (94.3% pre vs 91.2% post, p=0.16) remained a perceived benefit, however patient comfort did not (37.7% pre vs 17.6% post, p=0.046). Concern over incorrect placement diminished significantly on post survey (50.9% pre vs 29.4% post, p=0.049). Respondents additionally reported concerns regarding delays in L&D causing balloons to remain in situ for longer than scheduled and subsequent effect on patient anxiety. Barriers to outpatient ripening before and after implementation included office workflow (58.5% pre vs 52.9% post, p=0.65), and provider comfort with the procedure (32.1% pre vs 41.2% post, p=0.39). Over time, respondents were increasingly "somewhat" to "very likely" to recommend outpatient ripening to their patients (64.2% pre vs 91.7% post, p=0.004). On post survey, most respondents were "somewhat" to "very satisfied" with the current program (64.7%), and "somewhat" to "very likely" to recommend to their colleagues (82.4%).

A total of 188 patients who underwent balloon cervical ripening were contacted, and 63 (33.5%) responded. Forty-five (71.4%) patients surveyed had a spontaneous vaginal delivery, 4 (6.35%) required operative vaginal delivery, and 14 (22.2%) underwent cesarean delivery. The majority (61.9%) were nulliparous. Seventeen (27%) patients had an outpatient balloon. Mean pain scores were not statistically significant between outpatient and inpatient groups (6.13 vs 5.28, p=0.25). There was no difference in patient self-perceived preparedness for balloon placement (41.2% outpatient vs 41.3% inpatient, p=0.99). There were no differences in delivery-related anxiety between groups (47.1% outpatient vs 60.9% inpatient, p=0.32) or in likelihood to recommend the experience (41.2% outpatient somewhat to very likely to recommend versus 32.6% inpatient, p=0.53).

Conclusion: Adoption of outpatient cervical ripening required a mandatory program, as persuasion and education were insufficient to induce a change in practice. No differences were seen in delivery outcomes between inpatient and outpatient balloon ripening, though this analysis is not powered to assess outcomes. A 4-hour decreased length of stay on L&D was observed in those who had an outpatient balloon. Providers are overall satisfied with outpatient cervical ripening. Patient satisfaction remains mixed regardless of cervical balloon placement location.

A4 AN UPDATED SYSTEMATIC REVIEW ON PREDICTION MODELS FOR SUCCESSFUL EXTERNAL CEPHALIC VERSION

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DOI: 10.54053/001c.120134

Purpose: Current practice guidelines recommend offering patients an external cephalic version (ECV) when a fetus is found to be in breech position. If successful, vaginal delivery can then safely follow an ECV. ECV for a term breech presentation varies widely in success but is a well-studied topic, with many variables identified which relate to its success. This has led to a multitude of predictor models for ECV success. A systematic review by Velzel et al. published in 2015 examined prior predictor models for ECV success; however, many models have since been published. We aim to update this systematic review with the new predictive models published in the last seven years and thus review the decision aids currently available or being developed to predict a patients' odds that their external cephalic version (ECV) will be successful.

Methods: We searched PubMed/MEDLINE, Cochrane Central, and ClinicalTrials.gov from 2015-2022. Articles from a pre-2015 systematic review were also included. A clinical librarian helped with conducting a thorough search strategy. We selected English-language articles describing or evaluating models (prediction rules) designed to predict an outcome of ECV for an individual patient. Acceptable model outcomes included cephalic presentation after the ECV attempt and whether the ECV ultimately resulted in a vaginal delivery. Two authors independently performed article selection following PRISMA 2020 guidelines.

Since 2015, 380 unique records underwent title and abstract screening, and 49 reports underwent full-text review. Ultimately, 17 new articles and 8 from the prior review were included. Of the 25 articles, 22 proposed 1-2 models each for a total of 25 models, while the remaining 3 articles validated prior models without proposing new ones.

The studies were then analyzed for quality and risk of bias using a customized framework which analyzed four main

domains: participants, predictors, outcome, and analysis. Ultimately, the largest factor considered when assessing study quality was whether the outcome was likely to be different amongst groups within a similar population. We then assessed the model's calibration and discrimination metrics (if reported) to evaluate their overall model performance.

Results: Of the 17 new articles, 10 were low, 6 moderate, and 1 high risk of bias. Studies were considered to have moderate risk of bias and quality if model-building strategies were not described, as it introduces concerns regarding consistency in applying the models to a similar population. Almost all articles were from Europe (11/25) or Asia (10/25); only one study in the last 20 years was from the USA. Four of the 17 new articles had some form of overlap with articles from the prior systematic reviews. The remaining 13 new articles used datasets, proposed models, and were performed by researchers that were entirely distinct from the 8 original articles

The most included characteristics were parity (19/25), placental location (12/25), and breech engagement or station (10/25). Although many studies included BMI (8/25), only a few indicated whether this was to be pregravid, peri-ECV, or peripartum BMI. Some metrics for model discrimination (e.g., sensitivity, AUC, accuracy, PPV) was displayed in 17 of the 25 models.

The models found had diverse presentations including score charts, decision trees (flowcharts), and equations. The majority (13/25) had no form of validation and only 5/25 reached external validation. Only the Newman-Peacock model (USA, 1993) was repeatedly externally validated (Pakistan, 2012 and Portugal, 2018).

Most models (14/25) were published in the last 5 years. In general, newer models were designed more robustly, used larger sample sizes, and were more mathematically rigorous. Thus, although they await further validation, there is great potential for these models to be more predictive than the Newman-Peacock model.

Based on the findings in this review, the Newman-Peacock model to predict ECV success (odds of cephalic presentation after the ECV procedure) is currently the most clinically useful model. Even though it is the oldest model in the review, it includes three of the most widely included prediction features: parity, placental location, and station. Furthermore, it is the only model that has been externally validated in a significantly different population and by a different investigational team than what was used to create the model.

Conclusion: Only the Newman-Peacock model is ready for regular clinical use in predicting ECV success. Many newer models are promising but require further validation.

A5 DEVELOPMENT AND EVALUATION OF A CESAREAN HYSTERECTOMY SIMULATION MODEL

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Introduction: Cesarean hysterectomy is a life-saving procedure considered during postpartum hemorrhage in cases of uterine atony refractory to management, placenta accreta spectrum, or other obstetric complications. The procedure has high morbidity and mortality despite the rising rates of worldwide and in the United States. A high percentage of OB/GYN residents graduate without preparedness to perform this procedure post-residency, citing insufficient residency exposure as the primary contributor.

This study aims to use evaluation and assessment tools to validate a low-cost, low-fidelity cesarean hysterectomy model at multiple OB/GYN residency training sites across the United States to increase resident confidence and proficiency in performing this critical procedure.

Materials and Methods: Model Design and Development: Gynecologic surgeons from two OB/GYN residencies reviewed the literature for cesarean hysterectomy education and simulation. A low fidelity, anatomically accurate model was developed for cesarean hysterectomy simulation purposes. Efforts were made to optimize for anatomic layout and realistic feel, particularly for the anatomic structures relevant to cesarean hysterectomy: uterine vessels, anterior and posterior peritoneum, relation of anterior uterus to the bladder and ureters.

Study Design: The study received institutional board review exemption at the Loyola University Medical Center (LUMC) and the University of Toledo (UT). During the last two months of the academic calendar, OB/GYN residents were offered the opportunity to perform a cesarean hysterectomy on the model. Demographics were collected in addition to the number of cesarean and abdominal hysterectomies performed as well as the confidence in cesarean hysterectomies independently. A uniform set of surgical instruments with both appropriate and inappropriate tools were made available for residents to choose from. Throughout the simulation, residents were asked to verbalize each step being performed.

One faculty rater at each institution was trained to use the objective and standardized assessment tools and had completed an inter- and intra-rater reliability assessment. All residents were evaluated using the same two objective assessment tools.

The two validated assessment tools used to evaluate resident performance using the model were the Task Specific Checklist and the Global Rating Scale. The former assessed residents on a "performed or not" basis on 14 surgical steps specific to cesarean hysterectomy. The latter used a scale of 1 to 5, with higher values representing more advanced skill, to evaluate respect for tissue handling, time and motion, instrument handing, knowledge of instrument selection, operation flow, assistant use, and familiarity with the procedure.

Results: A total of 26 residents, 18 of 19 at LUMC and 8 of 17 at UT, completed the cesarean hysterectomy simulation between May and June 2022. At LUMC, no graduating

residents had performed a cesarean hysterectomy in their residency. At UT, graduating residents had performed up to 2. All of the residents, including PGY-4s, stated that they either disagree or strongly disagree with the statement "I feel confident performing cesarean hysterectomy independently."

As hypothesized, the median resident scores on the Task Specific Checklist and Global Rating scale correlated with increasing PGY level. The combined TSC+GRS score was a median of 40 out of 49 total for the PGY-4 class, while the PGY-1 class had a median combined TSC+GRS score of 12 of 49. The PGY-2 and -3 class had TSC+GRS scores of 14 and 28 respectively. The simulation model was well-received with a median 4/5 rating for improving comfort level with cesarean hysterectomy and a median 4/5 rating for model realism.

Each uterine model cost $6.00 and took approximately 20 minutes to build. The optional base constructed for supporting the model, cost a one-time fee of $160. All materials used for construction were easily available online.

Discussion: This study validated an affordable, easily reproducible model that highlights the most important anatomy relevant to a cesarean hysterectomy. The model was developed, produced, and tested at two residency programs with a total of 26 residents participating in the study. This is the first low-fidelity cesarean hysterectomy model inclusive of relevant surgical steps and offers near-real visceral feel that has been developed and assessed for validity. This multisite study created a realistic model with high reproducibility at a low cost.

Limitations of this study included the fact that only 27 residents participated in the study from only two institutions. In addition, faculty evaluators were not blinded to the residents they rated.

The model is a reliable and affordable way to introduce this procedure at residency programs, particularly those that do not perform a substantial number of cesarean hysterectomies.

A6 DURATION OF DOUBLE BALLOON CATHETER FOR PATIENTS WITH PRIOR CESAREAN: A BEFORE AND AFTER STUDY

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Objective: To evaluate, in patients with a prior history of cesarean delivery undergoing cervical ripening with a double balloon catheter, whether removal of device after six hours versus twelve hours would result in shorter time to delivery.

Methods: A before-and-after study was performed after a practice change occurred November 2020, at which time the standard duration of double cervical balloon catheter placement during induction was changed from twelve hours to six hours. Data was collected via retrospective electronic chart review. Inclusion criteria included singleton pregnancy, history of prior cesarean delivery, fetus in cephalic presentation upon admission, and cervical ripening accomplished with a double balloon catheter. Patients with multiple gestation pregnancy, those with more than one balloon catheter placed during labor, and those being induced for fetal demise were excluded from this study. Primary outcome was time from balloon placement to delivery. Secondary outcomes included rates of cesarean delivery and rates of maternal intraamniotic infection. Uterine rupture was a safety outcome. Kaplan-Meier curves compared median times to delivery between the groups. A Cox proportional-hazards model was used to adjust for time of balloon placement, number of previous vaginal deliveries, and co-medications used.

Results: From November 2018 to November 2022, 210 patients with a prior history of cesarean delivery received a double balloon catheter for cervical ripening during their trial of labor. After chart review, 189 patients were found to be eligible. The patients were separated into pre- and post-policy change groups (n=91 and 98, respectively). The median time to vaginal delivery for the pre-group was 28 hours (95% CI: 26, 35) and 25 hours (95% CI: 23, 29) for those in the post-group (p-value 0.052). After adjusting for dilation at time of balloon placement, number of previous vaginal deliveries, and co-medication, the estimated hazard ratio for successful vaginal delivery post-policy change was 1.89 (95% CI: 1.27, 2.81). There were no differences in rates of secondary outcomes.

Conclusion: In patients with prior cesarean delivery undergoing mechanical cervical ripening with a double balloon catheter, planned removal at 6 hours compared to 12 hours may result in shorter time to delivery without increasing rates of cesarean and intraamniotic infection. Shortened time to delivery has been known to reduce maternal and perinatal morbidity, such as infection, hemorrhage, and cesarean delivery as well as conserve hospital resources and improve patient satisfaction. Decreasing duration of balloon placement in this population should be considered.

A7 ASSESSMENT OF MARIJUANA USE DURING PREGNANCY AND ITS EFFECTS ON NEONATAL OUTCOMES

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Background: According to the American College of Obstetricians and Gynecologists (ACOG), marijuana is the most used drug during pregnancy, and its self-reported prevalence ranges from ~2% to 7%. ACOG currently recommends against marijuana use during pregnancy due to inconclusive data regarding its safety and health effects. However, we know that THC readily crosses the placenta and can reach high fetal concentrations on repeated exposures. Several reports have linked adverse infant outcomes, such as low birth weight and abnormal neurological development, to marijuana use in pregnancy. Yet, many pregnant women continue to use marijuana throughout gestation as they believe it is safe, highlighting the role that education on marijuana use in pregnancy may aid in decreasing its usage. Furthermore, the growing legalization of marijuana may lead to further increase in marijuana use during pregnancy.

Purpose: We aimed to identify the reported use of marijuana during pregnancy in our patient population, prior to legalization, and examine its effects on maternal and neonatal outcomes. We hypothesized that those who reported using marijuana during pregnancy would have higher rates of maternal complications and adverse neonatal outcomes.

Methods: A retrospective chart review (IRB #21-823) was conducted which included pregnant women and their neonates who were admitted and delivered in 2019 at HSHS St. John's Hospital in Springfield, Illinois to assess marijuana use prior to legalization and to investigate neonatal outcomes of infants who were exposed to marijuana, including the need for respiratory support or assisted ventilation after delivery. Other data extracted included demographic characteristics, the mother's medical and obstetrical history, intrapartum and postpartum events and all documented substance use during pregnancy including tobacco, marijuana and illicit drugs. A logistic regression was used to assess marijuana use as a predictor of respiratory outcomes in infants. Odds ratios with 95% confidence intervals (CI) are reported.

Results: In our study, 599 charts were reviewed. Of those, 69 reported marijuana use during pregnancy, or 11.5%, which importantly, is higher than the reported national average of 2-7%. Previous studies have shown a high correlation between marijuana, tobacco and illicit drug use. Additionally, studies have demonstrated that tobacco and illicit drug use result in poor neonatal outcomes. Therefore, we focused on a subpopulation of mothers who only reported marijuana use during pregnancy to remove these confounders. As a result, 112 subjects were removed from the analysis who reportedly used tobacco and/or other illicit drugs in addition to marijuana in order to exclusively focus on the effect of maternal marijuana use on neonatal outcomes. In this subpopulation of 477 subjects, the rate of marijuana use was 5.5% (lower than the overall population), but the effects of marijuana on neonatal outcomes was found to be significant. Demographics were as follows: mean age 28.2 ± 0.25 years; race, ethnicity: 76% White, non-Hispanic and 23% were other (i.e., African American/black, Asian, native Hawaiian/pacific islander, white and Hispanic, non-white and Hispanic or another race). In this subpopulation, admission to the NICU and small for gestational age were not significantly different between marijuana users and non-users. However, marijuana users did have higher odds of preterm birth (OR=3.8, CI: 1.5-9.6; p=0.004). Additionally, marijuana users had increased odds of having an infant that required respiratory support (OR=3.9, CI: 1.4-10.3; p=0.005) and assisted ventilation (OR=4.6, CI: 1.6-13.1; p=0.003). Yet, no adverse maternal outcomes were associated with exclusive marijuana use.

Conclusion: Rates of marijuana use during pregnancy in our population is higher than the reported national average. Moreover, infants whose mothers exclusively used marijuana during pregnancy experienced higher rates of neonatal complications. Thorough screening and counseling regarding marijuana use in pregnancy and during breastfeeding is recommended, although there is no uniform process at this time. Implementing a standardized screening methodology and approach to education on the adverse neonatal effects of marijuana use in pregnancy during prenatal visits may be an effective intervention to improve neonatal outcomes in our patient population. This education is of particular importance in light of the recent legalization of marijuana.

A8 IMPACT OF PERIOPERATIVE GABAPENTIN AND PREGABALIN ON OPIOID REQUIREMENTS IN MOTHERS UNDERGOING C-SECTION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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DOI: 10.54053/001c.120930

Introduction: Patients undergoing cesarean section (CS) are commonly prescribed opioids as part of their pain control regimens. Enhanced recovery after surgery protocols are utilized to reduce the need for postoperative opioids. Gabapentin is a part of some protocols. The goal of this study is to perform a systematic review and metanalysis of current literature to examine the efficacy of perioperative gabapentin and pregabalin for pain control for patient's undergoing CS.

Methods: We searched PubMed, MEDLINE, Embase, Scopus, EBSCO, Google Scholar, and ClinicalTrials.gov to identify studies involving perioperative use of Gabapentin and Pregabalin in patients undergoing CS. Characteristics of trials, outcomes measured, and protocols for pain relief were collected and descriptively summarized. The primary outcome was cumulative opioid requirements in the first 48 hours after surgery using mixed morphine equivalents (MME). Secondary outcomes included pain measured with activity using either a visual analog score (VAS) or numerical rating scale (NRS) converted to a 0-10 scale and participant satisfaction on a scale from 0-100. Network meta-analysis which adjusts for the correlation between multiple comparisons within multi-arm studies was implemented

with the netmeta package in R software.

Results: We identified 15 individual studies after review of abstracts and full text results. Thirteen studies used gabapentin, while two used pregabalin. The final analyses included 9 RCTs, and 2 observational studies. Most studies used gabapentin as a single dose preoperatively (n=10, 77%), while 2 studies (1 RCT, 1 observational) used the drug pre- and postoperatively after CS, and 1 observational study only used drug post-operatively. All but one study reported pain scores as an outcome and 9 reported MME use. Six studies reported patient satisfaction outcomes. Two observational studies incorporated gabapentin as part of enhanced recovery protocols, both of which saw benefit. Seven of the eight trials using only preoperative gabapentin showed some benefit. Overall, the risk of bias for all studies was low.

From a random effects model for a network meta-analysis approach, treatment with 600 mg of gabapentin, compared to no treatment or placebo, was associated with a decrease in cumulative opioid requirements post-operatively in MME (-20.72, 95% [CI -33.52, -7.93]) when including all study designs. When limiting the analysis to randomized trials, treatment with 300 mg of gabapentin or pregabalin perioperatively also led to reduced opioid use (-4.30, 95% CI [-8.25, -0.36]; -6.90, 95% CI [-8.51, -5.29], respectively). Using the same model for the outcome of pain, 600 mg and 900 mg of gabapentin were associated with lower pain scores (-1.01, 95% CI [-1.98, -0.04] and -2.50, 95% CI [-4.28, -0.71], respectively). From the limited studies that report satisfaction (using gabapentin), satisfaction was higher for those in treatment groups (200 mg/both, 300 mg, and 600 mg), but only the 300 mg level of gabapentin was associated with higher satisfaction (1.35, 95% CI [0.45, 2.24]).

Conclusion/Implications: Accumulating literature shows support for perioperative use of gabapentin or pregabalin as an adjunct for post-CS pain control. Evaluations for optimal protocols, dosing, and safety information in the postpartum period are still needed.

A9 EFFECTS OF COVID-19 INFECTION ON FETAL GROWTH IN PREGNANCY

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DOI: 10.54053/001c.120931

Background: Infections are known to affect fetal development and growth. Studies have shown that there is a higher frequency of maternal vascular malperfusion in the placental bed in pregnant women infected with COVID-19. It is further suggested that the abovementioned changes seen in the placentas of women infected with COVID-19 is associated with significant clinical sequelae, such as, preterm birth, fetal growth restriction (FGR), and fetal demise. Although there are growing studies that have evaluated the impact of COVID-19 infection on fetal growth, data remains limited. As a result, there is little consensus on perinatal recommendations and counseling that should be given to women infected patients COVID-19 during pregnancy. During the COVID-19 pandemic, our Maternal Fetal Medicine Clinics opted to perform serial growth ultrasounds and additional antenatal testing in the third trimester in women infected with the disease. Whether performance of these ultrasounds identified cases of fetal growth restriction and impacted fetal outcomes remains unknown. The purpose of this study is to perform a retrospective review of all ultrasounds performed in women identified to have COVID-19 during June 2020-December 2022, and to evaluate the impact on fetal growth. We hypothesize that COVID-19 will increase the risk of fetal growth restriction compared to pregnant women without COVID-19.

Study Design: This is a retrospective cohort study within the Obstetrix Maternal-Fetal Medicine Specialist of Houston Clinics. The study included all patients aged 16-55 years old with a singleton pregnancy who received an ultrasound at Obstetrix Maternal-Fetal Medicine Specialist of Houston between June 2020-December 2022. COVID-19 infection during pregnancy was defined as a self-reported positive SARS-Co-2 RT-PCR or Rapid Test. FGR was defined as estimated fetal weight less than the 10% or abdominal circumference less than the 10% for gestational age. Maternal and fetal characteristics, including FGR, were collected and compared between the two groups.

Results: Among the 21,917 women with a singleton pregnancy who received an ultrasound at Obstetrix Maternal-Fetal Medicine Specialist of Houston between June 2020-December 2022, 484 (2%) had COVID-19 infection during pregnancy and 21,433 (98%) did not. Of those who had COVID-19 infection during pregnancy there were 45 (9%) cases of FGR, and when compared to pregnant individuals reporting negative for COVID-19 there were 2,928 (14%) cases of FGR, p=005. When the 484 women who had COVID-19 were stratified by the timing of their COVID-19 infection by first, second and third trimester, there was no significant difference in the proportion who had an offspring with FGR (p=0.33 Cochran-Armitage test for trend).

Conclusion: COVID-19 infection in pregnancy, when compared to those who do not have COVID-19 infection in pregnancy does not appear to be more associated with FGR. The performance of routine serial fetal growth ultrasounds may not be indicated in pregnant women solely for the purpose of having a history of a COVID-19 infection during pregnancy.

A10 POSTNATAL OUTCOMES OF MONOCHORIONIC DIAMNIOTIC TWINS VERSUS DICHORIONIC DIAMNIOTIC TWINS

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DOI: 10.54053/001c.120933

Background: It is commonly accepted that postnatal out-

comes for twins are dependent on their chorionicity. However, few studies describe the short-term and long-term outcomes of monochorionic diamniotic (Mo Di) twins as compared to dichorionic diamniotic (Di Di) twins. The purpose of this study was to evaluate the differences in outcomes among Mo Di and Di Di twins admitted to the NICU. Primary outcomes evaluated include length of NICU admission and length of respiratory support.

Methods: A retrospective chart review of birthing people and their respective Mo Di and Di Di twins admitted to the NICU between 2019 and 2022 at the University of Missouri was conducted after approval by our International Review Board. Demographic information and short-term outcomes were collected. Chorionicity, receipt of antenatal steroids, receipt of prenatal magnesium sulfate, prenatal health data, prenatal ultrasound findings of the twins, reason for delivery, and mode of delivery were obtained from the birthing persons' charts. Gestational age was collected in completed weeks of gestation at birth. Postnatal growth parameters were determined using Fenton charts. Outcome data of twins were obtained from neonates' charts. Bronchopulmonary dysplasia (BPD) was characterized using the Jensen 2019 definition. Continuous variables and binomial variables were analyzed using the Kruskal-Wallis test and the Chi-Square tests, respectively. A p-value of <0.05 was used to define significance. Linear regression analysis using birthing persons' and neonates' variables was performed using SPSS version 28 (IBM SPSS Statistics, IBM Corporation, Armonk, NY).

Results: Of the 309 live-born neonates (in utero demise of one Mo Di twin), 28% were Mo Di twins. Thirty-three percent of both Mo Di and Di Di twins did not require admission to the NICU. Two sets of Mo Di twins had twin-to-twin transfusion syndrome (TTTS) and required laser therapy antenatally. Mo Di twins admitted to the NICU were younger (mean age 31 weeks) and lighter in weight (mean weight 1627g) than Di Di twins (mean age 32 weeks, mean weight 1955g) admitted to the NICU. Mo Di twins had a mean length of stay (LOS) in the NICU of 44 days versus 39 days for Di Di twins (p 0.007). Mo Di twins also had a higher need for respiratory support than Di Di twins (p 0.002). Linear regression revealed longer LOS in the NICU was associated with Mo Di gestation (p 0.003), less than 30 weeks' gestation at birth (p 0.000), birth weight less than 1500g (p 0.000), receipt of tocolytics (p 0.029), receipt of at least 2 doses of antenatal betamethasone (p 0.007), and premature prelabor rupture of membranes (PPROM) (p 0.030). Labor before birth (p 0.033) was associated with decreased LOS. Linear regression analysis revealed that longer duration of respiratory support was associated with Mo Di gestation (p 0.006), less than 30 weeks' gestation at birth (p 0.000), birth weight less than 1500g (p 0.000), and maternal diabetes (p 0.046).

Need for admission to NICU, survival, BPD, intraventricular hemorrhage (IVH), and spontaneous intestinal perforation (SIP) were not significantly different between the groups. There were no cases of necrotizing enterocolitis (NEC), and no neonates required placement of a tracheostomy in either group. One infant in the Mo Di group required gastrostomy tube placement. Genetic anomalies were diagnosed in Mo Di twins (Williams syndrome 1, Waardenburg syndrome 2). No major anomalies were found in the Di Di twins. Birth defects in Mo Di twins included Hirschsprung's disease (n=1), coronary artery fistula (n=1), and solitary kidney (n=1). One neonate had a constellation of cleft palate, vascular ring, and left hypoplastic lung.

Discussion: Our study found that Mo Di twins admitted to the NICU were younger and lighter compared to Di Di twins admitted to the NICU. Mo Di twins had longer NICU stays and required respiratory support for longer than Di Di twins. While additional studies need to be performed to evaluate long-term outcomes of twins based on chorionicity and the effects of maternal conditions on short-term outcomes, the common belief that Mo Di twins have worse short-term outcomes as compared to Di Di twins is true in regard to length of NICU stay and length of respiratory support.

A11 AIMING FOR ZERO: SUCCESS OF THE HYSTERECTOMY SURGICAL SITE INFECTION PREVENTION BUNDLE

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Background: The Center for Disease Control's National Healthcare Safety Network (NHSN) reported an increased Standardized Infection Ratio (SIR) at a large community hospital, calculated by the number of observed infections over the number of predicted infections. In response to the increased SIR, a multidisciplinary Hysterectomy Surgical Site Infection (SSI) Prevention Workgroup was formed in 2019.

Objective: To promote a surgical site infection prevention bundle that was implemented at a large community hospital to reduce hysterectomy associated surgical site infections.

Study Design: The Workgroup implemented an evidence-based Hysterectomy SSI Prevention Bundle which enforced standardization of measures and techniques at: The pre-operative clinic appointment, the day of surgery, the intra-operative time prior to incision, the intra-operative time from incision to closure, and in the immediate post-operative recovery. The Hysterectomy SSI Prevention Bundle was implemented November 2, 2020. This study included all hysterectomies for benign pathologies from 10/1/2018 to 9/30/2020 [pre-implementation (n=811)] and 1/1/2021 to 9/30/2022 [post-implementation (n=772)]. Per NHSN data categorization guidelines, a designation of abdominal hysterectomy includes both open and laparoscopic routes. Inpatient surgery was defined as that with a date of discharge different from date of operation; outpatient surgery was defined as the one with the same date of discharge. SSIs included superficial, deep and organ/space, while complex

SSIs included deep and organ/space. Patient demographics were categorized and evaluated for statistical significance.
Results: After implementation of the SSI bundle, SIR for hysterectomies was reduced to < 1.0, indicating infection prevention. Outpatient abdominal hysterectomy SIR pre-implementation was 2.551 and post-implementation was 0.868 (p=0.007). The outpatient vaginal hysterectomy SIR pre-implementation was 0, and post-implementation remained 0 (p=0.364). Inpatient abdominal hysterectomy SIR pre-implementation was 1.554 and post-implementation was 0.443 (p=0.072). The inpatient vaginal hysterectomy SIR preimple-mentation was 1.064, and post-implementation was 0 (p <0.001). The inpatient complex abdominal hysterectomy SIR pre-implementation was 1.757 and post-implementation was 0 (p=0.040). The inpatient complex vaginal hysterectomy SIR pre-implementation was 1.001, and post-implementation was 0 (p <0.001). Differences between the pre- and post-implementation groups were significant for increased laparoscopic hysterectomies (p<0.001), decreased vaginal hysterectomies (p<0.001), increased number of same day discharges (p<0.001), longer procedure duration (p<0.001), and younger age (p=0.039).
Conclusion: Implementation of an evidence-based surgical site infection prevention bundle at a large community hospital has significantly reduced SIR for inpatient vaginal hysterectomies, outpatient abdominal hysterectomies, and all inpatient complex hysterectomies.

A12 CHANGE IN MEDICAL STUDENTS' ATTITUDES TOWARDS FAMILY PLANNING AFTER PREGNANCY COUNSELING PANEL INTERVENTION

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DOI: 10.54053/001c.120960
Purpose: This study evaluates changes in medical students' attitudes after a virtual pregnancy counseling panel intervention during pre-clinical medical education at Indiana University School of Medicine. We hypothesized that students would feel more comfortable counseling and treating patients for unplanned pregnancy after attending the virtual panel.
Methods: Students participated in a "Pregnancy Options Panel" during their second-year course covering reproductive health. The panel consisted of five health professionals: two complex family planning fellowship-trained physicians, an obstetrician gynecologist that does not perform abortions, a pediatrician with adolescent health training, and a licensed clinical social worker with expertise in adoption. The panelists discussed appropriate care for patients diagnosed with unintended pregnancy. Two identical 19-item surveys consisting of multiple-choice and open-ended questions were electronically disseminated before and after the panel to assess students' comfort and beliefs about family planning counseling and treatment. A $10 gift card incentive was given to all students who completed both surveys. The survey asked students to rank their comfort on a Likert scale from zero to five with zero being "not comfortable at all" and five being "very comfortable" after considering the following question: "Assuming you have the knowledge and training required, if a patient presents in her first trimester requesting an abortion of a normal pregnancy, indicate how comfortable you would feel a) referring the patient to an abortion provider, b) prescribing an 'abortion pill,' and c) performing a surgical abortion?" Students were asked the same question under the circumstance of a fetal anomaly incompatible with life or pregnancy posing a life-threatening risk to the mother. Students were furthermore asked to report how they believe a doctor should behave while counseling patients with unintended pregnancy (i.e., having a neutral status or disclosing their personal beliefs). Statistical analyses were performed using non-parametric statistics (Wilcoxon signed rank and McNemar's test) to compare before and after responses of participants.
Results: The second-year medical school class enrolled in the reproductive health course at Indiana University was composed of 366 students with 189 students (51.6%) identifying as female. Of the 366 students, 207 (60.5%) completed the survey before the panel and 181 (49.5%) completed the survey after the panel. The demographics of the students who completed both surveys before and after the panel (171 students, 46.7%) were as follows: 60.6% female, 37.6% male, 64.9% white, 2.9% black, 84.6% non-Hispanic, and 10.7% Hispanic. After the pregnancy panel, students reported increased comfort when contemplating referral to an abortion provider, prescribing a medication abortion, and performing a surgical abortion compared to prior to the panel (p<0.01, all comparisons). Students felt more comfortable referring a patient to an abortion provider (p<0.01), prescribing an abortion pill (p=0.02), and performing a surgical abortion (p=0.05) knowing the fetus had a condition incompatible with life or the mother's life was at risk after the educational intervention. In addition, students were more likely to withhold disclosing their personal beliefs about abortion when counseling a pregnant patient (64.6% vs 42.3%, p<0.01), felt more capable of approaching the conversation about pregnancy options in a genuinely neutral manner (86.4% vs 71.6%, p<0.01), and had a significant increase in preparedness to counsel on continuing pregnancy, abortion, and adoption (p<0.01). There was no change in students' beliefs when considering if it is ethical for a physician to advocate their position on abortion when counseling a patient, as 90.0% and 95.3% answered "No" before and after the panel, respectively (p=0.08).
Conclusions: Our pregnancy options counseling panel effectively guided students through a common reproductive health scenario counseling a patient who has been diagnosed with unintended pregnancy. Second year preclinical medical students felt more prepared to counsel patients neutrally and without influence of their own beliefs after attending the educational event. Students additionally felt more comfortable referring to an abortion provider, prescribing a medical abortion, and performing a surgical

abortion after the panel, emphasizing how exposure to family planning scenarios can influence future physicians' comfort providing non-judgmental counseling and abortion care. Expert panels comprised of health professionals with diverse clinical and social perspectives on pregnancy options can serve as an instructional model for preparing medical students for their obstetric and gynecological clinical clerkship and improving pre-clinical medical curriculum on the often-neglected topic of abortion.

A13 THE UPTAKE OF PARTNER PARTICIPATION IN SEQUENTIAL PRECONCEPTION CARRIER SCREENING

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DOI: 10.54053/001c.120961

Introduction: Carrier screening that is performed in the preconception period allows for couples at risk for having children affected with certain single gene (Mendelian) conditions to be identified. This is the most optimal timeframe to perform such screening. Most obstetric providers utilize a sequential process in which the patient first undergoes screening and their partner is only offered testing if the initial results reveal that the first is a carrier for one or more autosomal recessive (AR) deleterious variants. If the partner fails to undergo screening, the couple cannot obtain meaningful and actionable risk information for future or current pregnancies. In this study, we sought to assess the frequency of completed carrier screening risk assessment among individuals and couples who were undergoing preconception screening at two prenatal screening programs staffed by genetic counselors and geneticists.

Materials and Methods: We reviewed the screening outcomes for individuals and couples who presented for preconception carrier screening from January 1, 2020 through December 30, 2021 at Insight Medical Genetics and the clinical genetics program at Northwestern Medicine. All individuals received pretest genetic counseling prior to screening and posttest counseling after results were available. We evaluated individuals who were found to be a carrier of at least one deleterious variant and whether the partner of that person underwent carrier screening, and, if so, which type of screening.

Results: 548 patients who identified as women underwent preconception carrier screening during the study period, along with 3 men presenting for initial screening. These screens consisted of a panel containing primarily autosomal recessive conditions with a few X-linked conditions. 247 individuals (45.1%) were positive for at least one pathogenic variant; of these, 244 (98.8%) were variants in genes associated with autosomal recessive conditions. A total of 219 partners (88.7%) underwent carrier screening, including the 3 female partners of the men who initiated carrier screening. Of note, 4 of the patients who underwent carrier screening reported not having a partner at the time of screening; accordingly, the partners who underwent screening represent 89.8% of individuals eligible for partner screening following an initial positive result. Of the 219 partners who underwent carrier screening, 201 (91.8%) chose a carrier screening panel of 150+ conditions, while 18 chose a more limited panel that included the gene(s) of relevance based on their partner's results, with or without additional genes relevant to their learned/self-identified ethnicity or race.

Conclusions: Approximately 10% of couples presenting for preconception genetic counseling and carrier screening found to be at potential risk for a child with an autosomal recessive condition did not obtain the requisite information to fully assess their risk of having an affected child. It is possible that the frequency of couples who do not obtain complete and actionable screening information is even higher when carrier screening is provided without the assistance of certified genetic counselors or geneticists. Recently, cell free DNA-based maternal screening has been introduced that assesses the risk for a limited number of genetic conditions in the fetus that may not require assessment of the partner. Nonetheless, providers must communicate to their patients that meaningful risk information can only be obtained when the partner undergoes screening in cases where the initial member of the couple is found to be a carrier of at least one autosomal recessive condition. Laboratories and professional societies need to develop effective educational outreach to patients and providers alike to improve the screening process for couples who want to determine if they are at risk to have a child with an inherited condition.

A14 THE IMPACT OF FOOD INSECURITY ON MATERNAL AND NEONATAL OUTCOMES

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Purpose: The purpose of this study was to examine the relationship between food security status and pregnancy outcomes.

Methods: This was a single-center cross-sectional cohort study of postpartum women in Indianapolis, IN. A validated 10 question Household Food Security Survey module was used to assess food security for patients who spoke English, Spanish, or Haitian-Creole. Correlating with the USDA definitions of food security, total scores were "high," "marginal," "low," and "very low." Scores were analyzed as inadequate (marginal, low, or very low) vs. adequate (high) food security. If a score fell within any category but "adequate" food security, patients were provided with information on community resources. Prenatal and postpartum data were abstracted via chart review, collecting: standard demographics, language, parity, diagnosis of diabetes, di-

agnosis of hypertensive disorder(s), pre-pregnancy weight, weight at time of delivery, BMI at time of delivery, gestational age at delivery, Edinburgh Postnatal Depression Scale (EPDS) score, and delivery mode. Neonatal variables included: weight and sex. The primary outcome was occurrence of gestational diabetes (GDM). These outcomes were compared between patients who had adequate vs. inadequate food security. Logistic regression was used to examine the association between food insecurity and each of the dichotomous outcomes. Linear regression was used to model the relationship between sex-specific birthweight z-scores and food insecurity. All adjusted models included language and maternal age. The Indiana University institutional review board approved the study (IRB# 14116).

Results: Two hundred six surveys were completed from June 2022 through December 2022. Ninety-three participants (45.4%, 95% CI 38.4-52.4%) were categorized as inadequate food security. The incidences of marginal, low, and very low food security were similar with 31, 30, and 28 participants, respectively. Race/ethnicity and language were different between adequate and inadequate groups (p=0.006 and <0.001 respectively). The incidence of GDM was 7.9% and was not different for those with inadequate food security (OR 0.96 95% CI 0.33-2.68). Food insecurity was protective against delivery via C-section (aOR 0.50 95% CI 0.25-0.98). Food insecurity increases odds of EPDS > 9 (aOR 4.32 95% CI 1.41-16.2).

Conclusions: Inadequate food security status is highly prevalent in our patient population and was associated with racial/ethnic minority status and non-English speaking populations. Inadequate food security was found to be associated with a decreased odds of cesarean delivery and higher odds of postpartum depression.

A15 PERIOD POVERTY: SURVEYING THE PREVALENCE IN TOLEDO AREA SCHOOLS

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Background: The lack of access to period products, also known as "period poverty," is a problem that millions of people face worldwide. Investigators have examined the extent of this phenomenon among low-income and college-aged populations in the United States and have found that period poverty is a pervasive issue in this country as well, despite its status as a high resource country.

Purpose: The purpose of this study was to determine the prevalence of period poverty in school-aged adolescents in Toledo, Ohio; to analyze the demographic factors associated with this lack of access; and to evaluate its effect on school attendance, extracurricular activities, and mental health.

Methods: This study used an observational, cross-sectional design and was approved by the Institutional Review Board. Participants completed a survey to assess adequate access to menstrual products, level of understanding about their health, feelings towards menstruation, and the perceived impact of periods on these students' lives. Data analysis determined the relationship between various measurements of period poverty, menstrual knowledge, and participant demographics. No personal identifiers were collected. The study was conducted for twenty days between February and March 2023. Participants' guardians could opt their students out of the survey or students could opt themselves out prior to the start of the survey. Students who did not opt out received the survey via their school email accounts. Nonmenarchal individuals were excluded from further survey participation, while eligible subjects who chose to complete the survey had the option to withdraw or leave questions blank. Survey data was collated using Microsoft Forms, and analysis was performed using Statistical Analysis Software (Version 9.4).

Results: A total of 408 students, aged 11 through 19, participated in the survey. Because many of the survey questions included a "select all that apply" option, responses to those questions fell into more than one response category. Of those surveyed, 36.4% identified their race/ethnicity as Black, 30.7% as Caucasian, 7.5% as Hispanic, 25.4% as "Other."

When asked where respondents get their period products, 86.4% indicated from the store, 58.6% from parent(s)/guardian(s), and 12.9% from school. Our study found a statistically significant correlation between increasing age and increasing concern for lack of period products. To the question "Why don't you have pads or tampons?" 61.0% of respondents had "left [products] at home," 36.2% expressed financial concerns, and 18.3% reported inadequate transportation. When asked if students ever had to miss school due to their cycle, 9.4% indicated not having products as their reason. Our study also determined a statistically significant relationship between the income status of the school (middle vs. low) and whether or not students had access to period products (p = 0.0439).

Participants also reported high rates of missing sports, work, theatre/music practice, and spending time with family/friends due to their menstrual period. 92.2% indicated cramps as their reason for missing these activities, 68.2% indicated heavy bleeding, and 9.4% as not having products. Of participants reporting availability issues, 35.0% reported using a product longer than advised and 65.5% reported using toilet tissue or fabric instead.

A majority of participants reported that they learned about menstrual period management from personal experience or from a parent/guardian. We noted a statistically significant, positive correlation between participants' age and their likelihood of receiving period education from their parent(s)/guardian(s). In other words, older students were more likely to receive education from their guardians than younger students. When asked about self-perceived knowledge gaps, participants were most interested to learn about menstruation-related mood swings and dysmenorrhea symptoms. When students have new questions about periods, they report turning to their parent(s)/guardian(s) and the internet most frequently. The most common feelings

participants associated with their periods were sadness, anger, anxiety, and embarrassment. Conversely, fewer respondents reported happiness, excitement, or pride.

Conclusions: People across the world face period poverty, and our survey shows evidence of this phenomenon among Toledo students. Due to lack of access to menstrual hygiene products, students report repurposing miscellaneous items in place of pads or tampons, missing extracurricular activities, and associating negative emotions with their cycles.

Our study limitations include: a small sample size, limited external validity, and selection bias. Future directions include rectifying these limitations, positing additional questions to gain better insight to the degree of period poverty, and interacting directly with the respondents as project investigators. Doing so will garner participants' trust, provide them with direct avenues to resources, and minimize education and language barriers. Combined, these efforts would offer a greater representation of the target population.

As menstrual cycles continue to affect the daily lives of menstruating people, we believe that closing the access gap can have profound positive effects on communities' physical and emotional wellbeing.

A16 EVALUATING FOR RACIAL DISPARITIES IN THE UTILIZATION OF MINIMALLY INVASIVE HYSTERECTOMY FOR THE TREATMENT OF UTERINE LEIOMYOMA

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Introduction: Minimally invasive hysterectomy (MIH) for benign gynecologic indications has many patient advantages over traditional abdominal hysterectomy (AH) including decreased hospital stay, decreased mortality, and faster recovery. Although MIH has been shown to improve outcomes as compared with abdominal hysterectomy, racial and socioeconomic disparities can impact patient access to the minimally invasive procedure. Previous studies have demonstrated that Black and Hispanic-identifying patients are significantly less likely to receive a MIH when compared to White patients. One proposed contributor to this finding is the higher rate and delayed diagnosis of uterine leiomyoma in Black patients compared to White patients. This disparity could delay diagnosis, and cause a larger leiomyoma necessitating use of abdominal hysterectomy. Another explanation in disparity is the physician training at hospitals in underserved areas. This study aims to investigate if race impacts access to MIH for leiomyoma at Carle Foundation Hospital in Urbana, Illinois.

Methods: This retrospective analysis studied patients from 2011-2020 who received a hysterectomy at Carle Foundation Hospital for a primary diagnosis of leiomyoma. MIH included laparoscopic, vaginal, and robotic-assisted. Hysterectomies for malignancy were excluded. The demographic data included age, race, body mass index (BMI), type of hysterectomy, insurance, history of previous obstetric and abdominal surgeries, and uterine weight. The race categories included White, Black, and Others. Hispanic and Asian patients were placed into the other category due to the limited sample size. Descriptive statistics were used to evaluate the demographic data. Odd ratios were calculated to determine if a patient received a MIH over an AH based on race. An adjusted odds ratio was calculated to account for BMI, uterine weight, history of cesarean section, and previous abdominal surgery.

Results: A total of 324 hysterectomies from 2011-2020 were performed for leiomyoma. Abdominal hysterectomies accounted for 32.1% and MIH accounted for 68.9%, with 7.4% being laparoscopic, 5.6% being vaginal, and 55.9% being robotic-assisted.

The average age of White patients was 46.7 years old, and was higher than Black patients, 43.6 years old ($p<.01$). The average BMI of Black patients was 34.6 kg/m2, and was higher than White patients, 30.3 34.6 kg/m2 ($p<.01$). More White patients had commercial insurance at 83.5% compared to Black patients at 48.1% ($p<.01$). More Black patients had Medicaid or Medicare at 50.6% compared to White patients at 14.8% ($p<.01$). Black patients had an average uterine weight at 579.8g compared to White patients at 438.6g ($p<.05$). The majority (73.7%) of White patients received a MIH, with 26.3% receiving an AH. Forty five percent of Black patients received an AH while 54.5% received a MIH.

Conclusion: At Carle Foundation Hospital during the years 2011-2020, a lower percentage of African American patients, compared to white patients, received a minimally invasive hysterectomy in the treatment of uterine leiomyoma. Further analysis will investigate for the odds ratios of each group receiving a MIH and will adjust for BMI, uterine weight, obstetric and abdominal surgical history.

A17 EVIDENCE-BASED GUIDELINE ADHERENCE TO RECOMMENDED PREOPERATIVE TESTING FOR WOMEN UNDERGOING HYSTERECTOMY FOR UTERINE LEIOMYOMA

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DOI: 10.54053/001c.121159

Background: Previous literature demonstrates that inappropriate preoperative testing in gynecologic surgery can lead to major healthcare expenditures and delayed procedures.[1-3] This study aims to investigate adherence to evidence-based preoperative testing recommendations for patients receiving a hysterectomy for uterine leiomyoma at

Carle Foundation Hospital (CFH) in Urbana, Illinois. We reviewed chest x-ray (CXR), electrocardiogram (ECG), complete blood count (CBC), basic metabolic panel (BMP), complete metabolic panel (CMP), prothrombin time (PTT), and urinalysis (UA) studies performed three months prior to surgery for patients who received a hysterectomy at CFH from 2011 to 2020. Our aim is to evaluate the adherence to National Institute for Health and Clinical Excellence (NICE) guidelines, based on individual patient's comorbidities.[1] Our hypothesis is that CFH will benefit from review of guidelines to improve preoperative testing adherence and provide cost effective care.

Methods: Retrospective data of women who received a hysterectomy for uterine Leiomyoma at CFH from 2011 to 2020 was reviewed to evaluate adherence to the NICE criteria for the following preoperative tests: CXR, ECG, CBC, BMP, CMP, PTT, and UA. Preoperative tests were included if completed less than three months before the patient's date of surgery. Past medical and surgical histories were collected to evaluate individual patient comorbidities. Patient comorbidities at time of surgery were utilized to label each preoperative test as indicated or not indicated. We performed logistic regressions to evaluate if age, race, procedure year, or hysterectomy type impacted the likelihood that preoperative tests were appropriately ordered.

Results: Our data demonstrated appropriate adherence to most NICE guidelines. For example, the NICE guidelines recommend that a CBC is indicated for any patient receiving a hysterectomy; 97.5% of patients received a CBC prior to their surgery. As a result of the risk stratification, a BMP was indicated for 183 patients in our sample, and 171 (93.4%) patients received the test. A preoperative ECG was indicated for 267 patients in our sample, yet, only 162 of the 267 patients (60.7%) received an ECG. The NICE preoperative testing guidelines did not recommend a preoperative UA as prior to hysterectomy, but 125 patients in our study (39.1%) received the test. Logistic regression evaluating preoperative UA was compared with hysterectomy type (total abdominal, laparoscopic, vaginal, or robotic). Robotic hysterectomy demonstrated a significantly lower incidence of UA as compared to abdominal 0.56 (95% confidence interval 0.34-0.91). Other procedure comparisons did not demonstrate any significant difference.

Conclusion: Our data demonstrate the need to reevaluate preoperative testing practices as CFH. While tests, such as CBC, BMP, and CMP had good adherence to national guidelines, others like ECG were underutilized. Finally, UA testing was frequently unnecessarily ordered. These variables, however, are moderated by physician practice and utilization of evidence-based preoperative testing guidelines by patient's primary care providers or the CFH preoperative clinic. Review of evidence-based guidelines regarding preoperative testing is indicated. Continued investigation into evidence-based guideline adherence will provide CFH and other institutions with recommendations to provide appropriate preoperative testing and foster cost-effective care.

A18 A SYSTEMATIC REVIEW OF MATERNAL MORTALITY IN AFRICAN COUNTRIES

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DOI: 10.54053/001c.120976

Introduction: The goal of this review is to investigate maternal mortality rates (MMR) in African countries. Because the MMR of Black women in the United States is 3-5x higher than in White women, this study aims to identify if a similar racial disparity is present in Africa where the majority of the birthing population identifies as Black.

Methods: Four bibliographic databases were searched - PubMed, Web of Science Core Collection, Scopus, and Cumulative Index to Nursing and Allied Health Literature (CINAHL) – and a variety of search terms were identified, including "Maternal Mortality", "Ethnic Groups", "Minority Groups", "Continental Population Groups", "Medically Underserved Area", "Race Factors" and "Racial Disparities". Inclusion criteria were manuscripts with statistics on maternal mortality or severe maternal morbidity in African countries or regions; exclusion criteria included "wrong outcome", "wrong study type", and studies only discussing maternal morbidity without mention of mortality. Papers that were not written in or that did not include information about an African country or region were excluded.

Results: Overwhelmingly, hypertension-related mortality was identified as a leading cause of death in nearly every study, followed closely by post-partum hemorrhage, often due to over- or underuse of anticoagulation therapy. Unsafe abortion contributed to higher rates of adolescent mortality (37% of adolescents in one study) while accounting for 9-27% of the overall mortality rate. MMR across the continent varied significantly. Countries with the highest average recorded MMRs include Tunisia (1,820/100,000), Sierra Leone (1,800/100,000), Guinea (1,600/100,000), and Somalia (1,600/100,000). The lowest average MMRs found in this study included Tanzania (120/100,000), Egypt (124.5/100,000), Algeria (160/100,000), and Libya (220/100,000). Factors contributing to higher rates of mortality included extremes in maternal age, with the highest rates being in those older than 40 and younger than 20. Educational status played a large role, with up to 68% of mortality in one study occurring in people considered to be illiterate. Low socioeconomic status and being a member of a minority religious and/or ethnic group within a population corresponded with higher mortality rates, in addition to either late or minimal access to antenatal care (up to 28x higher MMR). A common comorbidity related to maternal mortality was patients having an established HIV diagnosis. Though mortality rates were significant in both HIV-posi-

tive and HIV-negative patients, most deaths in HIV-positive patients were related to advanced disease as opposed to obstetric complications, with one study finding the MMR of HIV-infected patients to be 6.2 times higher than HIV-negative patients. Among these deaths, tuberculosis, pneumocystis jirovecii pneumonia, and meningitis were among the most common causes. One study investigated the association between antiretroviral (ART) therapy and decreased rates of HIV-positive mortality. The recorded MMR of both HIV-positive and HIV-negative women decreased over the 10 years in this study; however, the HIV-positive MMR in the third time period was still 3.2 times higher than that of HIV-negative women (4.1 times higher in the second period, 7.1 times higher in the first period) with HIV-positive patients making up 33.3% of maternal deaths. One 2021 study focused on the effects of a COVID-19 infection on maternal outcomes – identifying no statistically significant difference in MMR, except that HIV-positive patients were twice as likely to contract COVID than controls.

Conclusion: According to US CDC, the 2020 US national MMR was 23.8 per 100,000 live births, compared with the lowest national MMR in this study - Tanzania at 120/100,000; 6-fold higher than the US national average. In this systematic review, multiple factors were found to contribute to higher MMR, including low socioeconomic status, poor access to trained medical professionals, and patients having untreated or severe comorbidities such as HIV or tuberculosis. Two studies used a data collection method called 'The Sisterhood Method' which gathered retrospective data via interviewing women about the maternal outcomes of their biological sisters. Though this method of collection is useful for countries and/or regions that have limited access to electronic medical records (EMR) or census data, it relies on the memory and the willingness of interviewees to provide information, which may create recall bias and alter the validity of those studies. Our work identifies a need for further maternal mortality research to identify differences in healthcare systems across countries (both in Africa and worldwide) leading to higher death rates in some nations. Additionally, training programs (such as "Human Resources for Health," "Pan-African Academy of Christian Surgeons [PAACS]", "East, Central, and Southern African Health Community [ECSA-HC]", etc.) should be supported with funding and other resources to address this crisis, while also supporting ongoing initiatives to expand medical education and training in African countries. Efforts should also be made to increase patient education about early signs of obstetric complications. Though maternal mortality rates have trended downward in recent decades, further research is needed to highlight and address disparities across countries and populations to provide equitable care to all.

A19 CAPILLARY VERSUS VENOUS GLUCOSE FOR THE SCREENING 1-HOUR GLUCOSE TOLERANCE TEST FOR GESTATIONAL AND PREGESTATIONAL DIABETES

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DOI: 10.54053/001c.120977

Purpose: This study aimed to assess for disparities between capillary blood glucose and plasma glucose for the O'Sullivan 1-hour glucose tests.

Methodology: Subjects included were English-speaking, non-incarcerated, adult (>18 years old) pregnant patients who could give informed consent. Patients were approached at their outpatient obstetric office visits. After receiving written and verbal consent, patients were given a 50-g glucose load at the conclusion of their clinic visit. Strictly timed venous and capillary blood draws were performed at the outpatient labs. The venous and capillary blood samples were drawn within less than 5 minutes of each other and analyzed using select chemistry analyzers within less than one hour. Quality control measures, including recalibration, testing, and various quality control mechanisms, were reassessed every 24 hours. Data was tested for normal distribution with the Shapiro-Wilk test and Kolmogorov-Smirnov tests. Paired T-tests were used to compare the average difference between measurements in subjects on GraphPad.

Results: One hundred patients had enrolled in the study, with ten dropping out soon after being consented. Patients were lost due to nausea and vomiting with the 50-gram glucose load (4 patients) and scheduling conflicts (6 patients). Demographics identified 84% as African American (76/90), average body mass index (BMI) being 35.4 kg/m2, and a mean age of 26.

All data of the differences (capillary minus venous glucose) were found to be normally distributed. The capillary sample was significantly different from the venous sample, with the former being, on average 6.156 mg/dL higher than the latter (P 0.0008, CI 2.65 to 9.66). Subgroup analysis suggested significant differences in values among the multiparous patients (P 0.0014, CI -13.18 to -3.349), with capillary glucose being on average 8.26mg/dL higher. Similarly, patients with BMI < 30 mg/kg had significantly different sample values (P 0.0031, CI -18.75 to -4.25), with capillary glucose being 11.50 mg/dL higher on average. Patients with a gestational age of 24 weeks and beyond also had significantly different samples based on collection site (P 0.0023, CI 2.7 to 11.75), with capillary being on average 7.226 mg/dL higher.

Patients with BMI 30.0 to 39.9 had no significant difference between capillary and venous glucose (P 0.2393, CI -8.72 to 2.25), with capillary being 3.24 mg/dL higher on average. Patients with BMI 40 or higher also showed no significant difference between venous and capillary glucose (P 0.1053, CI -10.11 to 1.030), with capillary glucose being on average

4.52 mg/dL higher.
Nineteen (21%) patients failed their glucose test based on one or both samples. In 12 patients (13%), the two samples were in agreement for test failure. However, seven patients (7.8%) had discordant results where the glucose was less than 140 mg/dL for one sample and higher for the other. Furthermore, 4 of these patients passed by the venous sample and failed with the capillary, and the reverse in sample source occurred in 3 patients. None of the patients with discordant results failed their 3-hour confirmatory test.
Discussion: All pregnant patients undergo gestational diabetes mellitus (GDM) screening, and those with diabetes risk factors such as obesity and a history of GDM undergo early diabetes screening. The two-step approach commonly used in the United States is a one-hour 50-gram oral glucose tolerance test (OGTT) using a venous plasma glucose sample. If a patient fails (glucose > 140 mg/dL), she undergoes a 3-hour OGTT. Other accepted cutoffs for the one-hour OGTT are 135 mg/dL and 130 mg/dL. Venous sampling has some factors which lead to inaccuracy, including ongoing glycolysis in samples and decreased concentration compared to capillary/arterial samples in postprandial patients. Capillary sampling can be inaccurate in patients with microvascular disease such as shock, COPD, and Raynaud's disease. Our institution uses point-of-care testing (POCT) on capillary (finger-stick) using a glucometer with a 140 mg/dL cutoff. Studies are mixed in their endorsement of POCT for the diagnosis/screening of DM. This study suggests that capillary testing is more sensitive to hyperglycemia in postprandial patients and is more sensitive for non-obese, multiparous, and patients undergoing screening for gestational diabetes at 24 weeks GA and beyond. This study also suggests that if POCT/capillary testing is considered, the higher (140) cutoff may be the best. The findings do not show that there is a significant risk of missing diagnoses of GDM, but a higher incidence of needing 3-hour glucose tolerance testing due to its higher sensitivity.

A20 THE DEVELOPMENT AND EVALUATION OF ALTERNATIVE COMMUNICATION STRATEGIES TO FACILITATE INTERACTIONS WITH REFUGEES IN OBSTETRIC TRIAGE: A PRELIMINARY STUDY

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DOI: 10.54053/001c.120978
Purpose: In this pilot study, we investigate the potential of pictographs to facilitate communication and accelerate care for non-English speaking birthing people in triage. The immigrant and refugee populations have been steadily increasing in the United States; reproductive age women are a large percentage of those who seek medical care. Barriers to care include timely access to interpreters, which can delay treatment. Pictographs have been used successfully in medicine in various situations such as pharmaceutical instruction and symptom description. We searched extensively for obstetric triage pictographs with little success. To address this, we created a pictograph sheet specifically for common obstetrical complaints.
Methods: The most common reasons for visiting triage were ascertained. From these, key topics were identified for drawings. For each topic, the authors drafted scripts for a list of relevant actions. The actions for each topic were then represented by a professional illustrator in pictographs. Pictographs were developed using the following guidelines: focus on actions people should take, include prompts within pictures such as labels or arrows and exclude nonessential details such as room background and elaborate borders. After the pictographs were developed, its appropriateness, accuracy and relevance were reviewed and validated by two experts with experience in women' care. The experts perceived that the drawings represented the actions well in a simple and clean manner. The following concerns were depicted: decreased fetal movement, abnormal vaginal discharge, rupture of membranes, vaginal bleeding, vision changes, shortness of breath, nausea, contractions, headaches, and overall assessment of wellbeing.
Focus groups were developed collaboratively with Della Lamb, a resettlement agency. Inclusion criteria included women of reproductive age who are non-English speaking and currently pregnant. These focus groups were held at the University Health. Two focus groups were created: one with refugees from Afghanistan and one with refugees from the Congo. Each focus group was guided by a licensed medical interpreter of their native language: Dari and Swahili, respectively, and ranged from 3 to 4 participants.
One by one the pictograms were introduced to the group. Each participant was asked what they think the illustration represents. For participants' comfort, groups were not recorded; instead, notes were taken by observers during and after the discussion. The participants read the text and pictographs and were asked to identify if pictographs were clear, understandable, and acceptable.
Results: Congolese Focus Group: Participants' ages varied in their 30s. All had recently immigrated to the United States and lived in Missouri for less than 6 months. They were in the second trimester of their pregnancy and had at least one prenatal visit in the United States. They were all multiparous women with previous uncomplicated vaginal deliveries in their native country. All could read and write in Swahili but spoke no English. They all had no previous experience with the medical health system in the United States.
Afghani Focus Group: Participants' ages varied in their 20-30s. All had recently immigrated to
the United States and lived in Missouri for less than 3 months. 3 women were in their second trimester, 1 was in her third trimester. Aside from 1, the rest (3) were multiparous women with previous uncomplicated vaginal deliveries in their native country. 3 of them could read and write in Dari but spoke no English. They all had no previous experience with the medical health system in the United States.
Comprehension was significantly different between the two groups. Overall, the Congolese group of women misunderstood the purpose of the pictographs. No picture was un-

derstandable to the patients. It was also apparent that the patients did not realize these were issues for which to come to triage. There was also ambiguity regarding the color, i.e. they did not correlate green with nausea. The general prohibition sign was also absent in meaning for them. However, all of the patients expressed interest in learning what each picture meant and would like to have that option there if they came to triage and could not get an interpreter.
The Dari group did not understand shortness of breath or nausea. However, they were familiar with the other symptoms and able to identify those as reasons to come to triage. The patients were also familiar with colors and scales.
Conclusion: The pictograph-based approach might be an effective tool in developing health-care instructions for immigrant women with limited literacy skills. However, research is needed regarding limitations due to cultural backgrounds. Future research is also needed to compare the effect of pictograph-enhanced instructions with written text-based instructions on adherence to instructions and health outcomes.

A21 ROLE OF MATERNAL ABO BLOOD TYPE ON ADVERSE OBSTETRIC OUTCOMES

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DOI: 10.54053/001c.120980
Abstract: This retrospective chart review evaluates the potential role of maternal ABO blood type on various adverse obstetrical outcomes for both mother and neonate, including maternal hypertensive disorders, GDM, fetal growth restriction, clinical chorioamnionitis and other related disease processes.
Methods: Delivery records were obtained from the electronic medical record (EMR) for deliveries occurring between 1/1/2020 and 12/31/2022. Data were extracted from nurse entered fields in the EMR during the delivery encounter (blood type, maternal age, body mass index (BMI), gestational age at delivery, quantitative blood loss, mode of delivery, and presence of Category 2 tracing,). Missing data were obtained through chart review. Other variables obtained through chart review included maternal pregnancy history, clinical chorioamnionitis diagnosis, fetal growth restriction, stillbirth, prolonged rupture of membranes, indications for cesarean section, hypertensive disorders of pregnancy, and medical history including chronic hypertension, gestational and pre-gestational diabetes, thrombophilia, bleeding disorder, venous thromboembolism, seizure disorder, cholestasis of pregnancy, and COVID infection.
Comparisons between maternal blood type AB vs. all other blood types (group containing blood types A, B, and O) were completed using Student's t-tests, Mann Whitney U tests, Pearson's chi-square tests, or Fisher's Exact tests as statistically appropriate. Comparisons between the 4 individual blood types (AB, A, B, O) were completed using ANOVA, Pearson's chi-square tests, or Kruskal-Wallace tests as statistically appropriate. Post-hoc multivariate logistic regression was used to examine associations of interest identified on bivariate analysis.
Results: A total of 3263 deliveries were reviewed from between 1/1/2020 and 12/31/2022. Of these, 113 patients had blood type AB (3.5%) and 3150 had other blood types (1015 type A, 463 type B, 1672 type O). Patients with blood type AB had statistically higher age than other blood types (31.0 ± 5.2 vs. 29.9 ± 6.1, p=0.046) and lower BMI (31.2 [IQR 7] vs. 33 [IQR 9.5], p =0.009). There were no differences in nulliparity, gestational age at delivery, chronic hypertension, gestational diabetes, cholestasis of pregnancy, quantitative blood loss, postpartum hemorrhage, clinical chorioamnionitis, fetal growth restriction, stillbirth, category 2 tracing, or mode of delivery.
Patients with blood type AB had a gestational hypertension rate of 14% compared to 9% in other blood types (p=0.059). This association was further explored in multivariate logistic regression for prediction of gestational hypertension, which showed a statistically significant association for blood type AB vs. other (p=0.032, OR 1.91 (95% CI 1.06-3.43)) when controlling for age (p=0.074, OR 0.98 (95% CI 0.96-1.00)), BMI (p<0.001, OR 1.05 (1.04-1.07)), and gestational age (p=0.041, OR 1.06 (1.00-1.11)). However, patients with blood type AB had a rate of preeclampsia and superimposed preeclampsia of 3.6% compared to 8.9% in other blood types (p=0.05). This, too, was further explored in a regression for prediction of preeclampsia and superimposed preeclampsia, which did not show a statistically significant association for blood type AB vs. other (p=0.089, OR 0.36 (95% CI 0.11-1.17), when controlling for age (p=0.59, OR 0.99 (0.97-1.02)), BMI (p<0.001, OR 1.06 (1.05-1.08)), and gestational age (p<0.001, OR 0.88 (0.86-0.91)). A third regression model on any hypertensive disorder of pregnancy (including gestational hypertension, preeclampsia with or without severe features, eclampsia, and superimposed preeclampsia) did not show a statistically significant association for blood type AB vs. other (p=0.65, OR 1.13 (95% CI 0.66-1.95)) when controlling for age, BMI, and gestational age. Four-way comparisons between the 4 individual blood types (AB, A, B, O) did not show differences in any of the outcomes.
Conclusion: Previous investigations have found variable results regarding maternal blood type and adverse obstetrical outcomes including hypertensive disorders, gestational diabetes, and perinatal diseases. A previous study by Burgess et al. found that mothers with type AB blood had an increased risk of developing late onset preeclampsia, while Hentschke et al. found no association between preeclampsia and maternal blood type. Reisig et al. found a significant correlation between type A+ mothers and the development of preeclampsia. This retrospective chart review of 3263 deliveries was performed to further investigate these associations and address this knowledge gap. It has been shown that AB blood type is associated with stimulated antigen response, an increased prothrombotic state

and increased disease risk. In this study, maternal AB blood type was found to be associated with gestational hypertension. However, this association was likely due to a Type I error, as no other association with other hypertensive disorders, such as pre-eclampsia, was found to be significant. We found no other statistically significant correlations between maternal blood type and adverse obstetrical outcomes. Although previous studies have demonstrated a potential association between maternal AB blood type and adverse outcomes, our study, with a substantial sample size, did not yield similar results. In conclusion, physicians should not depend on maternal blood type as a reliable indicator of potential obstetrical outcomes or when identifying high-risk mothers.

A22 MATERNAL AND NEONATAL OUTCOMES WITH ONE ABNORMAL VALUE ON 100G THREE HOUR GLUCOSE TOLERANCE TEST IN PREGNANCY

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DOI: 10.54053/001c.120981

Purpose: The primary objective of this study was to compare pregnancy outcomes for patients with no elevated glucose values, one elevated glucose value, and 2 or more elevated glucose values on the 3-hour glucose tolerance test (GTT).

Methods: This was a retrospective chart review of obstetric patients seen by residents and attending physicians at a single institution from 2015 to 2020 who were required to complete a 3-hour glucose tolerance test (GTT). Data extracted from the maternal chart included demographic information, BMI, route of delivery, presence of preeclampsia, chorioamnionitis, shoulder dystocia and preterm labor. Data extracted from the neonatal chart included blood glucose level after birth, birth weight, Apgar scores, and if NICU admission was required. Continuous data were analyzed using one-way ANOVA to compare the 3 groups, followed by post-hoc Tukey HSD to compare the 1 abnormal value group to the control group. Dichotomous data were analyzed using Chi square tests. Logistic regression was performed using shoulder dystocia as the outcome.

Results: Patients with two or more elevated GTT values had higher age and BMI and were more likely to be prescribed diabetic medications compared to those with normal or one elevated value. They were also more likely to deliver at an earlier gestational age. Patients with one elevated GTT value experienced a statistically significant higher chance of shoulder dystocia compared to patients with all normal GTT results (OR 2.34; 95% CI 1.05, 5.20). Patients with two or more elevated values were more likely to have preeclampsia and a neonate requiring NICU admission. There were no differences in cesarean delivery rate, hemorrhage or chorioamnionitis between the groups.

Conclusions: Patients with one elevated GTT value are a special subset of patients who do not meet criteria for gestational diabetes, yet do not have normal glucose testing results. We hypothesize that this group is at higher risk of shoulder dystocia because these patients may have hyperglycemia but often do not receive the same type of monitoring, dietary education, medication initiation and induction timing as patients who meet criteria for gestational diabetes.

A23 ATTITUDES AND LIKELIHOOD OF OUTPATIENT CERVICAL RIPENING VIA SINGLE BALLOON FOLEY CATHETER AMONG OB/GYN PROVIDERS, NURSE PRACTITIONERS, AND OBSTETRIC LABOR & DELIVERY NURSES

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Introduction/Objectives: In certain parts of the United States and other developed nations, cervical ripening using the Foley catheter has already been introduced into the outpatient setting. An approved protocol exists at Loyola University Medical Center (LUMC), however usage is nonexistent. The primary aim of this study was to determine the current level of knowledge and familiarity regarding outpatient cervical ripening among OBGYN physicians and labor and advanced practice nurses at LUMC. The secondary aim of the study was to elucidate willingness to offer outpatient cervical ripening and potential reasons for support and hesitancy of this practice.

Methods: We created an 8-question anonymous survey to elucidate the current level of knowledge regarding outpatient cervical ripening and potential reasons that a provider may have in support of and against outpatient cervical ripening. The survey was distributed among General OBGYN attendings, fellows, residents, labor and delivery (LD) and advanced practice (APN) nurses at LUMC. Descriptive statistics and Fisher's exact test was performed on categorical data. An ordinal logistic regression model was used to compare the odds of being more likely to offer outpatient cervical ripening between attendings and resident physicians and the odds of being familiar with outpatient cervical ripening.

Results: 45 obstetric care providers completed the survey (comprising 20 OB/GYN residents, 10 General OB/GYN attendings, 13 LD, and 2 APN nurses). The response rate was 72%. 73% of all respondents had some degree of familiarity with outpatient cervical ripening, while 84% were familiar with the current body of research on this practice. Overall, the willingness to offer outpatient cervical ripening was 55% for the group, with only 11% unwilling. There was no difference in the willingness to offer outpatient cervical ripening between attendings and resident physicians (OR = 1.25, 95% CI: 0.32 – 4.88; p = .75) (Table

1). Major factors that drove willingness to offer were decreased induction to delivery time (77%) and patient convenience (85%). Major factors that drove unwillingness to offer OP cervical ripening were lack of fetal monitoring (66%), increased communication from patients (66%), and additional utilization of clinic resources/time for protocol implementation (66%). Resident physicians were significantly more likely to report familiarity with the current research on outpatient cervical ripening than nurses (OR=5.04; 95% CI: 1.24-20.45; p=.02) and attending physicians (OR=4.13; 95% CI: 1.05-17.78; p=.04). There was no difference in familiarity with research behind the practice between physicians and nurses respondents (p=.85). There was no association between those who reported the level of familiarity with the concept of outpatient cervical ripening and their willingness to offer (OR = 1.52, 95% CI: 0.40 – 5.78; p = .54) (Table 2).

Conclusions: Moving preinduction cervical ripening to an outpatient setting is equally efficacious and safe when compared to inpatient cervical ripening. However, despite having an existing protocol for cervical ripening using a Foley Balloon, this practice is not currently utilized at LUMC. Our survey suggests that though physicians and nurses are familiar with the concept and the research behind the practice, there are limiting factors for use. Further education regarding outpatient cervical ripening are essential for increasing practice adoption.

A24 ACCURACY OF OBGYN RESIDENT PHYSICIAN CLINICAL ESTIMATION OF FETAL WEIGHT IN TERM PREGNANCIES BEFORE AND AFTER A TEACHING CURRICULUM

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Purpose: Accurate prediction of fetal birth weight can improve antepartum and intrapartum shared decision-making with patients. Therefore, this study primarily sought to determine if OBGYN residents are more accurate at clinically estimating fetal weight via Leopold maneuvers following a teaching curriculum including a hands-on simulation model. Secondary aims were to determine if accuracy changes depending on training level, maternal or fetal characteristics.

Methods: A paired t-test was used to evaluate the primary aim of the teaching curriculum's effect on accuracy of correct fetal weight estimation. Nineteen residents served as their own controls to assess differences in accuracy by performing 10-12 estimates prior to and after the teaching curriculum. The curriculum consisted of a short verbal workshop with images of how to perform Leopold maneuvers, along with five models that were created to represent a gravid uterus with a fetus measured in the 5th, 25th, 50th, 75th, 95th percentiles. Residents were also tested on models with unknown weights to confirm accuracy prior to completing the teaching curriculum. The inclusion criteria during the fetal weight estimates pre- and post-curriculum was as follows: mother had to deliver during hospital admission; gestational age was between 37 weeks and 41 weeks; singleton pregnancy; mother had not undergone rupture of membranes; mother was English speaking. Accuracy was defined as estimated fetal weight within 10% of actual birth weight. Generalized Logistic Mixed Models were used to assess accuracy when adjusting for PGY level, maternal and fetal characteristics. Maternal characteristics including age, BMI, race, pregestational diabetes, gestational diabetes, polyhydramnios, and oligohydramnios were abstracted from maternal medical charts via retrospective chart review. Infant characteristics including fetal macrosomia, fetal growth restriction, and gestational age were also recorded. Analyses were conducted using SAS 9.4; all p-values were two-sided and p-values <0.05 were deemed statistically significant.

Results: Nineteen OBGYN residents performed a total of 443 Leopold maneuvers to estimate fetal weight. Overall, resident estimation accuracy within 10% of actual birth weight improved from 65.5% to 67.4% (p=0.49) after the teaching curriculum. Senior residents showed a greater improvement after the teaching curriculum than junior residents, however it was not statistically significant. This could be due to the low sample size. Increasing gestational age was associated with higher odds of accurate estimation of fetal weight (OR 1.34, p=0.0295). There were no other differences in accuracy based on other maternal or fetal factors.

Conclusion: The teaching of Leopold maneuvers is often not formalized in residency programs. This study did not show the expected improvement in accuracy of fetal weight estimation. Considerations that may impact clinical estimations include improving the simulation model, revising the teaching curriculum, and/or doing the teaching curriculum more frequently. Incorporating this hands-on simulation annually within the residency program educational curriculum to standardize the learning experience may be beneficial.

A25 PATIENT DECISION MAKING SURROUNDING EPIDURAL USE IN LABOR

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Introduction/Objectives: Labor is thought to be one of the most painful experiences in a woman's life, similar to pain caused by complex regional pain syndromes. Epidural analgesia has been proven to provide excellent pain relief, and many women in the United States choose this during their labor course. The decision to use, or not to use, neurax-

ial analgesia is complex and multifactorial, and has historically generated debate amongst patients and obstetric providers. In addition, many patients will also change their minds about desiring an epidural in labor during their admission to Labor & Delivery based on various factors encountered. This study aimed to determine the number of patients who change their mind about epidural in labor. We also aimed to characterize the factors involved in patients' decision about epidural analgesia during labor and to determine if these factors change throughout the labor and delivery course.

Methods: This study was a single-center, non-randomized, cross-sectional study that was performed at Loyola University Medical Center in the Labor & Delivery unit. The study population included all full-term nulliparous patients that were admitted to Labor & Delivery for full term labor or induction of labor. Patients were eligible if they were 18 years of age or older, and able to read, speak, and complete the study questionnaire in English. Exclusion criteria included previous vaginal delivery, contraindication to vaginal delivery, no plan to deliver during admission, and contraindication to epidural analgesia.

The patients completed one questionnaire about preferences for epidural and influencing factors prior to delivery, and one questionnaire after delivery with similar questions. Demographics were collected, as well as data about complications and details of their labor and delivery course.

Results: A total of 199 patients completed the study. The epidural rate was higher in patients who planned to receive it (n = 141/144 or 97.9%) than in patients who did not plan to receive an epidural (n = 49/55 or 89.1%). Further, there was significant discordance between patients' plans for an epidural and receipt of the medication. That is, only three (1.5%) patients who planned to receive an epidural did not receive one. Conversely, 49 (24.6%) patients who did not plan to receive an epidural received one.

Compared to patients who did not plan to receive an epidural, those who planned to receive the medication reported that their OBGYN physician (OR = 3.31, 95% CI: 1.80 – 6.06; p < .001), Anesthesiology physician (OR = 2.73, 95% CI: 1.50 – 4.96; p = .001), and labor nurse (OR = 2.50, 95% CI: 1.38 – 4.53; p =.002) were more important sources of information. Further, when compared to patients who did not plan to receive an epidural, those who planned to receive the medication reported they wanted to be more comfortable during the course of labor (OR = 4.84, 95% CI: 2.50 – 9.39; p < .001), that receiving an epidural would make their labor experience more enjoyable (OR = 27.17, 95% CI: 11.72 – 63.00; p < .001), and that getting an epidural was safe (OR = 5.91, 95% CI: 2.96 – 11.80; p < .001).

Conclusions: In conclusion, this study found that the majority of patients in our study population chose to receive an epidural in labor, regardless of their plans at the start of their admission. The most important factors in the decision were discussions with the OBGYN and Anesthesiology physicians. Patients who decided to receive an epidural, despite planning not to, reported that they wanted to be more comfortable during their labor course and that receiving an epidural would make their labor experience more enjoyable.

A26 UTILITY OF OBSTETRICS AND GYNECOLOGY RESIDENCY PROGRAM WEBSITES AND SOCIAL MEDIA

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DOI: 10.54053/001c.120992

Purpose: The COVID-19 pandemic radically changed the residency application process by ushering in a new era of virtual interviews. The objective of this observational study is to understand what information virtual interviewees prioritize most and how OBGYN Residency programs can improve the quality of their websites and social media.

Methods: Electronic surveys were sent to fourth-year medical students and OBGYN residents in postgraduate years one to four (PGY-1 to PGY-4). The surveys were sent to all OBGYN residency program coordinators and the coordinators were asked to disseminate the surveys to their residents. The survey remained available for six weeks; all responses were anonymous and voluntary. Questions were asked to determine the influence residency-specific websites and social media (Twitter, Instagram, Facebook) had on their residency selection process.

Results: There were 198 survey respondents at various levels of training: 31.82% fourth-year medical students, 20.71% PGY-1, 18.69% PGY-2, 13.13% PGY-3, and 15.66% PGY-4. From our cohort, fourth-year medical students, PGY-1, and PGY-2 residents had virtual interviews while PGY-3 and PGY-4 residents had in-person interviews. All survey respondents reviewed at least one program website with 61.62% reporting that they reviewed all program websites. Ranked on a scale of 1 (not important) to 5 (most important), both virtual and in-person interviewees reported that the most important information they were interested in finding on residency websites included current resident profiles (mean = 4.48), rotation schedule (mean = 4.27), application cycle information (mean = 4.26), post-residency employment or match (mean = 4.18), and salary and benefits (mean = 4.04). Compared to in-person interviewees, virtual interviewees were more interested in current resident profiles (P=0.227), salary and benefits (P=0.0124), and video tours (P=0.007).

Regarding social media, 91.92% reviewed at least one program's social media, with about a quarter reporting that they reviewed all program's social media. Virtual interviewees accessed social media more than in-person interviewees (P<0.001). The majority of respondents reported websites (89%) and social media (80%) were at least somewhat important to their decision to apply to a program. Social media did not influence the decision to apply as much for in-person interviewees compared to virtual interviewees (P<0.001). 78.79% of respondents reported websites or social media were at least somewhat important to their overall ranking of programs. Websites and social media did not influence ranking as much for in-person interviewees compared to virtual interviewees (P<0.001).

Conclusion: With the shift to virtual interviews, websites and social media platforms have become a vital part of the

application process. Compared to in-person interviewees, virtual interviewees engage and value websites and social media more. This may represent a larger, evolving change in how interviewees evaluate programs' goodness-of-fit the new era of virtual interviews. We recommend keeping programs' virtual platforms up to date and full of information to give residency candidates a comprehensive view of the programs.

A27 ROLE OF MATERNAL ABO BLOOD TYPE ON NEONATAL OUTCOMES

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This retrospective chart review investigates the association between maternal AB blood type and neonatal outcomes including birthweight, NICU transfer rate, Apgar scores, cord blood pH levels, clinical chorioamnionitis, and stillbirth compared to other maternal blood types (A, B, and O).

Methods: Delivery records were examined from the electronic medical record (EMR) for deliveries occurring between 1/1/2020 and 12/31/2022. Some variables were autofilled from nurse-entered data into the EMR during the delivery encounter (blood type, maternal age, Body Mass Index (BMI), gestational age at delivery, mode of delivery, presence of Category 2 tracing, infant birth weight, NICU transfer, Apgar scores, and cord gas values). Missing data were obtained through chart review. Other variables obtained through chart review included maternal gravida and para numbers, clinical chorioamnionitis diagnosis, fetal growth restriction, stillbirth, indications for delivery and cesarean section, hypertensive disorders of pregnancy, and medical history including chronic hypertension and gestational and pregestational diabetes.

Comparisons between maternal blood type AB vs. all other blood types (group containing blood types A, B, and O) were completed using Student's t-tests, Mann Whitney U tests, Pearson's chi-square tests, or Fisher's Exact tests as statistically appropriate. Comparisons between the 4 individual blood types (AB, A, B, O) were completed using ANOVA, Pearson's chi-square tests, or Kruskal-Wallace tests as statistically appropriate. Post-hoc multivariate linear regression was used to examine associations of interest identified on bivariate analysis.

Results: A total of 3263 deliveries were reviewed between 1/1/2020 and 12/31/2022. Of these, 113 patients had blood type AB (3.46%) and 3150 had other blood types (1015 type A (31.07%), 463 type B (14.18%), 1672 type O (51.28%)). Patients with blood type AB had statistically higher age than other blood types (31.0 ± 5.2 vs. 29.9 ± 6.1, p = 0.046) and lower BMI (31.2 [interquartile range 7] vs. 33 [IQR 9.5], p = 0.009). There were no differences in nulliparity, gestational age at delivery, chronic hypertension, gestational diabetes, cholestasis of pregnancy, clinical chorioamnionitis, fetal growth restriction, stillbirth, category 2 tracing, or mode of delivery.

No statistically significant differences were observed in birthweight between infants born to mothers with blood type AB (mean: 3227 grams, SD: 694 grams; p = 0.158) compared to those born to mothers with other blood types (mean: 3195 grams, SD: 734 grams; p = 0.158). The rates of NICU transfer were similar between the two groups, with 12% of infants born to blood type AB mothers requiring NICU admission compared to 17% of infants born to mothers with other blood types (p = 0.162). Apgar scores at 1, 5, and 10 minutes did not significantly differ between the two groups (p > 0.05). Additionally, there were no significant differences in cord arterial pH (AB: 7.26 ± 0.06 vs. others: 7.25 ± 0.07; p = 0.649) and cord venous pH (AB: 7.33 ± 0.06 vs. others: 7.32 ± 0.06; p = 0.860).

Furthermore, when comparing the individual maternal blood types with 4-way comparisons, similar findings of no significance were observed for Apgar scores, cord arterial and venous pH levels, clinical chorioamnionitis diagnosis, fetal growth restriction diagnosis, stillbirth, category 2 notes, and delivery or C-section indication for category 2 tracing (p > 0.05). The Kruskal Wallace test comparing birthweight between the 4 blood types showed p = 0.055. A multivariate linear regression for birthweight did not show a significant association for blood type (p = 0.201) when controlling for maternal age, BMI, hypertensive disorder of pregnancy, chronic hypertension, diabetes, and gestational age.

Conclusion: The impact of maternal ABO blood type on neonatal outcomes remains a topic of interest in obstetric and perinatal medicine. We have previously demonstrated newborn AB blood type is associated with significant morbidity and mortality with necrotizing enterocolitis (NEC), as well as a higher incidence of respiratory distress syndrome, retinopathy of prematurity, and sepsis (McMahon et al., 2019). Previous studies have independently provided evidence of adverse pregnancy outcomes for type AB mothers (Fan et al., 2023) and type AB neonates. However, there are conflicting findings regarding the association between maternal ABO blood type and neonatal outcomes. Our findings suggest that neonatal outcomes, including birthweight, NICU transfer rate, Apgar scores, cord blood pH levels, clinical chorioamnionitis, and stillbirth do not significantly differ between infants born to mothers with blood type AB and those born to mothers with other blood types. These results indicate that other factors may play a more substantial role in determining neonatal health and outcomes. Further research with additional perinatal measures is warranted to explore the potential influence of blood type and other factors on neonatal health.

A28 NEUTROPHIL TO LYMPHOCYTE RATIO VALUES IN LATE PRETERM AND TERM PATIENTS WITH EVIDENCE OF CHORIOAMNIONITIS ON PLACENTAL HISTOPATHOLOGY: A RETROSPECTIVE COHORT STUDY

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Introduction: Neutrophil to lymphocyte ratio (NLR) is an inexpensive biomarker that may aid in the prediction of adverse pregnancy outcomes, though data remains sparse at this time. Previously published research regarding chorioamnionitis almost exclusively focuses on preterm labor and preterm prelabor rupture of membranes before 34 weeks of gestation and suggests an increase in NLR in those patients with chorioamnionitis identified on placental histopathologic examination. However, chorioamnionitis in the late preterm and term timeframe also represents a significant source of maternal and neonatal morbidity. Therefore, the primary aims of the study were to: 1) compare obstetric admission NLR values among those with and without evidence of histopathologic chorioamnionitis 2) evaluate the efficacy of NLR in identifying histopathologic chorioamnionitis and 3) compare NLR values pre- and postdelivery in the setting of a placental histopathologic chorioamnionitis diagnosis in patients beyond 34 weeks of gestation.

Methods: A retrospective electronic chart review was performed at an American urban safety net hospital. Institutional review board approval was obtained (UMKC #2093657), and patient consent was waived due to the retrospective nature of the review. Obstetric encounters were included if a complete blood count (CBC) with differential was performed on admission and postpartum, the subject underwent a trial of labor, a placental histopathologic examination was performed, and delivery occurred beyond 34 0/7 weeks of gestation. Subjects were excluded if an extrauterine infection was present during the hospitalization or the subject received corticosteroids within two weeks of delivery. Postdelivery placentas were examined by the University's pathology department. Statistical analyses were performed with receiver operator curves, Mann-Whitney U test, and Wilcoxon Signed-Rank Test where applicable, with a significance level $p < 0.05$.

Results: Three hundred seventy-nine patient encounters were reviewed, with only 30.1% of all encounters with placental histopathology available. A total of 58 subjects met the inclusion criteria and 14 additional subjects were excluded due to extrauterine infection (n=1), SARS-CoV-2 diagnosis (n=5), and late preterm steroids administration (n=8). There was no difference between those subjects with and without histopathologic chorioamnionitis in median gestational age at the time of delivery (39 0/7 versus 39 1/7 weeks of gestational, p=0.960), median time of admission CBC collection to delivery (0.98 versus 0.98 days, p=0.340), and timing of collection of postpartum CBC (1.0 versus 1.0 days postpartum, p=0.631).

Predelivery neutrophil to lymphocyte ratio values were compared in subjects with and without histopathologic chorioamnionitis and there was no significant difference in median values (4.11 versus 4.52, p=0.683). The predelivery NLR predicted the presence of chorioamnionitis poorly (AUC 0.518, 95% CI [0.326, 0.711], p=0.843). The postdelivery NLR was a slightly better predictor of chorioamnionitis (AUC 0.634, 95% CI [0.454, 0.815], p=0.147), but did not reach statistical significance. Although there was no significant difference in postpartum NLR values in those with and without chorioamnionitis on final histopathology (6.73 versus 4.63, p=0.147), the value was notably higher in the former.

When the antepartum and postpartum NLR were compared across individual subjects in a paired fashion, there was a significantly higher postpartum NLR in those subjects both with and without chorioamnionitis on final histopathology (with chorioamnionitis: antepartum median 4.52 versus postpartum 6.73, p=0.012, n=15; without chorioamnionitis: antepartum median 4.11 versus postpartum 4.63, p=0.043, n=29).

Conclusion: Though predelivery NLR is a poor predictor of chorioamnionitis, significantly higher postpartum NLR values in the sample population suggest an increase in NLR for all laboring patients, but a more pronounced increase occurs in those with inflammatory placental findings. While the study is limited by a heterogeneous sample population, nonparametric evaluation, and small sample sizes, the data does add to the paucity of preexisting literature that seeks to utilize NLR in the prediction of chorioamnionitis during the labor course. Larger longitudinal studies may help better characterize the rising NLR values over the course of labor and delivery as seen in our study. Neutrophil to lymphocyte ratio values across the spectrum of disease states and gestational ages in pregnancy may help isolate other inflammatory processes that impact perinatal outcomes.

A29 VAGINAL DELIVERY SURGICAL TRAY UTILIZATION AND COST SAVINGS ANALYSIS

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Introduction: The underutilization of surgical trays increases healthcare costs and strain on sterile processing operations. Other surgical specialties have reported instrument underutilization rates, including a reported rate in gynecology of 20.5% (26.3% in abdominal, 13.6% in vaginal, and 19.4% in laparoscopic surgeries), but data in obstetrics

is lacking. The objective of this study is to characterize the instrument utilization rate in vaginal deliveries and to estimate potential cost savings with tray modification. Secondary objectives include determining if utilization correlates with the presence of an obstetric laceration and estimated blood loss (EBL).

Methods: Instrument utilization data was prospectively collected through a data collection form which was completed immediately after vaginal deliveries. The form was completed by a resident physician or an assisting scrub technician immediately following the vaginal delivery at a tertiary care safety net hospital in 2022. The physician team classified perineal lacerations as first, second, third, or fourth-degree. Vaginal or vulvar lacerations without a perineal component were defined as "other." The EBL from delivery was also determined by the physician team. Descriptive statistics were calculated as well as Mann Whitney U and Spearman's rank order correlation analyses.

The institutional review board deemed the project to be a quality improvement (#2073102-QI) and patient consent was waived.

Results: The instrument utilization was collected for fifty vaginal deliveries. Each vaginal delivery tray contained 18 instruments. The median vaginal delivery tray instrument utilization rate was 27.7% (IQR 26.4-38.9). A median of only 5.0 instruments (IQR 4.7-7.0) were used per delivery. The most used instruments for all deliveries were Kochers (2), Lister bandage scissors (2), and ring forceps (1). In addition to those 5 instruments, deliveries requiring repair of an obstetric laceration also utilized a straight Mayo scissor and 6-inch Hegar needle holder.

Twenty-one subjects (42.0%) experienced a delivery-related laceration including first-degree laceration (n=3), second-degree laceration (n=11), third-degree laceration (n=2), and other (n=5). There was a significantly higher median number of instruments required when a delivery-related laceration occurred (7.0 versus 5.0 instruments, $p<0.001$).

There was no correlation between EBL and the number of instruments used in vaginal deliveries ($p=0.96$). Two deliveries required additional instruments from individually wrapped sterile packages, both of which were right-angle retractors.

Conclusion: This is the first study to characterize instrument utilization rates in an obstetric setting. Only 5 of 18 instruments were used per delivery. This corresponds to an instrument utilization rate of 27.7%, which is higher than what other specialties have reported outside of obstetrics and gynecology (13-26%). Assuming the literature reported costs ranging from $ 0.51 to $3.19 per sterilized instrument, a 33% instrument reduction in the tray would save our institution of 1,700 deliveries between $5,196 - $32,538 per year.

While the study is limited by a small sample size and a convenience sample type which may introduce bias against more complicated cases, lacerations requiring the repair of obstetric anal sphincter injuries (OASIS) were represented in the sample (4%), consistent with larger population studies. Regardless, this study provides baseline data that may motivate a broader assessment of current utilization rates among other institutions that can inform subsequent sterile tray design. This may not only help decrease costs but also address hospital labor shortages concerning sterile processing.

Future studies may utilize larger, multi-institutional cohorts to confirm these preliminary findings of tray underutilization and introduce greater specificity regarding vaginal delivery sterile tray design and cost savings.

A30 CANNABIS HYPEREMESIS SYNDROME: AN UNDERRECOGNIZED CAUSE OF NAUSEA AND VOMITING IN PREGNANCY

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Introduction: Cannabis Hyperemesis Syndrome (CHS) is characterized by refractory and recurrent nausea and vomiting in birthing people with chronic cannabis use and is emerging as an increasingly common diagnosis in patients who present to the emergency department. The objective of this retrospective case series was to describe presentation, management and outcomes of CHS during pregnancy.

Methods: Patients were identified by the investigator at two tertiary care centers in Kansas City from January 2019 to October 2021. Patients were included if (1) intrauterine pregnancy (2) refractory and recurrent nausea and vomiting without acute cause, and (3) documented chronic cannabis use which preceded symptom onset were noted. The study was approved by the UMKC IRB (#308059).

Results: Twelve patients were identified who met inclusion criteria, ranging in age from 17 to 32 years (mean 23.2 ± 4.5). Eleven patients reported daily cannabis use. The mean number of emergency department visits during pregnancy for nausea and vomiting was 8.9 (± 7.1). Patients presented at a wide range of gestational ages, between 4 and 37 weeks (mean 19.6 ± 9.8). Compulsive hot water bathing for symptom relief was documented in 33% of cases (4 of 12). The rate of fetal growth restriction in this series was 44% (4 of 9). Despite counseling, only one patient successfully discontinued cannabis use.

Conclusions: CHS should be considered in the differential diagnosis of nausea and vomiting in pregnancy. Patients who meet criteria should be counseled about cannabis cessation as part of treatment recommendations.

A31 DOES PHARMACOLOGIC TREATMENT OF DEPRESSION ALTER PRENATAL CARE COMPLIANCE IN SUBSTANCE USE DISORDER

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Objective: To evaluate whether antidepressant utilization

alters prenatal compliance in patients with Substance Use Disorder (SUD) enrolled in a multidisciplinary treatment program.

Methods: Patients in a cohort study of women enrolled in an SUD program between 2015 and 2022 were eligible. Patients with the co-morbidity of depression at the initial behavioral health assessment were selected. Use of antidepressant medications was recorded at enrollment and during prenatal visits. Prenatal care compliance was the primary outcome. Edinburgh scores and neonatal outcomes were secondary outcomes. Fisher's Exact test was used in analysis of variables.

Results: 240 of 456 (52%) patients had a history of depression. 40 of 240 (17%) were on antidepressants at enrollment versus 7 of 240 (3%) were started on antidepressants during pregnancy. 20 patients on antidepressants out of 47 (61%) having an Edinburgh score ⩾12 at enrollment while 54 patients (62%) of the 193 women not treated scored ⩾12, P=1.0. SSRIs were the most commonly used drugs (85%). Demographic data was similar between groups. A GAD 7 scores ⩾10 was common in patients on medication (47%, n=15), and untreated, (54%, n=61), P=.21. The AAS score was positive for abuse in 27 women on medication (57%) versus 113 (59%) untreated, P=1.0. Patients treated with antidepressants were more commonly on Medication-Assisted Treatment (MAT) at enrollment, 14/47 (32%) vs untreated 23/193 (13%), P=.005. Prenatal visit compliance did not differ between the groups of treated (48% ± 27%) vs untreated (50% ± 28%), P=0.65. Gestational age at delivery, and birthweight did not differ between those treated and not treated with antidepressants. NAS treatment 46% (n=21) vs 44% (n=82), P=.87; and length of hospital stay 14.7 ± 12.0 vs 14.8 ± 20.4, P=.99, were similar.

Conclusions: Pregnant patients enrolling in substance use program have a high rate of co-existing depression, anxiety and abuse with a minority of patients on antidepressants despite similar risk profiles. Patients on antidepressants were more commonly on MAT on enrollment. Early treatment was not associated with worsening rates of prenatal care attendance, preterm birth, NAS or neonatal hospitalization. Increased frequency of treatment appears warranted in this population based on elevated Edinburgh scores.

A32 INVESTIGATING PLACENTAL PATHOLOGIES IN COVID-19 POSITIVE PREGNANCIES AMONG THE PRE-COVID AND COVID ERA

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Purpose: The overall objective of this study was to better understand the impact of COVID-19 infection during pregnancy, especially effects on placental pathologies; our central hypothesis is that COVID-19 positive placentas will demonstrate more placental vasculopathies than the pre-pandemic placentas and post-vaccine placentas.

Methods: Under IRB-approved protocols (MU IRB #2022984, #2044102, #2057162), participants were recruited for this study, consented via phone, and consented for research studies using RedCAP. All research participants consented to having their placentas examined after delivery. Of note, multiple research participants were found to have prior deliveries at the University of Missouri Women and Children's Hospital, and placentas from those previous deliveries were available for comparison purposes.

Placentas were broken up into four groups, depending on if they belonged to women: (a) positive COVID-19 testing during pregnancy (b) never having a positive COVID-19 test during pregnancy, (c) pre-pandemic placenta for a woman with positive COVID-19 testing, or (d) pre-pandemic placenta for a woman who never had a positive COVID-19 test during pregnancy. These placentas were compared and contrasted for gross and microscopic pathologic findings associated with COVID-19 infection. Specifically, vasculopathies such as villous thrombi, perivillous fibrin deposition, and placental infarcts or necrosis. Signs of infection were also assessed, including acute chorioamnionitis or funicitis and acute chorionic plate vasculitis. More than twenty unique pathologic diagnoses were found among all placentas examined, and these findings were confirmed by a board-certified Anatomic Pathologist (EJ).

Histologic examination consisted of hemoxylin and eosin staining after formalin fixation and paraffin-embedding of the histologic sections. Micropictography was utilized to obtain images of significant pathologic findings. Infection was confirmed using reverse transcriptase polymerase chain reaction (RT-PCR) to detect SARS-CoV-2.

Additionally, a thorough chart review was performed on the pregnancy course of each research participant associated with each placenta. Specifically, APGAR scores, live-born status, newborn neonatal intensive care unit (NICU) stays, maternal vaccination status, and maternal comorbidities were identified.

Results: 59 participants consented to having their placentas examined after delivery in 2020-2021. Of these 59 participants, 31 delivered at the University of Missouri Women and Children's Hospital (WCH). Of these 31 participants, 12 women had their placentas sent for pathologic examination. Of these 12 women, 10 had a prior delivery at WCH pre-Covid, 1 had 2 previous deliveries at WCH pre-Covid, and one did not have a past delivery at WCH pre-Covid. 3 of these 12 women tested positive for COVID-19 infection while pregnant.

Overall, 24 placentas were examined from 2020-2021, with the following major findings:

1. Nine (9) placentas from research participants negative for COVID19, as compared to pre-pandemic placentas from the same mothers, had similar outcomes including the incidence of acute and chronic decidual inflammation. Interestingly, these pre-pandemic placentas had higher rates of chorioamnionitis and funicitis.
2. Three (3) placentas from research participants with positive COVID-19 tests, compared to pre-pandemic placentas from the same mothers, had no major differences. Among this group, one patient had more

severe pathologic vascular disease while COVID positive, compared to her earlier, pre-pandemic placenta in which that earlier pregnancy course involved preeclampsia. Additionally, positive COVID19 results earlier in pregnancy exhibited more severe pathologic findings than those testing positive during later stages of pregnancy.

3. COVID-19 positive placentas delivered had more severe and diffuse infarcts than the COVID-19 negative placentas.

   Overall, in this limited case series, COVID-19 infection did not impact the clinical outcomes of either mother or newborn. No differences were seen in APGAR scores, live birth outcomes, percentile size (for gestational age), or days of NICU stay. Additionally, no women in this case series were found to be vaccinated for COVID-19 before the date of delivery.

   Conclusion: Microscopically, placentas from women with mild COVID-19 disease may be associated with a slightly higher risk of placental infarctions, and more severe placental findings with COVID-19 infections that occur earlier in pregnancy. The clinical significance of mild COVID-19 infections during pregnancy remains to be fully characterized and may warrant further investigation. Despite the end of the COVID-19 public health emergency, there also remain concerns about neurodevelopmental outcomes in the offspring of mothers who test positive for SARS-CoV-2 during pregnancy (Edlow, et al). More comparative studies with larger sample sizes, would help elucidate the potential effects of COVID19 infection on placental pathologies, as well as maternal and newborn outcomes.

A33 A REVIEW AND CASE SERIES OF UTERINE LIPOLEIOMYOMATA

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Purpose: The purpose of this case series is to understand the prevalence, clinical significance, pathophysiology, pathology findings, and workup of uterine lipoleiomyomas.

Methods: This case series, with cases in February and March of 2023, includes the presentation, clinical management, and pathologic diagnosis of two separate uterine lipoleiomyomas. Separate chart reviews were performed on each patient, including frozen and permanent section pathologic findings. Micropictographs were obtained from hematoxylin and eosin-stained slides. This project was acknowledged as "IRB-exempt" by the MU Institutional Review board.

Results: Case 1: A 51-year-old G3P2 woman presented with six months of severe postmenopausal bleeding, severe left-lower quadrant pelvic pain, and lightheadedness. A transvaginal ultrasound revealed a heterogeneous, thickened endometrial echo of 3.9 centimeters and a probable left ovarian dermoid cyst. CT showed distension of endometrial cavity due to polyps and/or submucosal masses, as well as a fat-containing mass in the uterine corpus. Hysteroscopy with dilation and curettage was performed with pathology of high-grade malignancy. Differential diagnosis at this time included high-grade stromal sarcoma, undifferentiated carcinoma, adenosarcoma, or malignant mixed Mullerian tumor. Patient underwent MRI due to concern for malignancy, which showed FDG-avid endometrial thickening with no other FDG-avid areas of concern. Histopathologic diagnosis found carcinosarcoma of the uterus, two positive lymph nodes, and an incidental finding of lipoleiomyoma. Plan for medical management with gynecologic oncology will include chemotherapy and vaginal cuff brachytherapy for uterine carcinosarcoma.

Case 2: A 50-year-old G5P5 woman presented with increasing vaginal spotting and worsening urge incontinence. CT showed increased size of heterogeneous mass in right lateral uterine wall, consistent with previously identified fibroid/leiomyoma. An adjacent fat-containing lesion was identified within the uterine wall. Patient underwent MRI which revealed large uterine mass at the fundus, with an associated fatty component. Due to the abnormal rate of fibroid growth, and the fat component, there was concern for uterine sarcoma and/or malignant transformation of leiomyoma. Histopathologic diagnosis found lipoleiomyoma with benign atrophic endometrium, paratubal cysts of bilateral fallopian tubes, and follicular cyst of the right ovary. Follow-up in one year was recommended.

Conclusion: Lipoleiomyomas are uncommon benign entities, occurring most commonly in postmenopausal women, similarly to uterine fibroids. While asymptomatic patients can be managed conservatively, these tumors can cause vaginal bleeding, pain, and urinary or fecal incontinence and can be definitively treated with hysterectomy. While imaging is necessary to initially characterize the lesion and determine concern for malignancy, histopathologic diagnosis remains the gold standard for diagnosis. Lipoleiomyomas are associated with other gynecologic malignancies, metabolic disorders, and rarely tumor-to-tumor metastasis. For this reason, careful clinical evaluation and surgical management are required for complete evaluation of the patient.

A34 PERCEPTIONS OF MATERNAL MORTALITY IN THE PREGNANT MISSOURI BIRTHING POPULATION

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DOI: 10.54053/001c.121001

Introduction: The US has the highest maternal mortality

(MM) rate among developed countries with significant disparities between Black, Hispanic, and Native American birthing people and their White counterparts. Missouri ranks among the 10 states with the highest MM. It has been presumed that the general population's lack of knowledge surrounding the issue and distrust of the medical system both contribute significantly to MM. Thus, suggestions for improving maternal mortality have been centered primarily around education. To date, there has been a paucity of research surrounding the knowledge and perceptions of MM in the general population. This study sought to understand the perceptions of MM among a representative sample of pregnant people in Missouri.

Methods: This is an anonymous, cross-sectional survey conducted from May 2022-August 2022 across the state of Missouri. The Missouri Perinatal Quality Collaborative/ Maternal-Child Learning and Action Network (LAN/PQC) iteratively developed a 46-question survey, distributed in both English and Spanish, to elicit opinions of birthing people in Missouri, assessing their knowledge about state-specific maternal mortality issues. The target population included individuals 18 years and older with a Missouri zip code who identified as someone of birthing potential. Those without a Missouri zip code, who identified as male, and not pregnant were excluded. All survey questions were uploaded into a secure database (REDcap) and accessible to participants through a survey link. The survey was pilot tested by placing a QR code and survey link on social media platforms by the authors. Once feasibility was confirmed, an additional survey link was distributed through an email listserv purchased from a data distribution platform (Dynata). Demographic data, including age, race, pregnancy status, number of lifetime pregnancies, number of living children, and preferred language, were recorded. All survey responses were documented without patient identifiers following signed, informed consent. The survey was aimed to sample 1500 respondents online racially representative of the Missouri birthing population. The study was approved by Saint Luke's Hospital of Kansas City IRB and was designed to follow STROBE guidelines for the reporting of cross-sectional studies.

Participants were asked general knowledge about maternal mortality including whether or not they knew it was a public health issue in Missouri, if they knew someone who died as a result of pregnancy, and if they themselves had ever been concerned about dying as a result of pregnancy. These results were reported as "yes" or "no" responses. Qualifying questions to positive responses included whether the perceived rate of maternal mortality in Missouri was high or low, suspected underlying medical and social causes and timeframe, and personal relationship to the decedent in the case of known death. For those who answered positively about concern for dying in pregnancy, qualifying responses were recorded on a Likert scale (1 for not at all concerned, 2 for a little concerned, 3 for somewhat concerned, 4 for very concerned and 5 for extremely concerned). Respondents were also asked to identify certain groups of people according to race, income status, insurance status, urban versus rural place of residence, educational status, and marital status that may suffer disproportionately from maternal deaths.

Statistical analysis was performed in SAS 9.4. Descriptive statistics are reported in percentages and counts for categorical outcomes and means ± SD for continuous outcomes. Knowledge questions were analyzed as yes or no responses and reported in frequencies. Perceived etiologies for maternal mortality are reported as nominal data in percentages. Logistic regression was performed utilizing employment status, insurance status, marital status, education attainment, and difficulty with finances as predictors variables. Questions were stratified by age, race, and self-reported zip code.

Results: Eighty-five people met inclusion criteria with an average age of 30.4 ±7.6 and parity of 3.1±2.0. Of those, 65.9% identified as White, 25.9% as Black, 8.2% as Hispanic, 3.5% as Native American, 4.7% as Asian, and 2.4% as Hawaiian Native or Pacific Islander. Over 85% reported awareness that MM was an issue in Missouri, and 59.2% reported they believed those numbers to be high. Thirty percent of people reported knowing someone who had died from a pregnancy-related cause; of those, 73.9% reported that the person who died was a family member or personal friend. Only 21.2% of pregnant people reported not being concerned about dying during their pregnancy. Seventy-five percent of the pregnant cohort reported trusting their medical providers' recommendations.

Discussion: Our study found that over 85% of pregnant people in Missouri are aware of MM, and a majority are aware that the MM rate is high. This contradicts commonly held beliefs that our patients' lack of knowledge may be an opportunity for our efforts. Our survey also revealed that 75% of patients trust their medical providers despite much blame being placed on distrust of the health care system. Further surveys of health care providers may be helpful to reveal how exactly MM can be improved.

A35 ENDOSCOPIC AND ROBOTIC ASSISTED TRANSVAGINAL HYSTERECTOMY: A FEASIBILITY STUDY

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DOI: 10.54053/001c.121002

Purpose: To perform a feasibility study of the novel approach "transvaginal natural orifice transluminal endoscopic surgery" (vNOTES) with Da-Vinci robotic assistance. The primary objective of the study is to describe best surgical practices using a case series of robotic-assisted vNOTES in select patients.

Methods: An institutional review board approved prospective single-arm, surgical intervention trial was performed. Outcomes measured included operative time, operative complications, estimated blood loss, hemoglobin changes, postoperative pain scores, and need for conversion to traditional robotic or laparoscopic hysterectomy via the abdominal approach. Patients who were referred to the gynecology oncology clinic to undergo hysterectomy for benign indi-

cations and met the study's inclusion and exclusion criteria were consented. Patients were included if they had benign causes of abnormal uterine bleeding or pelvic pain, endometrial hyperplasia, cervical dysplasia, need for risk-reducing surgery for hereditary cancer syndromes or need for transgender-affirming surgery. Patients were excluded if they had prior rectal surgery, evidence of fixed uterus, posterior cul-de-sac obliteration and/or adhesions based on physical exam and/or imaging, evidence of narrowed vagina on physical exam, virginity, current pregnancy or history of advanced pelvic organ prolapse. Furthermore, obesity, nulliparity, or no history of spontaneous vaginal delivery are characteristics that may be deemed as risk factors for failure of a transvaginal approach and clinical judgment was used to determine eligibility for study inclusion. Patients deemed eligible were then enrolled for robotic-assisted transvaginal hysterectomy and bilateral salpingectomy with or without oophorectomy.

In the pilot case, the surgery began as a traditional vaginal hysterectomy starting with a posterior colpotomy followed by transection and ligation of the bilateral uterosacral ligaments. Identification of the vesicouterine peritoneal reflection anteriorly was difficult and the GelPoint V-Path was placed only through the posterior colpotomy. The Da Vinci robot was docked and a 0-degree Da Vinci camera, monopolar scissors, Vessel Sealer and AirSeal assist port were placed through the 9.5 cm GelPoint transvaginal platform in a diamond configuration. The Vessel Sealer was used to transect across the uterine arteries. Due to poor visualization, conversion to the traditional abdominal robotic approach was required and the remainder of the surgery was completed in the usual fashion.

In the subsequent two cases, a single laparoscopic port was placed abdominally to perform an initial survey of the pelvis. The abdomen was then deflated and the surgery was initiated in a fashion similar to the pilot case. Anterior and posterior colpotomy were successfully performed and the GelPoint platform was optimally placed. Vagina-pneumoperitoneum was obtained to 15 mmHg. In the second case, the 30-degree Da Vinci camera, the Vessel Sealer, ProGrasp Forceps, monopolar scissors, AirSeal assist port and a 9.5 cm GelPoint transvaginal platform were utilized. In the final case, three robotic arms were used rather than four (0-degree Da Vinci camera, the Vessel Sealer, ProGrasp Forceps) along with an AirSeal assist port through a 7 cm GelPoint transvaginal platform to improve ergonomics. The remainder of surgery was completed with robotic assistance with good visualization of the upper abdomen, pelvis and bilateral ureters. The vaginal cuff was closed by placing multiple figure-of-eight sutures similar to a traditional vaginal hysterectomy.

Results: Two cases were successfully completed while the pilot case required conversion to the traditional robotic abdominal approach. This was due to difficulty in identifying the anterior vesicouterine peritoneal reflection. Intra-abdominal laparoscopic survey revealed anterior cul-de-sac adhesions with pathology-confirmed endometriosis. The most ergonomic set up was found to consist of three robotic arms (0-degree da Vinci camera, the Vessel sealer, ProGrasp Forceps) and an AirSeal assist port through a 7 cm GelPoint transvaginal platform in a diamond configuration. In the two successful cases, both patients had uncomplicated postoperative courses with pain scores of 2-3 on floor arrival and 0 at their two- and six- week post-op visits. Estimated blood loss of the second and third cases were 75 cc and 30 cc, respectively. The operative time of the third case significantly improved compared to the second case, from 195 minutes to 99 minutes.

Conclusion: We demonstrated that robotic-assisted vNOTES is a feasible option in appropriately selected patients. As demonstrated by operative time changes, there exists a learning curve even when performed by experienced robotic surgeons. Compared with traditional vaginal hysterectomy, robotic surgery allows for improved visualization of and access to the adnexal structures and upper abdomen with improved dexterity in comparison to traditional laparoscopy instruments.

A36 EFFECTIVENESS OF A HYSTEROSCOPIC TISSUE REMOVAL SYSTEM DEVICE FOR HYSTEROSCOPIC MYOMECTOMY ON PATIENTS' QUALITY OF LIFE: A RANDOMIZED CLINICAL TRIAL

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Background: This is the first prospective randomized analysis comparing outcomes of medical therapy versus hysteroscopic myomectomy using the TruClear™ hysteroscopic tissue removal system to treat heavy menstrual bleeding from sub-mucosal leiomyoma(s).

Objective: To evaluate the quality of life in patients treated for submucosal leiomyomas after hysteroscopy myomectomy compared to medical therapy.

Study Design: Setting: private practice and community-based hospital; subjects: female patients with symptomatic submucosal leiomyomas from 2014-2017. A total of 69 patients enrolled, with 47 completed. Statistical analysis used: randomized clinical trial. Each patient was randomized to oral contraceptive pills/progesterone releasing intrauterine device or hysteroscopic myomectomy. Each patient was to complete the Uterine Fibroid Symptom and Health-related Quality of Life (UFS-QOL) questionnaire at baseline, one month, three months, and greater than or equal to six months after treatment. Primary outcome was the health-related quality of life (HR-QOL), as reflected from UFS-QOL scores. Contrasts were constructed from a linear mixed-effects model to compare the two treatment groups for changes from baseline in UFS-QOL scores.

Results: UFS-QOL scores were similar at baseline between the two treatment groups. There was an overall improvement in all UFS-QOL scores within each group. Higher improvement scores were noted in the surgical group compared to the medical group for almost all UFS-QOL scores. At ⩾6 months, in comparison to the medically managed pa-

tients, the most considerable score improvements for the surgical group were reported in HR-QOL concern, activities, self-consciousness and symptom severity scores having mean change scores (95% CIs) of 35.3 (22.3 – 48.2), 28.9 (16.3 – 41.5), 28.6 (15.0 – 42.1), and 32.2 (21.5 – 43.0), respectively.

Conclusion: Patients with submucosal leiomyomas who received medical or surgical treatment reported similar improvement in overall HR-QOL scores.

A37 LEIOMYOMATOSIS: A RARE CASE OF MISTAKEN IDENTITY

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Abstract: Diffuse uterine leiomyomatosis (DUL) is a rare benign uterine pathology that is often misdiagnosed as uterine leiomyomas. We present a case of a woman with abnormal uterine bleeding treated with multiple medical therapies without symptomatic relief. She underwent two surgeries, almost a year apart, with the histopathologic diagnosis of leiomyomas. After numerous failed attempts at medical and surgical treatments, the patient requested definitive surgery and underwent a robotic-assisted laparoscopic hysterectomy. Histopathologic analysis of the entire uterine specimen confirmed diffuse uterine leiomyomatosis.

Case Report: A 31-year-old female was referred to our office with a history of abnormal uterine bleeding and heavy menstrual bleeding who failed hormonal therapies. Levonorgestrel-releasing intrauterine devices were inserted at two different times and were expelled due to heavy menses. Pelvic magnetic resonance imaging reported leiomyomas.

The patient underwent hysteroscopy and a robotic-assisted myomectomy. Pathology revealed leiomyomas. Seven months after her first surgery, her bleeding recurred, and the patient became severely anemic, requiring hospitalization and transfusion of 2 units of packed RBCs.

Over a year later, the patient underwent a second hysteroscopic and robotic myomectomy after failed medical therapies of tranexamic acid, progesterone medication, and gonadotropin-releasing hormone antagonist with minimal symptom relief. Her quality of life suffered tremendously due to ongoing AUB-HMB. After seven months, the patient requested definitive surgical therapy and underwent a robotic-assisted laparoscopic hysterectomy. Pathology reported diffuse uterine leiomyomatosis.

Diffuse uterine leiomyomatosis is a rare benign uterine pathology that is often misdiagnosed as uterine leiomyomas. Early diagnosis of DUL is challenging and often inconclusive. Less than 50 diffuse uterine leiomyomatosis cases have been reported in the literature. The myometrium in DUL is almost entirely replaced by numerous ill-defined benign smooth muscle tumors. MRI offers mapping of the size, site, and distribution of leiomyomas, but findings are difficult to differentiate from DUL.

The pathophysiology of DUL development remains poorly understood, with patients frequently complaining of abnormal uterine bleeding, heavy menstrual bleeding, fertility issues, and dysmenorrhea. DUL is often misdiagnosed as leiomyomas or adenomyosis clinically, given the similarity in manifestations.

Leiomyomatosis is histologically characterized by the proliferation of smooth muscle cells forming fascicles and nodules, which blend with normal myometrium tissue. Hysterectomy is the definitive treatment of DUL, with this case report demonstrating the close similarity between the two.

A38 CASE REPORT OF LIPOMYOMA

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DOI: 10.54053/001c.121005

Report: Uterine lipoleiomyoma are rare forms of leiomyomas that are often only described in literature as case reports. Lipoleiomyomas could increase in size despite menopause and most commonly occur in postmenopausal women with an incidence rate of 0.03% to 0.2% Clinical symptoms of lipoleiomyoma are very similar to leiomyoma. Radiologic imaging can aid in the diagnosis of lipoleiomyoma with smooth muscle confined to the tumor periphery.

In our case, we describe a 53y/o G0P0 perimenopausal patient who complained of abnormal uterine bleeding with irregular menses, urinary retention and difficulty completely emptying her bladder due to the large mass compressing her bladder. She was diagnosed with a large 8.8 cm hyperechoic lesion with internal vascularity arising from the central uterus/ endometrium. Radiology recommended a pelvic MRI for further differentiation of mass. Office hysteroscopy with endometrial biopsy was performed. Pathology confirmed limited inactive endometrium, benign endometrial surface epithelium. The patient requested a hysterectomy through a minimally invasive gynecologic surgery approach. A pelvic MRI was performed that revealed a large, round, circumscribed mass measuring 7.3 X 7.2 X 7.5 cm favoring to represent an intramural lipoleiomyoma. The patient had a robotic assisted laparoscopic hysterectomy which was uncomplicated. Final histopathologic diagnosis was uterine lipomyoma.

As benign masses, management for lipoleiomyoma are guided by symptoms, fertility preservation desires, and whether or not a patient is a candidate for surgical intervention. Given the rarity of these cases, the histogenesis is still relatively unknown although various theories exist such as differentiation of embryonic fat cells, metaplastic changes of existing cells into fat cells, and pluripotent cell migration. Although there was not evidence of malignancy in our case report, certain literature has suggested the presence of coexisting malignancies and in an even rarer occasion the presence of liposarcoma from a lipoleiomyoma. More information is needed on these rare cases in order to further lead management and any recommendations regarding cancer screening on top of age related recommendations already in place.

A39 THE SUBJECTIVE SEXUAL EFFECTS OF INTRAVENOUS METHAMPHETAMINE USE IN WOMEN

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Purpose: This study aimed to identify the sexual effects of methamphetamine on female users and determine the factors that encourage continued use of this substance.

Methods: This structured interview study was approved by the Institutional Review Board at Louisiana State University Health Shreveport. The research participants were female volunteers that reported either currently or previously using methamphetamine. One study team member conducted all the interviews similarly to reduce variability between interviews. This individual was a doctorate-level addiction specialist to ensure the integrity and value of the data collection. All interviews were conducted in private offices at the Council on Alcoholism and Drug Abuse of Northwest Louisiana (CADA) facility in Bossier City, LA, between January 25, 2013, and October 7, 2014. Each volunteer provided informed consent to participate in the study. The specialist asked study subjects open-ended questions, and each conversation lasted approximately one hour. The specialist started each interview with an inquiry regarding the participant's experiences with methamphetamine. The interviewer would particularly ask about the activities in which that participant would become involved immediately after using methamphetamine. The research subject was given time to discuss any sexual effects of using this stimulant without any prompting by the interviewer. If the study participant did not broach this topic during the interview, the specialist would ask them, "How does methamphetamine make you feel?" This "trigger" question was developed with the primary objective of the study in mind, which was identifying the sexual effects of methamphetamine use on females. Descriptive statistical analysis was performed on the data collected from the interviews.

Results: Fifty-six interviews were conducted over 1.5 years. The mean age of the research subjects was determined to be 34.5 (± 10.2; range: 18 to 56). The entire study population was comprised of white females. Fifty (90%) of the study subjects utilized methamphetamine through the intravenous route. Most of these intravenous users (96%) had smoked, snorted, or ingested the substance prior to injecting the substance. Forty-four (88%) of the research participants who engaged in intravenous methamphetamine use reported feeling sexual arousal and an immediate sensation of pleasure indistinguishable from that attributed to orgasm when they injected the substance. The methamphetamine had to be of "sufficient amount and of better quality," according to these subjects, to elicit this effect. None of the individuals interviewed reported a feeling similar to orgasm when they smoked or snorted methamphetamine. Many subjects stated that they engaged in intravenous methamphetamine use as frequently as every two hours to keep experiencing the sexual response, even if they still felt intoxicated. Twelve (21%) of the subjects reported being directed towards intravenous methamphetamine use by other females describing the sexual effects. Twenty-three (47%) of the participants recounted immediate "vapors," which were described as "cough" or "taste" of the drug. None of the subjects said they had previously shared the sexual component of their experience with methamphetamine use with medical providers. All participants recounted disinhibition regarding sex but not social interactions. They also declared indifference to the consequences of high-risk sexual behavior and unsafe use of needles. Four subjects admitted avoiding hospital settings because they feared their methamphetamine use would be discovered.

Conclusion: Female study participants who currently use or previously used methamphetamine reported a sexual response to intravenous use of the substance. Females who use methamphetamine were drawn toward intravenous use for the sexual experience, and those who use intravenous methamphetamine increase the frequency of use to reexperience the sexual response. These findings indicate that the sexual effects attributed to intravenous methamphetamine may contribute to its ongoing and recurrent use.

A40 SHIFTS IN RELIGIOUS AND CULTURAL DIVERSITY SUPPORT ACROSS OBGYN RESIDENCIES WITH A FOCUS ON ABORTION TRAINING: A TWO-YEAR FOLLOW-UP

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DOI: 10.54053/001c.121007

Introduction: The Accreditation Council for Graduate Medical Education (ACGME) has recognized cultural competency as part of three out of six core competencies residency programs provide training in. Religion and culture are interwoven, and efforts to increase inclusivity by incorporating religious and culturally competent medical education has become a vital aspect of residency training.

Inclusivity in healthcare has enhanced the recruitment of a racially, religiously, and culturally diverse workforce overall, thus enhancing the patient-provider experience through representation. Similarly, diversity among residency candidates has also improved. While current literature highlights the steps taken to ensure various forms of equity, there is little focus on religious or cultural support provided to OB/GYN residents. More recently, access to abortion training may impact which residency programs a candidate chooses to apply to, as ACGME requires such training opportunities to be provided without implications unless precluded by religious restrictions. However, minimal data exists on the training provided, institutional or alternative (outsourced services), and the methodology for

abstention from abortion education.
As program websites are often the primary source of information for residency applicants, this study aimed to identify shifts in cultural and religious support depicted on OB/GYN residency websites in the past two years while assessing the publicly-listed abortion training variations among such programs.
Methods: During April 2022 and April 2023, websites of ACGME-accredited OB/GYN residency programs in the United States were evaluated using a novel 20-attribute collector tool that objectively benchmarks programs from religious/cultural diversity and incorporation of corresponding competency training into resident education. A religiously representative diverse focus group developed our tool.
Items assessed included holistic reviews of applications, explicit interest in the recruitment of residents from diverse religious/cultural backgrounds, presence of religious/ethnic indicators depicted on the website, reported support for those with religious obligations, and if cultural/religious or diversity, equity, and inclusion (DEI) competency were cited.
Additionally, the 2023 data collection focused on abortion references with guided support per ACGME-required training while providing an overview of protections and restrictions using the Guttmacher Institute website.
Results: A total of 576 websites were analyzed, with 285 websites accessible for review in 2022 and 291 in 2023. Due to the program count discrepancy across both years, percentages were used to compare the data (as a result of an increase in accredited programs and website accessibility).
An increase of 2% was noted in referencing holistic reviews and ethnic/religious support. Additionally, a 12% increase in spiritual and cultural-focused research was noted on websites with an additional 8% verbalizing such support. A 9% reduction in overall inclusivity advocacy was listed on websites, while an additional 10% reduction was explicitly noted in cultural competency. A 1% reduction in referencing religious diversity and a 2% reduction in websites referencing time allocations for religious holidays were identified. Furthermore, 12% had fewer stated opt-out options for religious obligations.
There was a 7% increase in the discussion of religious or ethnic support, with a 5% increase in the focus on race. However, there was a 5% decline in referencing either concept.
Although ACGME specifically suggested having Opt-Out options for programs, 1% had the Opt-In option, 12% stated the Opt-Out, 19% vaguely referenced either, and 68% did not mention abortion abstinence options or support on their website. Only 2% of websites suggested alternative sites for residents' training due to legislation, whereas 27% referenced fellowship and supplementary post-residency training opportunities. Regarding the concept of abortion, 14% stated support for abortion, 14% mentioned abortion but provided limited details, and 72% did not reference it on the website. Concerning current state-specific legislature, 41% are distinctly protective of abortion rights, 46% are restrictive, with the remaining having both protections and restrictions.
Conclusion: Our study suggests that the overall focus on religious and cultural diversity across OB/GYN residencies websites has become slightly accentuated over the past two years. The investment or deference of abortion training has not been adequately referenced to permit making informed decisions by prospective trainees. Having cultural and religious congruency of residents with program offerings may potentiate resident success while training.

A41 DISPARITIES ACROSS THE CREOG DISTRICTS: ANNUAL VARIATIONS OF WELLNESS AND INCLUSIVITY EFFORTS IN OBSTETRICS & GYNECOLOGY RESIDENCY WEBSITES

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DOI: 10.54053/001c.121008
Over the past few years, CREOG has emphasized improving resident well-being, decreasing physician burnout, and supporting efforts toward inclusivity. This focus has also been shared by various medical specialties and their training programs. The recent emphasis on wellness and inclusivity partly stems from the concern for burnout and higher attrition rates among Underrepresented In Medicine (URIM) learners. However, limited assessment exists of how residency programs have addressed this focus nationally.
As virtual interviews have become the 'current' standard, timely updates have become critical as websites are an essential resource for residency applicants. As the perceived value of some updates differs by program, an assessment of the inclusivity and wellness variations over the years has been limited, especially across Obstetrics and Gynecology (ObGyn) residency program websites.
This study aimed to identify the annual variations in website depictions of wellness and inclusivity across CREOG districts in the past two years, while suggesting optimized platforms to convey the commitment to such efforts.
Methods: This study is a cross-sectional analysis of the websites of ACGME-accredited ObGyn residency programs across the United States in April 2022 and again in April 2023. The assessment was based on a compilation of 22 attributes devised by a nine-person focus group and piloted and tested on a 40-person focus group.
Six medical students and two residents at Louisiana State University in Shreveport and the University of Toledo conducted the website benchmarking comparison. All cohorts were racially, ethnically, and gender diverse to ensure representative benchmarking. Racial diversity in this study was defined by visual representation as identified by the medical student researcher's self-perceived report of at least one African-American/Black, Hispanic/Latino, American Indian/Alaska Native, or Native Hawaiian/Pacific Islander faculty member and resident among their colleagues based

on publicly-accessible website photographic representation. Gender diversity was defined similarly by visual representation as identified by the medical student researcher's photo-based self-perceived report of at least one member of a differing gender compared to the majority (a minimum of female and/or one male) within the faculty members and resident class.

Percentages were used to compare the data due to the program count discrepancy across both years, as a result of an increase in accredited programs and website accessibility.

Results: A total of 560 websites were analyzed. Minimal change in inclusivity sections of websites was noted across the two years, but a reduction in leadership referencing inclusivity (by 30%) and wellness (by 22%) occurred in 2023.

Wellness efforts remained unchanged in both years from the standpoint of website investment, dedicated support personnel, and group activities.

Wellness support was persistently the highest in District 5, with overall wellness efforts appearing unchanged between the two years across all districts. Similarly, District 5 had the highest DEI referencing with dedicated staff and webpage support across both years.

References to holistic reviews were less identified in 2023 (by 7%), while curricula referenced DEI less frequently in their mission statement (by 15%). Similarly, a 14% reduction in DEI-focused research was noted on the websites, with an 8% reduction in resident testimonies to such efforts.

District I showed the highest incorporation (32%) and increase (7%) in inclusive pronoun usage between the two years, whereas District 5 had the highest increase in supplementary LGBTQI verbiage (8%) on their website.

A 17% increase in the use of inclusive pronouns was noted, whereas a reduction in gender diversity was identified in 9% of faculty and 5% of residents. Similarly, a 6-7% reduction in URIM faculty and residents was noted.

Regarding racial representation, District 4 had the highest loss of resident body diversity (21%), whereas District 3 had the highest loss of faculty diversity (22%). Regarding gender diversity, District 1 was impacted by a 30% decline in gender diversity, while District 3 by 23%.

Conclusion: This study demonstrates the variations in support across the country and the past two years. With some components of inclusivity being adopted more readily, the hope is that websites ultimately provide an accurate reflection of the investment in resident wellness and equity efforts across all districts.

A42 CONSERVATIVE MANAGEMENT OF IATROGENIC UTERINE PERFORATION AT 22 WEEKS OF GESTATION PERMITTING FOR A THIRD-TRIMESTER DELIVERY

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DOI: 10.54053/001c.121009

Introduction: Acute cholecystitis is one of the most common causes of nonobstetric procedures in pregnancy (Jayalal 2015; Post 2019; Tolcher 2018; Nezhat 1997), with suggested need for cholecystectomy if the diagnosis is made in pregnancy, irrespective of the indicators for urgent or emergent surgery (Post 2019). This is because delaying surgical treatment has been suggested as increasing the risk of perinatal morbidity and mortality (Jayalal 2015).

Laparoscopic cholecystectomy in pregnancy can be safely performed, while recognizing the changes in anatomy and physiology occurring due to the ongoing conception (Jayalal 2015; Post 2019). However, inadvertent uterine perforation of the gravid uterus has been reported in the literature, resulting in risk of premature delivery, miscarriage, chorioamnionitis, and rupture (Tolcher 2018).

In this report, we present a case of incidental iatrogenic second trimester uterine perforation by a trocar during laparoscopic cholecystectomy that was addressed conservatively following identification and repair which permitted for delay of delivery until early in the third-trimester delivery.

Case Presentation: 32-year-old lady, G4P3 presented to the Emergency Department at 22+2/7 weeks of gestation with a two day history of epigastric pain, radiating to the right upper quadrant and the right shoulder. Surgical history was pertinent for one prior cesarean section due to breech presentation, with the uterine incision repaired in two layers. Vital signs were overall reassuring. The physical exam was consistent with a gravid uterus and a positive Murphy sign.

Laboratory test results were significant for hyperglycemia: 207 (74-106mg/dl); SGOT: 78.2 (<31 UI/L); phosphatase alkaline: 235.4 (35-104 UI/L); lipase: 1524 (13-60 UI/L); and amylase: 781 (20-100 UI/L).

Abdominal ultrasound showed a distended, thin-walled gallbladder containing several biliary stones of differing size with the common bile duct dilated at 0.4 cm.

The patient was admitted for persistent abdominal pain refractory to analgesics. The general surgeon was consulted, and the plan was made for laparoscopic cholecystectomy upon reaching 23 weeks of gestation.

Intraoperatively, three trocars were inserted and extensive adhesions were noted to invest the gallbladder, omentum, liver, and abdominal wall. A laceration measuring 1 cm in diameter in the uterine wall occurred with the introduction of the umbilical trocar as the uterus was adherent to the abdominal wall. The blind entry technique had been used. The trocar was mobilized and the adheiolysis performed. The cholecystectomy was successfully completed and upon reducing intrabdominal gas pressure, the amniotic fluid leak was noted. The general surgeon thereafter repaired the uterine laceration with a polyglactin suture in a figure of 8 fashion. Hemostasis was ensured.

Postoperative obstetrical ultrasound performed soon thereafter suggested the presence of a 1000g fetus; cephalic presentation; fundal placenta with notable anterior and posterior uterine investment without signs of retroperitoneal

hematoma or abruptio placentae. The amniotic fluid was suggested to be 'cloudy'.

The patient received a course of antibiotics and antenatal corticosteroids for postoperative chorioamnionitis prophylaxis and fetal lung maturity. She was also started on an oral progesterone. The patient was closely monitored with serial ultrasounds and fetal heart monitoring.

At 28 weeks of gestation, the patient presented to the hospital with preterm labor at which time she received a second course of steroids for fetal lung maturity and was subsequently discharged after complete resolution of uterine contractions.

One week later, the patient again developed episodic abdominal pain. Contraction tomography showed regular uterine contractions that was nonresponsive to conservative measures. She was then transferred to the operating room for urgent cesarean section due to concern of uterine rupture at the site of the injury.

Cesarean intraoperative findings included a healing site where the uterine injury had occurred, with a near-complete dehiscence along the transverse axis of the lower transverse uterine segment. Examination of the placenta indicated trauma to the anterior uterine wall that had been of full thickness.

Discussion: The incidence of cholecystitis in pregnancy ranges from 0.05% to 0.8% (Date 2008). The higher rates of incidence in pregnancy are due to expected physiologic changes, namely supersaturation of cholesterol driven by increased estrogen levels along with the relaxation of the smooth muscle in the gallbladder caused by elevated progesterone. Given these physiologic changes, risk of occurrence requiring admission has been reported to be as high as 38-70% after initial conservative treatment (Date 2008). The guidelines of the Japanese Society of Gastroenterological Endoscopic Surgery (published only in Japanese) recommend laparoscopic surgery during the second trimester (14-27 weeks) in pregnant women.

In this report, we presented an unusual case of direct trocar injury at 23 weeks which was managed conservatively on outpatient basis with the injury site remaining intact despite a full wall thickness injury. This patient delivered via cesarean section at 29 weeks, after which the neonate remained inpatient in the NICU for a period of 2 months. This case demonstrates the utility of a conservative approach in the setting of a stable patient and fetus in the setting of an intrapartum iatrogenic uterine perforation. This is one of a few cases in published literature with successful neonatal outcomes. This approach opens the door for conservative management in future cases after weighing the potential risks of chorioamnionitis and uterine rupture which could develop at any time.

Conclusion: While iatrogenic trocar injury in pregnancy is rare, conservative management and stabilization of the mother and fetus may be possible to delay delivery for steroid administration and promotion of fetal maturation. This case highlights the potential benefits of such management route in the setting of a stable pregnancy.

A43 A CASE OF PARTIAL MOLAR PREGNANCY COMPLICATED BY HELLP AND PRES

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DOI: 10.54053/001c.121010

Introduction: The term gestational trophoblastic disease encompasses premalignant and malignant conditions arising from trophoblastic cells. Premalignant disorders include complete or partial hydatidiform mole, whereas malignant disorders include invasive mole, choriocarcinoma, and placental-site trophoblastic tumor. Partial hydatidiform moles are triploid in nature and occur when 2 sperm fertilize a single ovum.

Preeclampsia is a syndrome complicating 2-8% of pregnancies which presents as new-onset hypertension plus proteinuria. The occurrence of hemolysis, elevated liver enzymes and low platelet count, referred to as HELLP syndrome, is a severe form of preeclampsia. A related severe manifestation is posterior reversible encephalopathy syndrome (PRES) - a clinicoradiological syndrome characterized by symptoms including headache, seizures, altered consciousness and visual disturbances. PRES is commonly associated with acute hypertension. The symptoms of PRES vary widely: i.e., the visual disturbance can vary from blurred vision and homonymous hemianopsia to cortical blindness. Seizures and status epilepticus are common.

Although preeclampsia and HELLP syndrome rarely occur before 20-weeks of gestation, reports have suggested early occurrences of these hypertensive disorders specifically in the setting of a molar pregnancy.

Case Report: The patient is a 23-year-old, female gravida 1 at 16 week 5 days who presented to an outside emergency department with a 3-day history of progressive abdominal pain which radiated to her back, arms, and shoulders. At the outside facility, the patient had multiple systolic blood pressures greater than 160 mmHg and had a witnessed 30-second seizure which resolved with an intravenous (IV) injection of 2-mg of Lorazepam and 4-gram magnesium sulfate loading dose. She was initiated on magnesium sulfate maintenance pending transfer to our institution. On admission, the patient met criteria for eclampsia and HELLP (platelets 79,000 K/uL, AST 144 U/L, ALT 96 U/L, LDH 482 U/L, Hemoglobin 8.7 g/dL). The beta human chorionic gonadotropin level (HCG) was greater than 200,000 mIU/mL. Bedside ultrasound suggested the presence of an enlarged cystic placenta and a growth restricted fetus (estimated fetal weight 124g, 2%). The patient and her family were counseled and the decision was made to proceed with misoprostol induction and termination of the pregnancy due to maternal indications. During the induction, the patient developed significant vaginal bleeding and was taken to the operating room for an uncomplicated dilation and evacuation. After the procedure, the patient developed progressive visual blurring with 4+ hyperreflexia. Magnetic resonance imaging (MRI) of the brain with and without con-

trast was obtained with findings significant for PRES. The MRI revealed T2 high-signal lesions within the cortex of the bilateral occipital lobes. Neurology was consulted and recommended blood pressure control and initiation of levetiracetam for seizure prophylaxis. She was initiated on long-acting nifedipine with subsequent blood pressure control. Patient's visual symptoms and hyperreflexia resolved. Her liver function tests, platelets, and LDH also returned to normal. The patient received contraceptive counseling to prevent pregnancy during gestational neoplastic disease surveillance period. She underwent weekly beta-hCG until negative, followed by three weekly consecutive negative levels before spacing measurements to every 3 months for a period of six months per National Comprehensive Cancer Network (NCCN) guidelines.

The pathology results indicated the presence of chorionic villi composed of both large hydropic and smaller normal-appearing villi, a 69.3-gram female fetus compatible with caudal neurocutaneous defect with abnormal localization of brain tissue. The genetic profile of the villous tissue consisted of two sets of dispermic paternal alleles in addition to one set of maternal alleles consistent with a partial mole diagnosis.

Discussion: There is an association between preeclampsia and molar pregnancy. Of partial hydatidiform molar pregnancies, 41.9% will develop the symptoms of preeclampsia if left untreated. Although the pathophysiology of eclampsia spectrum disorders is incompletely understood, some evidence points to the role of increased death of trophoblasts and the maternal inflammatory response to trophoblast deportation. Additional evidence points to angiogenic factor imbalance and interestingly, molar placentas produce high levels of antiangiogenic factors. Other causative agents include placental factors that trigger maternal endothelial activation. It is known that trophoblastic debris shed from the placenta into the maternal blood is associated with this condition. It has been demonstrated that trophoblastic debris from molar pregnancies also induces endothelial cell activation through heat-shock protein 70 (HSP70) expressed on a hydatidiform molar placenta, which may be a pathogenic signal to endothelial cells. This case reiterates the association between hydatidiform moles and the hypertensive disorders of pregnancy possibly supporting the theories that such disorders may share an etiologic linkage through trophoblast debris and angiogenic factor imbalance. This case also supports screening molar pregnancies for severe preeclampsia syndrome.

A44 PREIMPLANTATION GENETIC TESTING FOR HLA MATCHING (PGT-HLA) WHEN ONLY PARTIAL EMBRYO MATCHES ARE IDENTIFIED

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DOI: 10.54053/001c.121011

Introduction: Preimplantation Genetic Testing (PGT) is an option for couples to select embryos that have a matching Human Leukocyte Antigen (HLA) type to a child that is in need of hematopoietic stem cell transplant (HSCT). Families in search of HLA-matched donors for HSCT may have a difficult time finding publicly available optimal donors or donors within their families. The likelihood of a family finding an optimal donor can vary from 16% to 75%, depending on ethnic and racial groups. Previously, PGT-HLA has been used to identify potential future siblings who would be an HLA match to an affected child through embryo testing as early as 2001 for conditions like Fanconi Anemia. PGT-HLA can be complicated by the presence of recombination within the HLA complex on chromosome 6 in the affected individual. If an affected child is found to be recombinant within the HLA complex (6-7% of PGT-HLA cases), the chances of finding a full sibling-matched donor can be extremely low.

PGT for partial HLA matching can be used when the affected child is found to be recombinant or if a full parental match is not possible. When a child is identified as recombinant in the HLA region, consultation with their transplant team can determine whether a partial sibling match would be a good therapeutic candidate. PGT-HLA is performed by linkage analysis which requires DNA samples from the oocyte source, sperm source, and the affected child. These results will determine shared parental regions of the HLA complex genes so that partial matches can be identified.

Case Reviews: We present two cases of PGT-HLA where only partial matches were identified during embryo testing. Of these 2 cases, both families completed one testing cycle for PGT-M and PGT-HLA and both had partial matches that were recommended for transfer per patient consent. One family had 3 partial match embryos, but they did not have a successful pregnancy following frozen embryo transfer. However, during the period of their transfers, they were able to find an adequate publicly-matched donor for HSCT therapy for their child. In one family, only a paternal HLA match was sought due to advanced maternal age of the mother. Consultation with the family's transplant team indicated that a paternal-only match would be sufficient for a therapeutic effect.

Conclusions: Despite the complexity of testing for PGT-HLA matching for a child where a full sibling match is not available embryo testing can still provide a therapeutic benefit. Interdisciplinary consultation in these cases would optimally include the couple, the affected child's transplant team, the couple's reproductive endocrinologist, and genetic counseling available at the PGT laboratory or the REI office. As accessibility to PGT continues to grow and as guidelines for PGT acceptability continue to be written, PGT-HLA should similarly find more usage. Inevitably, partial embryo matches will be seen and we will continue to learn how these can be used in clinical practice.

A45 ETIOLOGIES OF SEX-DISCORDANCE IN MONOCHORIONIC DIAMNIOTIC GESTATIONS

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Purpose: To investigate the possible etiologies of sex discordancy among monochorionic diamniotic gestations through thirty-five known cases and the addition of a new case presented here.

Methods and Case: Analysis of all cases (35) with gender discordance published between 2000 and 2022 were tabulated to include the type of discordance, the testing performed, the details of conception and additional notes on each case. In many cases there was also blood chimerism (designated in our table by the letter b). Four cases were removed from a previous review study because the MC/DC twins only exhibited chimerism or other genetic differences and not discordant sex in either phenotype or chromosomes.

A 42-year-old G4P30030 was diagnosed by ultrasound with MC/DA twins having discordant genders. Pregnancy had been achieved using in vitro fertilization (IVF) with donor egg. The donor's age is unknown but less than 35. Two embryos were transferred. The pregnancy was originally diagnosed as dichorionic/triamniotic but later a vanishing triplet left MC/DA twins. NIPS testing after 16 weeks was within normal limits. The patient and partner initially refused gender reveal until NIPS confirmed the presence of Y chromosome and detailed 20-week scan showed two normal appearing fetuses of different genders. Given the discordance, the patient agreed to fluorescent in situ hybridization (FISH) for chromosomes 21, 18, 13, X and Y along with microarray. FISH for fetus 1 showed XY in 92.5% of the 200 cells evaluated while fetus 2 was XX in 100% of the 100 cells analyzed. Chromosomal microarray was noted to have cells identical to fetus 2 present, consistent with chimerism. Healthy twins were delivered by C-section at 31+3 weeks gestation. Unfortunately, neither preimplantation testing, zygosity testing nor any other postnatal testing was performed on either twin.

Results: The frequency of discordant and dizygotic monochorionic gestations has escalated as the rate of ART has risen. To reduce the risk of complications with multiples such as twin-twin transfusion syndrome, congenital anomalies, intrauterine growth restriction and increased fetal morbidity and mortality, there has been a steady push towards single embryo transfer if possible. This has been somewhat offset by the technique of "assisted hatching" where a laser is used to open the zona pellucida to assist in implantation but may also lead to increased monozygotic twinning along with fertilization anomalies. Four etiologies have been hypothesized, three involving splitting and one involving fusion of embryos.

In the previous review, 31 of the above cases ART was used 81.2% of the time with 83.9% being discordant. Chimerism was present in 90.33% with only 15.4% exhibiting phenotypic genital anomalies. Of the ow 36 cases, at least 80.5% used some form of ART therapy; the method of conception is unknown, or not documented, in three cases. Among the ART methods, 38.46% (n=10) were ICSI, 38.5% (n=10) IVF, 15.38% (n=4) were intrauterine injection (IUI), and 7.69% (n=2) were with clomid. Among the 26 cases, 4 used assisted hatching (15.4%).

Due to the complication of twin-to-twin transfusion, chimerism is defined as genetically different cells from more than one zygote within one individual. With monochronicity it can be inferred that chimerism will be present to some degree due to shared placental blood flow so postnatal testing for chimerism is essential. Although the gravity of chimerism within dizygotic twins is not fully understood, it may confer tolerance to foreign antigens and prove beneficial. Chimerism was noted in 27 cases (75%).

Most reported cases of discordant gender in MC/DA twins are thought to begin as 46,XY before splitting to fetuses that are 45,X and 46,XY. The mechanism could be either postzygotic nondisjunction or anaphase lag accompanied by twinning secondary to discordant placental morphology. As this report shows however, most of the present cases do not result in a fetus with Turner Syndrome. A second splitting theory involves a somatic mutation in one of the twins. This could result in either a 46,XY or 46,XX twin although this would be exceedingly rare. A third splitting theory involves a 47,XXY zygote resulting in either a 46,XX and 46,XY pair or a 46,XY and 45,X depending on how the split occurs. The fourth etiology occurs at the blastocyst stage which creates a shared chorion or at the morula stage in the case of ART. In other words, fusion of two separate fertilized embryos occurs before implantation, producing a monochorionic pregnancy that is still diamniotic and dizygotic. ART is thought to alter how embryos interact which may promote fusion or adhesion in close proximity. A corollary theory suggests a chorionic fusion in early pregnancy with subsequent disintegration of the intervening septum layers. Further studies may help unravel this mystery as well as the role played by ART.

Conclusion: The complexity of MC/DA gestations ideally requires preimplantation genetic testing, amniocentesis for zygosity testing and postnatal testing on each twin. Reimbursement issues often lead to denial of claims and inability to obtain necessary test results, as occurred with this patient. With increasingly molecular testing sophistication it is often possible to take analysis to the next level. For example: "DNA fingerprinting" may determine if discordant phenotypes reflect discordant genotypes or the fusion of two dizygotic embryos.

A46 REVERSIBLE CEREBRAL VASOCONSTRICTION SYNDROME DURING CESAREAN SECTION COMPLICATED BY SEIZURE ACTIVITY, INTRAPARENCHYMAL AND SUBARACHNOID HEMORRHAGE

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DOI: 10.54053/001c.121013im

Body of the Abstract: (1) To report a rare case of Reversible Cerebral Vasoconstriction Syndrome (RCVS) and associated intraparenchymal and subarachnoid hemorrhage following induction of spinal anesthesia in an uncomplicated, elective C-section (2) To discuss its potentially life threatening or well-being altering effects (3) To review the pathophysiology, diagnosis and potential treatments of the syndrome.

Introduction: Reversible cerebral vasoconstriction syndrome (RCVS) is a rare condition defined clinically by symptoms of a severe recurrent headache described as a thunderclap headache, cerebral vasoconstriction of at least two different arteries on imaging, and resolution of vasoconstriction within three months. Complications include nonaneurysmal subarachnoid hemorrhage, seizure, stroke, and intracerebral hemorrhage. More than half of cases of RCVS occur postpartum or after use of vasoactive substances such as adrenergic or serotonergic drugs. Triggers include illicit drugs, eclampsia, or strenuous physical or sexual activity. As RCVS most commonly occurs during the postpartum period, it is extremely rare to encounter RCVS during the antepartum or peripartum periods. There has been only one other reported case of RCVS while undergoing spinal anesthesia for a C-section. Presented is a patient diagnosed with RCVS after spinal anesthesia during an elective C-section subsequently complicated by seizure, intracerebral and subarachnoid hemorrhage.

Case Presentation: A 32-yearold G2 now P2002 patient presented at 39 6/7 weeks gestational age for elective primary C-section for a history of delivery complications with the first pregnancy. Medical history was unremarkable. First pregnancy labor epidural analgesia was uncomplicated. Spinal anesthesia induction was uneventful. Shortly thereafter, dizziness was reported and hypotension and bradycardia (P 42, BP 76/41) developed. Treatment included IV Ephedrine and Glycopyrrolate. Frontal headache developed. The patient then developed a tonic-clonic seizure with gaze deviation and upper limb rigidity lasting 45 seconds. An oral airway was placed for respiratory assistance with 100% oxygen. The patient became alert five minutes later. Vital signs: BP 168/98 P 122.C-section was performed. After incision, the patient had a second tonic-clonic seizure lasting 30 seconds. Midazolam was given. A healthy baby was delivered with Apgars of 7 and 9. The C-section was otherwise uncomplicated. Postoperatively, the patient was alert with stable vital signs. The neurologic exam was intact. The CT showed a 1.9 x 3.8 x 1.2 cm intraparenchymal hemorrhage-right frontal lobe with a subarachnoid hemorrhage in both the right frontal lobe and right sylvian fissure. Exam was normal. Headache continued. Tertiary care facility transfer was arranged.

Tertiary care evaluation with 24-hour EEG monitoring, CT angiography (CTA) and CT venogram showed no evidence of venous sinus or cortical vein thrombosis. Magnetic resonance imaging (MRI) and transcranial doppler showed vasospasm diagnostic of RCVS. Subsequent CTA showed vasospasm of three branches of the carotid artery. Hospital discharge occurred on day 6. Six-month neurological follow-up showed resolution of hemorrhage and minimal residual symptoms.

Discussion: Literature review discovered only one other case of RCVS with induction of regional anesthesia. To our knowledge the associated seizure activity coupled with intraparenchymal/subarachnoid hemorrhages has not been previously reported. RCVS, an extremely rare phenomenon is estimated to occur in 0.26% of headache patients; is more frequent in middle aged women and may have variable triggering factors. It may be associated with antidepressants, illicit drugs or sympathomimetic meds. Pregnancy and vasoconstrictive meds are risk factors with an occurrence rate of 5%. The pathophysiology is unknown but felt to be due to impaired cerebral vessel autoregulation. It is hypothesized that other factors and substances including endothelial dysfunction, pro and antiangiogenic factors, serotonin, cytokines and vascular endothelial growth factor may play some role. While MRI and doppler imaging may be of assistance, CTA is most useful for diagnosis. Since static imaging alone does not confirm the diagnosis, most cases likely go undiagnosed. Rarely, complications of RCVS include stroke, seizure, cerebral hemorrhage and Posterior Reversible Encephalopathy Syndrome. There is no prophylactic or therapeutic treatment proven effective for RCVS. Recommendations include symptomatic treatment of the headache, blood pressure, and delivery if eclampsia is suspected. Calcium channel blockers are often used for vasodilatory effects, although they have not been proven to improve symptoms or outcome in RCVS.

Conclusion: RCVS is a very rarely occurring vascular disorder occasionally seen postpartum. This is the first reported case of associated seizure activity and resultant intraparenchymal and subarachnoid hemorrhage occurring after induction of spinal anesthesia for an uncomplicated C-section. It demonstrates the need for awareness of this disorder as well as knowledgeable hemodynamic anesthesia management specific to its unique features. The RCVS diagnostic and management challenges dictate that case collection and research be continued.

A47 EXTRAVASATED PUDENDAL ARTERY PSEUDOANEURYSM PRESENTING AS A LARGE VAGINAL HEMATOMA FOLLOWING UNCOMPLICATED DELIVERY

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DOI: 10.54053/001c.121014

Body of Abstract: (1) To report a case of an extravasated pudendal pseudoaneurysm presenting as vaginal hematoma following an uncomplicated delivery. (2) To discuss alternatives of management of vulvar hematomas.

Introduction: Postpartum hemorrhage is a leading cause of maternal mortality and can infrequently (1/300-1/1500 deliveries) be caused by vulvar hematomas. Vulvar hematomas are typically small and resolve with conservative treatment. Rarely, they can develop rapidly, posing a significant risk to the patient. Risks for vulvar hematomas include a prolonged second stage of labor, multiple gestation, operative vaginal delivery, episiotomy, and vaginal laceration. Extravasation from a pseudoaneurysm in the pelvic arteries is a rare cause of vulvar hematomas (< 5% of cases) with >75% involving the uterine artery. Pseudoaneurysms typically result from damage to vasculature during a traumatic delivery. Spread into the retroperitoneal space can lead to shock and eventual demise if improperly managed. This case illustrates the exceptionally rare occurrence of a pudendal artery pseudoaneurysm with rapidly expanding potentially catastrophic hematoma formation.

Case Summary: Presented is a 21-year-old G2P1011 patient at 39w5d with a large vaginal hematoma diagnosed shortly following spontaneous vaginal delivery. The case initially presented to the hospital one hour after spontaneous rupture of membranes with an unremarkable pregnancy. Normal labor ensued and stage II of labor lasted one hour with an uncomplicated nonoperative vaginal delivery. Postpartum a significant increase in fundal height was noted. Cytotec was given and bladder catheterization removed 800 ml urine. Abdominal pain increased. Vital signs were normal. Exam revealed a large posterior vaginal wall swelling extending upward, but without active bleeding. A computerized tomography (CT) scan of the abdomen/pelvis revealed a 9.7 X 10.5 X 13.2 cm pelvic hematoma arising from the posterior vaginal wall with extension cephalad into the perirectal space and right adnexa. Evidence of active bleeding and bilateral hydronephrosis were reported. Hemoglobin was 10.1, down from admission 12.5. Symptoms included worsening abdominal pain and dizziness. Based on the active bleeding noted on CT scan and the progressive symptoms, the patient was transferred to a tertiary care center.

Upon tertiary center admission the patient was tachycardic and hypotensive (P 153 and BP 101/61). Hemoglobin was 9.3. Physical exam was unchanged. Interventional radiology recommended and patient underwent embolization of bilateral uterine arteries for treatment of a diagnosed pseudoaneurysm with extravasation of the right pudendal artery.

Postpartum day 1, mild right lower quadrant pain was felt to be consistent with the embolization. Hemoglobin decreased to 6.5, and the patient received one unit of packed red blood cells (PRBCs). Clinically, ambulation was tolerated, but tachycardia and hypotension remained and there was decreased swelling. Hemoglobin remained low at 6.8, and another unit of PRBCs was given. Hospital course thereafter was uneventful and discharge was on day 3.

Discussion: This case describes a vaginal hematoma and pudendal artery pseudoaneurysm as a very rare but potentially life-threatening postpartum hemorrhage following vaginal delivery. Association with an uncomplicated pregnancy and delivery, involvement of the pudendal artery with an expanding large hematoma dissecting the retroperitoneal space creating a hemodynamically unstable situation are only rarely seen concurrently.

Hematoma treatment starts conservatively, utilizing ice, rest, and pain control if patient is hemodynamically stable and the hematoma is small. When large, rapidly expanding, or the patient is hemodynamically unstable, surgical intervention or artery embolization should be considered when imaging identifies the source of bleeding. Imaging may include ultrasound, CT, CT angiography, and magnetic resonance imaging as options for localization of hematoma. No superior mode of evaluation is identified.

Pseudoaneurysms following delivery have most commonly been described in the uterine arteries with only a handful of case reports documenting other sources including the obturator, labial, vaginal, and internal pudendal arteries. Our case demonstrates that extravasated pelvic artery pseudoaneurysms can present in benign appearing nonoperative deliveries and should be considered in the differential diagnosis as a source of post-partum hemorrhage. Recently, pseudo-aneurysms have more commonly been treated with IR artery embolization as it is a less invasive and better tolerated procedure by patients. Tsumagari et al suggested an algorithm proposing vulvovaginal hematomas should be observed versus surgically evacuated, whereas upper vaginal hematomas should undergo CT angiography for assessment for selective arterial embolization.

Conclusion: Pseudoaneurysms of the pudendal artery with hematoma formation occurring in an uncomplicated delivery are an extremely rare cause of potentially life-threatening hemorrhage as reported in only a handful of cases. Because of their potential for catastrophic sequelae, they should be considered in the differential diagnosis of expanding upper vaginal hematomas. This case depicts the importance and success of rapid identification and embolization of pudendal artery pseudoaneurysm to prevent mortality.

A48 MALES IN OBSTETRICS AND GYNECOLOGY: THEN, NOW AND TOMORROW

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Objective: Efforts aimed at equity are not focused on as male gender equity. In this study, we used national datasets to analyze trends of male faculty and residents in obstetrics and gynecology (ob-gyn) over 50 years to predict the future of men in the specialty.

Methods: This retrospective observational study examined the gender of ob-gyns from 1972 to 2021 using data from the Association of American Medical Colleges (Faculty Roster and Graduate Medical Education Track) and American Medical Association (Physician Characteristics and Distribution). Gender was self-reported as being either female or male. Only faculty identified as "full-time" were included. Regression slopes defined rates of changes in the percentage of male ob-gyn faculty and residents. Statistical analyses were conducted with SAS version 9.4 (SAS Institute, Cary, North Carolina). The University of Mississippi Medical Center Institutional Review Board deemed the study exempt.

Results: Continuous declines in male ob-gyn faculty and residents are observed. Over a 50-year period, male faculty decreased from 88.1% of faculty to 37.8%. There were similar declines among male residents (84.6% to 11%). By 1992, women comprised half of all ob-gyn residents and by 2005 half of all faculty. Males in ob-gyn have decreased every five years by 5.6% (95% CI: 5.5 – 6.0%) for faculty and 6.0% (95% CI: 5.3– 6.5%) for residents. Graphing the data over 45 years shows a nearly linear decline that is parallel for faculty and residents. If the current rate of decline continues, it is predicted that by 2040 less than 10% of ob-gyn faculty will be male (95% CI: 3.5 – 22.8%) and nearly all residents will be female.

Conclusions: Medical education organizations support the concept that truly diverse medical teams improve medical outcomes. Gender and racial diversity in health care brings perspectives that improve group problem solving and creativity. Gender diversity is considered critical for excellence in medicine. The focus has been on women in medicine, while a long-term retrospective analysis of men in ob-gyn has not been published. Findings from this study show that over a 50-year period, there has been a steady decline in male ob-gyn faculty and residents. The annual rate of decline in male faculty reported here is comparable to the 1.4% reported by D.J. Wooding et al. (2020) between 2007 and 2018. At the current rate of decline, our results predict that in 17 years, less than 10% of all ob-gyn faculty will be men and nearly all residents will be women.

The literature provides insight into activities that appear to contribute to this ongoing trend. With the expansion of medical schools, the number of female medical students has increased. Furthermore, the percentage of female medical students has reached 50%. Males represented only 20% of applicants to first-year ob-gyn residency positions and were less likely to be selected in the match (Bowe et al 2021). Experiences during the ob-gyn clerkship show reports of occasional exclusion of male students from clinical activities. Males are told that patient preference for gender concordance will negatively impact their clinical practice opportunities. In fact, gender concordance is fourth on the list of characteristics valued by women after a provider's technical skills, interpersonal style and communication skills (Johnson et al. 2005). At institutional level, medical students have few male ob-gyn role models or, in the case of racial minorities, none. The dwindling number of male faculty, especially at the junior level, and residents may be indicative to students that there is no longer a role for men in ob-gyn.

Strengths of this analysis include use of large national datasets spanning five decades. Study limitations include that the projections may be underestimates due to a lack of age data for analysis of attrition. Retirement is expected to be proportionally greater for men than women over the next 20 years. Information about gender expansive individuals was not available as gender was collected as a dichotomous variable. Finally, an analysis of gender in academic ob-gyn leadership and rank was beyond the scope of this report.

The present study clearly demonstrated the steady decline of males in the academic ob-gyn settings. Academic leadership, and especially ob-gyn department chairs and medical education organizations, need to acknowledge this decrease of gender diversity and determine if this is acceptable. In an expert review in 2018, L.B. Craig et. al. stated that, in a field that is seemingly less attractive to male medical students, identifying the root of gender differences in ob-gyn training may help elucidate and, perhaps, even reverse this trend. This is a strategy being employed in other specialties to increase the representation of women. This data could provide a metric for determining whether efforts to improve gender diversity in ob-gyn are warranted. Moving forward, the specialty of ob-gyn will either accept becoming nearly exclusively female or institute strategies to encourage those male medical students considering pursuing ob-gyn residencies.

A49 STANDARDIZING PATIENT AND PROVIDER EDUCATION TO ADDRESS BREASTFEEDING INEQUITY

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DOI: 10.54053/001c.121016

Introduction: Breastfeeding provides many infant, mater-

nal and societal benefits. Breastfeeding reduces maternal and infant risks for a number of diseases, encourages maternal-infant bonding, is more environmentally friendly and lowers healthcare costs. Based on the most recent Women, Infants and Children (WIC) program data, the obstetrical patient population served by the Department of Ob/Gyn at Southern Illinois University School of Medicine (SIU-SM) was significantly lacking in breastfeeding initiation rates (~16% in 2020) when compared to the Healthy People 2020 goal for ever breastfed infants of 81.9%. We aimed to assess areas of patient care that could be improved upon when counseling our patients about breastfeeding.

Purpose: Our primary goal was to evaluate current breastfeeding initiation rates and whether these improved after implementation of the standardized breastfeeding education materials that were to be provided to both healthcare professionals and patients.

Methods: In partnership with the Illinois Public Health Institute (IPHI), all patients who received prenatal care at SIU-SM, Department of Ob/Gyn were offered standardized brochures that supplemented our prenatal counseling regarding breastfeeding. Nurses, residents, and other healthcare providers were also provided information on counseling patients. Breastfeeding rates were assessed in our prenatal population prior to and after implementing standardized breastfeeding educational materials (IRB# 22-133) and compared with Chi-square tests.

Results: Patient demographics were as follows: 55.9% White, 31.8% Black/African American; 95.7% non-Hispanic; 93.4% utilized Medicaid services for insurance; the mean age was 26.8 ± 6.1 years of age. Baseline breastfeeding initiation rates of ever breastfed infants were significantly higher in the interventional group compared to the control group (75% vs.60%; p=0.002). Breastfeeding rates at the first postpartum visit were also significantly increased after the intervention (65% vs. 43%; p=0.008). A significant increase in the percentage of breast pumps provided in the prenatal clinic was also noted (28.4% vs. 0%; p<0.0001).

Conclusions: Breastfeeding rates in our patient population were significantly lower than the Healthy People's 2020 goal. Raising awareness through this initiative and improving our educational tools via the partnership with IPHI improved breastfeeding initiation rates. As obstetrical providers, we are optimistic about this data, but acknowledge additional interventions may be necessary to improve health equity across our disadvantaged patient population. Future directions include looking at data for ever breastfed infants vs. continuation of breastfeeding through the American Academy of Pediatrics recommended 6 months of exclusive breastfeeding. We would also like to explore how partner involvement and occupation type might impact breastfeeding initiation rates.

A50 ASSESSMENT OF THE INCIDENCE OF MÜLLERIAN ANOMALIES IN CENTRAL ILLINOIS

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DOI: 10.54053/001c.121017

Introduction: Müllerian anomalies include a spectrum of malformations resulting from the underdevelopment of the Müllerian duct during embryological development. This results in a malformed vagina, uterus or both. Complete agenesis of one or both of these structures in a subset of these cases is known as Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome. There are two types of Müllerian agenesis: Type I MRKH only affects the upper vagina, cervix and uterus, whereas Type II MRKH has associated malformations affecting the renal, auditory and skeletal systems. The reported prevalence is approximately 1 in 5,000 for MRKH syndrome and ~5.5 in 100 for all Müllerian anomalies; however, there is a broad range in the described incidence rates.

Purpose: We hypothesized the patient population served by the Department of Ob/Gyn, Division of Reproduction, Endocrinology and Infertility (REI) at Southern Illinois University (SIU) School of Medicine has a higher incidence of Müllerian anomalies and MRKH. Our objective was to assess the incidence of these Müllerian anomalies and describe the types of anomalies that affect women in Central Illinois.

Methods: All patients receiving care at SIU Ob/Gyn, Division of REI from 01/1/2010-07/31/2021 were queried using specific ICD-9 and 10 codes and further screened to verify eligibility. A retrospective review (IRB# 21-893) was then conducted on all eligible subjects and relevant health information was extracted from the electronic health record. Continuous variables were measured by central tendency (mean or median) and dispersion (standard deviation or range). Categorical variables were described using frequencies and percentages.

Results: The initial query identified 282 individuals of which 81 were deemed eligible (i.e., confirmed Müllerian anomaly). The total number of unique patients who underwent an ultrasound at REI during that time of study approval was 697. Based on these data, the calculated incidence of Müllerian anomalies in the REI patient population is ~11.6% and the incidence of MRKH is 57 in 5000. Demographics included: 74 subjects were White (91.4%), two Black or African American (2.5%), one Asian (1.2%) and 4 declined to report their race or identified as more than one race (4.9%); two subjects were of Hispanic ethnicity (2.5%). Mean ages at menarche and diagnosis were 12.7 ± 1.7 and 27.8 ± 6.4 years, respectively. Eight subjects diagnosed with MRKH had Type I MRKH. The specific type of anomalies identified included: uterine septum (29.1%), arcuate uterus (25.3%), unicornuate uterus (19.0%), agenesis (10.1%), bicornuate uterus (6.3%), uterus didelphys (6.3%) and 3.8% had another type of anomaly. The majority of patients underwent surgery within approximately one year of diagnosis (74%). Postoperative complications were rare (~7%) and included mild constipation, urinary retention and bleeding from the incision site. Pregnancy outcomes were as follows: prior to diagnosis, 3 (30%) infants were preterm vs. 7 (70%) term and those were spontaneous conceptions; af-

ter diagnosis 4 (30%) infants were preterm vs 9 (70%) term deliveries and the most common methods of conception were spontaneous and ovulation induction; post-surgery 11 (31%) infants were born preterm vs 24 (69%) term deliveries, and the most common methods of conception were ovulation induction and in-vitro fertilization.

Conclusions: From this initial investigation, we found the incidence of Müllerian anomalies in the SIU Ob/Gyn, REI population is higher than the wide range of reported values. As expected, the vast majority of these patients underwent surgical management with little or no complications. We aim to further study what factors/exposures may be impacting the development of female fetuses resulting in Müllerian anomalies.

A51 CLINICAL CHARACTERISTICS AND MATERNAL AND NEONATAL OUTCOMES OF PREGNANT WOMEN POSITIVE, NEGATIVE, AND RECOVERED WITH COVID-19 PNEUMONIA

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Background: The pandemic of coronavirus disease 2019 (COVID-19) has caused serious concerns about its potential adverse effects on pregnancy. There are limited data on maternal and neonatal outcomes of pregnant Hispanic women with COVID-19.

Methods: This study was a retrospective chart review. This cohort included pregnant females between the ages of 18-60 who had tested positive for COVID-19 and tested negative for COVID-19 from the electronic medical records of Texas Tech Health Sciences Department of OB/GYN clinics, University Medical Center (UMC), and El Paso Children's Hospital (EPCH) from March 2020 to June 2021, in addition to their neonates. Records were analyzed to collect information on demographics, BMI, gestational age, COVID status at the time of delivery, history of exposure to COVID, signs and symptoms of COVID, presenting symptoms, comorbidities, and treatment of COVID before and after delivery. Further, mode of delivery, pregnancy complications, complications during labor, and adverse outcomes (maternal death, admission to ICU, length of stay in ICU). We also collected diagnostic data. The control group included age-matched pregnant individuals without a diagnosis of COVID. The control group was evaluated for the same variables and outcome assessment. For the neonatal outcomes, the mothers were matched to the neonate. Data collected on neonatal outcomes included demographics, date of delivery, APGAR score, admission to the newborn nursery or NICU, the reason for NICU admission, birthweight, length, head circumference, fetal abnormalities, prematurity, neonatal death, COVID test results, breastfeeding (expressed or direct), and length of hospital stay. We also collected diagnostic data for neonates. Statistical analyses was performed using descriptive statistics for the various variables, a t-test to determine differences between the two groups for the continuous variables, and a chi-square test for the categorical variables.

Results: During the period March 21, 2020 - June 15, 2021, 370 pregnant women, out of which 100 women were COVID-positive, 71 women who were recovered, and 188 controls. COVID-positive women had more elevated fibrinogen, WBC, alkaline phosphatase, aspartate aminotransferase, and alanine transaminase but nonsignificant CRP levels. Most of the COVID-positive and COVID recovered women had preeclampsia during pregnancy, 29.24% COVID positive women delivered via C-section, while 68.42% of women delivered vaginally. The mean length of stay was 2.97 days for both groups. There 79.41% of women chose to breastfeed. One maternal death was recorded, while only two women had ICU admissions. Compared to the COVID-positive, the recovered women still had significantly elevated fibrinogen but not ALP, ALT, AST, and CRP. The COVID recovered women had lower counts of vaginal delivery (56.3%) and higher C-section rates (39.4%) among the three groups. The recovered group had higher premature deliveries (18%) than the other two groups (8%, 17%). Among the neonatal outcomes, there were four neonatal deaths in the COVID group, two neonates had COVID transmission during delivery, and 19.4 % of neonates were admitted to the NICU. Among neonatal vitals, blood pressure was higher in the positive (41%) and recovered (32.39%) groups than in controls (27.6%). Neonatal hypoglycemia was also higher in the recovered group (27.5%) than in the positive (17.11%) and control group (18.4%).

Conclusions: Severe maternal and neonatal complications were not observed in pregnant women with COVID-19 pneumonia who had a vaginal or cesarean delivery. There were complications observed in women who recovered from COVID during pregnancy.

A52 PROMOTING REPRODUCTIVE JUSTICE IN THE OFFICE: LARC REMOVAL COUNSELING AT TIME OF INSERTION

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Purpose: While access to receiving LARC devices is increasing, it is not apparent if there is an infrastructure for providing equal access to LARC removal. The purpose of this study was to assess how patients perceive LARC counseling by providers at the time of insertion. In addition, explore the information that providers include in their LARC removal counseling at the time of insertion.

Methods: The study population included participants of both patients and providers. Our patient participants included people between the ages of 18 to 50 years old who have or previously have had any form of intrauterine contraceptive device or subdermal contraceptive implant. Sub-

jects will be recruited from the Texas Tech El Paso Obstetrics and Gynecology Clinics. The provider participants included residents, attending OB/GYNs, and nurse-midwives in the Texas Tech Health Science Center at El Paso Department of Obstetrics and Gynecology. Patients completed an anonymous survey depending on which type of device they had. If they have had both the intrauterine contraceptive device and the subdermal contraceptive implant, they were eligible to complete one survey for each device. Participants completed surveys on an iPad. Providers were surveyed once, either through paper surveys or emailed surveys. Survey responses were anonymous. Data was analyzed using SAS 9.4 software.

Results: Overall, 246 participants reported having a subdermal implant (45.5%) or IUD (54.5%), majority of the participants were between the ages of 18-30 (72.8%), Hispanic (78.9%), had insurance or grant accessibility (67.5%). There were 17 providers consisting of medical residents, physicians, and nurse midwives who completed the survey. Based on provider surveys, 80.0% of providers counseled patients at 100% of visits about getting device removed. In addition, 80.0% of providers informed their patients to return to the office for device removal. About 93.3% of providers never discuss the cost of removing the device. Regarding the patient surveys, in response to the question, "How well do you understand the process of getting the device removed," results were reported into two groups: 'extremely poorly/poorly/neutral" and "somewhat well/very well." There was no statistically significant difference among the patients with an IUD who either poorly understood the process or understood the process as least somewhat well. For patients with a subdermal implant, 73.68% of those who poorly understood the process of removal stated that providers did not discuss the cost of removing the device versus 37% of those who understood the process well where providers did not discuss the cost of device removal ($p < 0.001$). About 68.42% of patients with a subdermal implant who poorly understood the process of device removal stated that providers did tell them they needed to come back to the office for device removal; 94.62% of patients with a subdermal implant who understood the process of device removal well stated that providers told them to return to the office for removal ($p < 0.001$). On whether providers discussed insurance coverage for device removal, 63.44% of patients who understood the process well states yes versus only 21.44% of patients who poorly understood the process of device removal.

Conclusions: In patients with subdermal implants, a low percentage of providers discussed the cost of removal and whether or not insurance covered the cost of removal. Results implicate a need for an infrastructure to increase access for LARC removal services. However, further studies with larger patient and provider pools would be necessary for statistically significant results, particularly for IUDs.

A53 COMPARISON OF SHORT CERVICAL LENGTHS IN SINGLETON AND TWIN PREGNANCIES

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Introduction: Multifetal gestations are six times more likely to give birth preterm and 13 times more likely to give birth before 32 weeks gestation than women with singleton gestation (Martin et al, 2014-2018). Abnormal cervical shortening measured with transvaginal ultrasonography has been associated with an increased risk of preterm birth (Iams et al, 1996). In singleton pregnancies, midtrimester cervical length of less than 2.5 cm measured between 16-24 weeks has been associated with an increased risk of preterm birth in a variety of screened populations (Crane, JM., Hutchens, D., 2008). In twin pregnancies, a shortened cervix in the second trimester is more common than in singleton pregnancies and can be a predictor of early preterm birth (Yang et al, 2000). Current guidelines from ACOG, state that the data is insufficient to recommend for or against routine endovaginal ultrasound screening of cervical length in twin pregnancy. Our aim was to determine if twin gestations have shorter cervical lengths than singletons at the time of midtrimester anatomy scan, and to investigate the correlation of cervical length with the likelihood of spontaneous preterm birth.

Methods: Retrospective chart review between January 2016-January 2022 identified patients with cervical shortening (<2.5 cm) at the time of mid-trimester anatomical ultrasound exam. Exams were performed at the Maternal Fetal Medicine Department at Promedica Toledo Hospital between 16 and 24 weeks' gestation. Cervical lengths and delivery data were collected and analyzed.

Results: 122 patients met inclusion criteria, with 95(78%) singleton pregnancies, and 27(22%) twin gestations. Singleton gestations had an average short cervical length of 1.8 ± 0.6cm, whereas twin gestations had an average short cervical length of 1.29 ± 0.55cm ($p<0.0001$). Twin gestations were more likely than singleton gestations to have a very short cervical length <1.5cm (OR=6.75, 95% CI 2.59-17.58, $p =0.0001$). Average gestational age of delivery for singleton gestations identified with a short cervix was 35w6d ± 4w4d, whereas the average age at delivery for twin gestations was 31w6d ± 5w6d ($p=0.0002$).

Discussion: Our results are consistent with previous reports that cervical shortening is more common in twin pregnancies than singleton pregnancies. Our results suggest that twins are more likely to have a very short cervical length identified in between 16-24 weeks. In addition, twin gestations with abnormal cervical shortening deliver at earlier gestational ages in comparison to singleton gestations with abnormal cervical shortening. Obtaining transvaginal cervical lengths at 16-24 weeks gestation allows for earlier identification of shortened cervical length. Ongoing research may identify interventions which are consistently effective in preterm birth prevention in twin gestation.

A54 THE IMPACT OF MATERNAL BMI ON TIME OF TRANSVAGINAL CERVICAL IMAGING

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Introduction: Ultrasound is an integral part of obstetrical care and obesity has been shown to decrease the accuracy of ultrasound examination in high-risk pregnancy (Tsai et al, 2015). Obesity decreases the fidelity of ultrasound, as decreased visualization is seen with increasing depth of abdominal adipose tissue (Paladini, 2009). While maternal obesity has been shown to detrimentally impact anatomical ultrasound, the effects of obesity on the performance of transvaginal ultrasound are unclear. Our aim was to evaluate if obesity has an effect on the time required to obtain transvaginal cervical length.

Methods: Retrospective chart review between January 2016-January 2022 identified patients with cervical shortening (<2.5 cm) at the time of mid-trimester anatomical ultrasound scans. Scans were performed at the Maternal Fetal Medicine Department at Promedica Toledo Hospital between 16- and 24-weeks gestation. Patient BMI was recorded at the time of ultrasound and divided into obese (BMI ⩾ 30 kg/m²) and non-obese (BMI ⩽ 30 kg/m²) categories. Time to complete transvaginal ultrasound imaging was recorded in both patient populations and compared.

Results: 216 patients met study criteria. Out of the 216, 89 (41%) were obese and 127 (59%) were non-obese. Average BMI of all participants was 29.2 ± 7.4 kg/m². Average time spent on ultrasound for patients with BMI <30 was 13:36 ± 01:28 and for BMI >30 15:34 ± 01:48 (p=0.46). There was no statistical difference between obese and non-obese patients and transvaginal scanning time > 10 minutes (OR 1.24, 95% CI 0.719-2.13, p=0.44)

Discussion: Our results suggest that the time to obtain cervical length measurements via transvaginal ultrasounds is similar between obese and non-obese patients. Time necessary to perform endovaginal ultrasonography of the cervix does not appear to be affected by maternal BMI. Since length of time necessary to complete transvaginal cervical length measurement does not appear to be affected by maternal BMI, our results suggest that additional scheduling time does not need to be allocated for obese patients. Other investigators have shown that early incorporation of transvaginal assessment of fetal anatomy in obese women improved the rate of survey completion and demonstrated earlier completion of the fetal anatomic evaluation (Toscano et al, 2021). This study encourages the further use of transvaginal ultrasound in obese, obstetrical patients.

A55 METHODOLOGY FOR VNOTES SACROCOLPOPEXY WITH TRANSVAGINAL MESH RETROPERITONEALIZATION AND TENSIONING

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Background: Laparoscopy has the potential of making procedures less invasive with a lower complication profile while being more appealing to patients due to ease of recovery and cosmesis. Sacrocolpopexy has traditionally been performed through the abdominal route with limited reports of transvaginal applications.

Methods: Our study aims to provide a step-by-step approach to performing a vNOTES sacrocolpopexy with appropriate tensioning and peritoneal coverage of the mesh used based on both cadaveric and live patient experience. This systematic description of a fully laparoscopic transvaginal apical suspension with mesh attachment to the sacrum being completely retroperitoneal and the mesh retroperitoneal and covered at the conclusion of the case.

Results: Successful vNOTES Sacrocolpopexy is performed and reproduced, with transvaginal complete peritoneal coverage and tensioning of the mesh. Total vaginal length (TVL) of 9 cm in both live and cadaveric patients. The steps of the procedure include

1. A vNOTES laparoscopic-assisted vaginal hysterectomy is completed.
2. A 0-Prolene suture is attached longitudinally to the sacral arm of a precut (Y) mesh or any single layer Type I polypropylene mesh piece, placed from the sacral arm to the distal edge of the mesh forming a "U" shape with the bottom of the "U" ultimately attaching to the anterior longitudinal ligament.
3. To begin the SCP procedure after completion of the vaginal hysterectomy, dissection of the presacral mesh attachment site begins by entering the retroperitoneal space, slightly right of midline at the level of the ischial spine, lateral to the rectum and medial to the uterosacral ligament.
4. Once the dissection is completed with appropriate exposure of the anterior longitudinal ligament at the sacral promontory, the sacral mesh is attached to the anterior longitudinal ligament at the S1-2 level, ideally with a tacker under direct visualization.
5. Two sutures, one on each side of the tunnel, are placed on the cephalad edge of the sacral peritoneal incision and labeled. After removing the Gelport, two more absorbable sutures are attached to the anterior peritoneum of the anterior vaginal wall in the proximity of the bladder, around 3 cm on each side of the midline. These peritoneal sutures in each of the

above two steps will later be tied together to help cover the arms of the mesh.

6. Before mesh arm attachment, each area on the anterior and posterior vaginal walls is dissected off respective tissue (bladder and perineal body/rectovaginal fascia) and then everted for mesh attachment.
7. Both anterior and posterior mesh pieces are sutured to their respective vaginal walls with six interrupted sutures. Each mesh arm will have several centimeters of mesh freely hanging off both anterior and posterior cuff edges. These edges can be trimmed to 2 cm past the vaginal cuff edge.
8. All three pieces of mesh are stacked together and serially threaded from anterior mesh to posterior mesh, ensuring each mesh piece remains aligned (Figure 1). Each U suture is then passed through the free ends of the anterior and posterior mesh pieces and then secured with a hemostat. The cut edges of the suture can either be aligned at the back of the posterior arm to permit retroperitonealization of the knot or placement at the vaginal apex abutting the vaginal cuff.
9. Peritoneal closure is achieved by tying a posterior tunnel suture to each respective anterior vaginal wall suture at each lateral edge of the tunnel incision.
10. The vaginal cuff closure begins with a Vicryl suture anchored at the patient's right forniceal edge running it to midline while anchoring another suture at the left forniceal edge to permit the surgeon to tension the vaginal apex appropriately.
11. Mesh tensioning is achieved by placing a single digit through the remaining space left in the tunnel incision. A knot using the Prolene suture securing the overlapping mesh is tied extracorporeally and pushed through the vaginal cuff to mobilize the mesh crux cephalad, thus elevating the vaginal apex towards the sacrum. The elevation of this knot guides the vaginal length.
12. The remainder of the vaginal cuff is then closed while avoiding incorporation of the mesh into the suture line (the ideal distance from mesh Y-junction to cuff is 1-2cm).

Conclusion: By describing an innovative and reproducible technique to perform vNOTES sacrocolpopexy based on cadaveric and live patient experience, we successfully demonstrate how to perform a laparoscopic transvaginal apical suspension with mesh attachment to the sacrum through retroperitoneal placement. The vNOTES approach for sacrocolpopexy may offer a viable alternative to the transabdominal approach for candidates with difficult transabdominal access while avoiding trocar injuries and reducing surgical costs.

A56 PURSUIT OF A DUAL DEGREE DURING RESIDENCY TRAINING

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Background: The increasing complexity of the health care system is requiring physicians to become more expansive and comprehensive in their knowledge. Public health awareness, biostatistics, and fiscal understanding including medical reimbursements are only small facets of the expertise physicians are needing to understand. Residency programs across the country are starting to permit the incorporation of graduate education into residency curricula. Residents in academic training programs are starting to have the opportunity to pursue a dual degree study in addition to their residency training. Despite the recognized need for well-rounded physicians and growing opportunities for master's degree education concurrent with residency training, there is a lack of research regarding residents' interest in pursuing concurrent degrees. Additionally, the resources that institutions offer repertoires needed to support residents during such endeavors are lacking.

Objective: The purpose of this study was to elucidate current interest, resource availability, as well as barriers that Obstetrics and Gynecology (OBGYN) residents may come across when considering a dual degree opportunity during their residency.

Methods: A comprehensive questionnaire of 28 items was developed by the researchers using a focus group. The innovative survey was sent to the program directors of all ACGME-accredited OBGYN programs in the US in an electronic format. The survey offered anonymity and easy online accessibility while being available for a total of four weeks (during the month of August 2022). A reminder was sent one week prior to the conclusion of data collection.

Results: A total of 298 ACGME-accredited OBGYN programs were contacted with 52 individual responses received. The majority of the respondents identified as white females, with all respondents being under the age of 35. A total of 72% of respondents came from combined academic programs or strictly academic programs with 25% of respondents having initiated or completed additional graduate-level degrees at the time of the survey. Most programs did not mention the opportunity of pursuing a dual degree at the time of residency interviews, and over 50% of programs did not permit their residents to pursue another graduate study during their training. Of those permitting such an endeavor, criteria for pursuing the graduate degree included successfully completing the first year of residency and having a 'passing' CREOG score, whereas 40% of respondents were unsure of stipulations by their health systems. Regarding the source of the degree, 90% of respondents stated their residency institution did not have the setup or offer a combined dual degree program option,

and >75% of respondents reported a lack of tuition reimbursement for such growth opportunities. Whereas 38% of respondents would consider a dual degree option during residency training if available, 51% of those surveyed are interested in pursuing another degree only after residency, with time and cost being the biggest deterrent to pursuing a degree while in residency. Additionally, the platform utilized for the courses - online versus in-person – was another significant factor that plays a role. Regarding growth opportunities, the majority of respondents are interested in leadership roles and believe that supplementing their credentials, ideally with a Masters in Public Health.

Conclusion: The increasing demand for physician knowledge outside of clinical medicine has slowly increased throughout the years. As a response, residency programs are beginning to integrate graduate classes and degrees into the training curriculum. Although a majority of residents appear to be interested in pursuing a graduate degree at some point in their career, their biggest concerns during residency include the time needed to devote to their studies and the cost of earning a graduate degree. It is also apparent through the survey that many programs have not been clear regarding the resources they offer for those who are interested in continuing graduate education during residency training. Recognizing the need for physicians to navigate studies outside of clinical medicine, residency programs need to establish more robust pathways for residents to pursue additional graduate education in fields including business, public health, and social work amongst others. Large-scale research will be needed to further investigate how programs can better support their residents' interests as they diversify their knowledge base to support their clinical decision-making skills.

A57 LATENT CLASS ANALYSIS OF DIETARY INTAKE AND ORGANIC FOOD CONSUMPTION IN A MIDWEST COHORT OF PREGNANT INDIVIDUALS

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Introduction: The objective of the study was to describe food consumption patterns over the trimesters throughout pregnancy in a prospective obstetric cohort. We planned to characterize patterns of overall food and organic food consumption into groups using a latent class analysis (LCA).

Methods: A Midwest pregnancy cohort self-reported dietary food intake and percent of foods of each type that they consumed which were organic on a questionnaire. This was administered multiple times during pregnancy. The food frequency questionnaire was designed for this study and contained questions related to 89 food categories. The questionnaire was completed once in each trimester, after they were enrolled into the study. The cohort has responses across the 13 food domains were grouped by a LCA process demonstrating separation of the cohort by higher or lower consumption of fruits, vegetables, and berries and percentage of those foods where organics were consumed. The organic percentage in each food was categorized as low (0-10%) and significant (anything > 10%). Demographic characteristics were compared between LCA groups.

Results: Valid responses were analyzed from 359 participants. The LCA best model grouped participants into 3 groups: I- high fruits, vegetables and berries, with significant organic use; II- high fruits, vegetables, and berries, with low or no organic use; and III- low fruits, vegetables, and berries with low organic use . Using this grouping, there were 84 (23.4%) in Class I, 153 (42.6%) in Class II, and 122 (34.0%) in Class III. There were significant differences in racial distribution in the groups, with lower rates of Caucasians in Class II and higher rates of Hispanic women in reporting Class I. We observed that 50% of African American women were grouped into Class III. Women in class III tended to be younger (p=0.01), unmarried (52.4%, p<0.001), have less than college degree attainment (p=0.0005), be of lower income (p<0.001), and be a current smoker (p=0.03). -While not statistically significant, living in an urban area was higher for those in Class III than in Class I or II. -Participants living in rural areas were reported significant organic food consumption 18.6%, compared to 24.1% of those in suburban areas and 23.1% in urban areas (p=0.36). 23.1% of rural-dwelling participants were grouped in Class III compared to 31.9% of those in suburban areas and 35.3% of those in urban areas. (p=0.36).

Conclusion: Self-reported food consumption in this pregnancy cohort was categorized in 3 classes based on consumption of fruits, vegetables, and berries and the percentage of foods consumed that were organic. These Classes were associated with multiple maternal characteristics. This may indicate opportunities for dietary education interventions for pregnant individuals.

A58 ASSOCIATION OF CLINICAL FACTORS WITH THE DEVELOPMENT OF GDM IN THE HOOSIER MOM'S COHORT

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Introduction: Gestational diabetes mellitus (GDM) develops during pregnancy, raising the risk of adverse perinatal outcomes. The objective of this study was to investigate potential therapeutic targets for prepregnancy and early pregnancy interventions to decrease the impact of GDM on health during and after pregnancy.

Methods: The Hoosier Mom's Cohort was a prospective pregnancy cohort designed to assess for predictors of GDM. Inclusion criteria were gestational age <20 weeks, a singleton pregnancy, and being at least 18 years old. Individuals with a pregestational diabetes diagnosis, HbA1c at screening of ⩾6.5, or abnormal 3-hour oral glucose tol-

erance test before 20 weeks of gestation were excluded. Study visits with survey completion and biospecimen collection occurred, one at enrollment, and one in the early third trimester. All participants were given a Garmin activity tracker to collect objective physical activity and sleep data. Sociodemographic, medical, behavioral, and psychosocial characteristics were obtained, and obstetric outcomes were abstracted after delivery by certified chart abstractors. The primary outcome was development of GDM. Associations between categorical variables and GDM were made with Chi-square testing, and those between continuous variables and GDM were done with t-test.

Results: Of 411 participants recruited into the Hoosier Moms Cohort, complete data was available for 391 (95.1%). Participants had a mean age of 30 years, a BMI of 28, and 17% were of Hispanic ethnicity. Study participants self-identified mostly as White (71%) or Black (16%). 66% of participants were nulliparous. Additionally, 54% reported a family history of diabetes, with 4% of patients also reporting a prior history of GDM.

A total of 39 participants (10.0%) developed GDM. Participants who developed GDM had significantly higher BMI at study entry (31.6 ±8.5 vs 27.2 ±6.5, p=0.003), lower probability of being nulliparous (15.38% vs 33.61%, p=0.02), higher baseline HbA1c values (5.24 ±0.3 vs 5.07 ±0.3, p<0.001), higher triglycerides levels (156.85 ±62 vs 134.16 ±54.5, p=0.022), and higher blood glucose values (85.90 ±14.4 vs 79.96 ±17.7, p=0.025) at first study visit. Additionally, 28% of participants who developed GDM had a prior history of GDM, compared to 2% of participants who did not (p<0.0001). Those who developed GDM had higher rates of chronic hypertension (12.82% vs 1.96%, p=0.0034) and higher insomnia scores (9.62 ±5.1 vs 7.80 ±4.7, p=0.028).

Conclusion/ Implications: Multiple clinical factors were found to be statistically associated with the development of GDM. These characteristics will be utilized in a comprehensive predictive model using machine learning methodologies to guide clinical decisions early in pregnancy.

A59 USE OF ALGORITHMS TO PREDICT DISEASE: A CLINICAL PERSPECTIVE

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DOI: 10.54053/001c.121026

Introduction: Artificial Intelligence (AI) has been the focus of many recent publications describing its use in a variety of medical specialties, yielding seemingly overwhelming positive success. Its dependence on a large volume of information from different sources requires a computerized analysis for its execution. Rather than explain the complexities of its operation, it is the intent of this communication to advance reasons for caution in its medical applications in Obstetrics and Gynecology (OBGYN) and elsewhere. Machine Learning (ML) represents a significant aspect of AI, and the concepts that help to explain its function are unique and different from how data is traditionally visualized and statistically described. AI and the algorithmic approach to making diagnoses has become popularized recently, along with the use of prediction models for the screening of targeted populations of patients for possible disease.

In OBGYN, there may be value in predicting clinical circumstances that may not otherwise be predicted, but applying these formulas should be measured against the interventions which can have the desired clinical outcomes. For example, does it matter if we can predict the occurrence of postpartum hemorrhage (PPH) if we know there is a finite risk of it happening, and that we need to always be prepared for it, regardless of whatever predicted risk there may be? Moreover, there appears little that can prevent PPH at the site of care when a prediction is made. Another predictable clinical scenario, shoulder dystocia (SD), can also be considered in this light. We may need to contrast these prediction models with scenarios for which there may be an intervention that can be offered to prevent it from occurring. Preeclampsia (PE) is such an example of a condition that can be predicted by AI (better than by statistical measures), for which there may be interventions that may diminish its likelihood of occurrence and severity in later pregnancy (e.g. with low-dose aspirin, LDA).

A project was conducted to contrast the use of clinical AI applications in these described circumstances (PPH, SD, and PE).

Methods: The medical literature was searched in PubMed for articles having the keywords of "obstetrics gynecology" and "algorithms" and "clinical success", published in the past 5 years. 17 articles which are clinically relevant to the specialty were found, and three specifically impactful articles were selected to compare their clinical utility, relative to what was mentioned in the Introduction. The three citations include: 1) Tsur A, et al: Development and validation of a machine-learning model for prediction of shoulder dystocia. Ultrasound Obstet Gynecol. 2020 Oct;56(4):588-596. 2) Venkatesh VV, et al: Machine Learning and Statistical Models to Predict Postpartum Hemorrhage. Obstet Gynecol 2020;135(4):935-944. 3) Jhee JH, et al: Prediction model development of late-onset preeclampsia using machine learning-based methods. PLoS ONE 2019; 14(8):e02212202.

Results:

1. 0.44% of over 53,000 births had SD, predicted 87% of the time with ML.
   The clinical benefit of its prediction has not been demonstrated, regarding the value of preparedness for when it occurs (approximately one in 200 vaginal births). For example, the time it takes to execute the necessary maneuvers for delivery when SD is recognized may not at all relate to its prediction.
2. 4.8% of over 152,000 births had PPH, predicted 93% of the time with ML.
   Whether PPH is recognized at vaginal or cesarean birth, the cascade of actions which are necessary for its successful management, may not be employed any more quickly whether it is predicted or not. Preparedness for its occurrence is a necessary skill for every obstetric professional at every delivery.

3. 4.7 % of about 11,000 patients had late term (⩾ 34 weeks of gestation) PE, predicted 92% of the time with gradient boosting ML.
   PE has a finite occurrence in late pregnancy, causing premature birth and other related perinatal morbidities, for which LDA has been shown to improve pregnancy outcome if initiated prior to 16 weeks of gestation. The initiation of such prophylaxis has been shown to not regularly occur for those at increased risk. It appears that ML may be able to cause initiation of prophylaxis which may not otherwise sufficiently occur. Therefore, the clinical benefit of prediction may have important potential value in this case, if prompting the initiation of prophylaxis, resulting in decreased incidence of PE complications.
   Discussion: While the ability to predict clinical events may seem to be attractive, the clinical outcomes in those circumstances must be measured. Three such examples of prediction models were compared (SD, PPH, and PE), and the potential difference in clinical outcome is described. The clinical value of AI should indeed be recognized. However, caution is advised before resources are provided for it without the necessary demonstration of clinical benefit from such AI prediction models.

A60 3D SONOGRAPHIC DIAGNOSIS OF HYDROSALPINX: IMPLICATIONS FOR THE NON-LAPAROSCOPY CONFIRMATION OF PELVIC INFLAMMATORY DISEASE

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Introduction: As Pelvic Inflammatory Disease (PID) has many clinical and radiographic features, the specific utility of sonographic imaging for its diagnostic confirmation may be helpful with its non-invasive approach, rather than the common reliance on the operative procedure of laparoscopy for this purpose. Since the presence of hydrosalpinx is commonly associated with PID, its associated three-dimensional transvaginal sonography (3DTVS) appearance may offer helpful diagnostic certainty. Although Timor-Tritsch introduced a sonographic technique for its display previously in 2005, the technique used in this current imaging project may be somewhat simpler to employ and possibly even more revealing. A case series was investigated for the possible diagnosis of deep invasive endometriosis (DIE), for which patients presented with pelvic pain presumed to represent DIE. A separate case series was investigated for the possible value of the O-RADS app for the diagnosis of ovarian malignancy. Since the sonographic diagnosis of hydrosalpinx was made in each dataset, and some of those patients underwent exploratory surgery, the veracity of the sonographic diagnosis could be calculated. As pelvic pain could also represent possible PID, the cases in which hydrosalpinx were found were specifically examined for it. The present investigation was performed in order to detail the value of 3D surface rendering imaging for hydrosalpinx and its ultimate diagnosis. Some patients underwent operative intervention and thus histologic confirmation, in addition to the sonographic evaluation which all patients had performed. It is the intent of this investigation to display the value of 3DTVS to diagnostically determine some cases of chronic pelvic pain as being due to PID.

Methods: A series of 32 patients were sonographically evaluated with 3DTVS for complaints of pelvic pain, and when a hydrosalpinx was observed, a particular technique was employed (described below). Nine of those patients had a surgical intervention in addition to the ultrasound evaluation. The technique that was used can be described as follows. The 3D volume of the region of interest (ROI) was obtained, and it was manipulated to produce the best image of the hydrosalpinx. A large Ultrasound rendering box was created to demonstrate the external surface of the resultant 3D hydrosalpinx image.

Results: A total of 32 patients underwent the described rendering imaging with 3DTVS. Of those patients, 9 (27 %) also underwent surgical exploration. 78 % of those cases revealed surgical findings consistent with the presurgical sonographic diagnosis.

Conclusion: From the review of this case series, it appears that the sonographic diagnosis of chronic PID can virtually be relied upon with 3DTVS, rather than subject all patients to laparoscopy for whom this diagnosis may be considered. One can consider the described technique as a method of performing a partial "Virtual Laparoscopy". After sonographically confirming the diagnosis of chronic PID, a gynecologist can confidently use the available medical therapeutic methods for its treatment, and if such treatment fails improvement of the patient's symptoms, surgical extirpation can be considered (e.g. TAH-BSO). In this way, 3DTVS can be considered as an important gynecologic diagnostic tool for the described purpose. The rendered images increased the confidence in diagnosing hydrosalpinx.

A61 EVALUATION OF A PATIENT-CENTERED PERIOPERATIVE CURRICULUM: A PILOT STUDY

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Objectives: To evaluate a standardized patient perioperative education curriculum for women undergoing pelvic reconstructive surgery.

Materials and Methods: We performed a feasibility study to examine the practicality of a group-based, perioperative patient-centered educational curriculum (PPEC). Adult (⩾ 18 years) English-speaking women undergoing surgery for

pelvic organ prolapse (POP) and/or stress urinary incontinence (SUI) at a single center from February 2020 to March 2020 were approached to complete a PPEC session instead of receiving usual perioperative counseling. In-person PPEC sessions were facilitated by one Registered Nurse and attended by 2-4 patients and their support people 2 weeks before surgery. Patients undergoing SUI and POP surgeries were combined in each session. Recruitment was halted prematurely due to the COVID-19 pandemic. The content of the PPEC incorporated information about health optimization, details regarding the day of surgery, and instructions for postoperative care including pain, urinary and bowel management. A questionnaire assessing six aspects of patient preparedness was completed prior to (pre) and immediately following (post) course completion. Each question was self-rated on a scale of preparedness from 0 (not at all) to 10 (proficient). The primary outcome was change in self-assessed patient preparedness for pelvic reconstructive surgery. Median and interquartile range of pre- and post-course scores for each question are reported and the Wilcoxon matched pairs signed rank test was used to test significance of differences.

Results: A total of 16 patients were included in this pilot study. Patient preparedness was significantly improved among all domains for patients who completed the PPEC session. Prior to PPEC, patients self-reported they were most prepared in how to be healthy for surgery. The greatest difference in pre- to post-PPEC preparedness self-reported scores was in what to expect during hospital admission.

Conclusion: Our novel approach to perioperative counseling through a standardized educational curriculum offered to mixed groups of patients undergoing SUI and/or POP surgery was associated with significant improvements in patient preparedness for surgery.

A62 QUALITY IMPROVEMENT INITIATIVE TO OPTIMIZE MANAGEMENT OF PREGNANCY OF UNKNOWN LOCATION

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Introduction: Gynecology often gets consulted for patients with pregnancy of unknown location (PUL). Management is often delayed until a definitive diagnosis is made, despite the life-threatening nature of a missed or delayed diagnosis of ectopic pregnancy. A patient may undergo multiple blood draws and ultrasounds and wait days prior to diagnosis and treatment. In collaboration with the emergency department, a protocol was created to standardize the management of patients with PUL. The goal was to decrease the time to final diagnosis of pregnancy location, the time to resolution of management, and the total healthcare costs.

Methods: This was an IRB approved (#15137) QI initiative that involved retrospective analysis of patients prior to and after implementation of the protocol. The protocol centered around offering management options after trending 3 β-HCG values. Provider education was implemented via presentation at Grand Rounds and periodic emails. Chi-square, Wilcoxon rank sum, and Kaplan Meier estimation tests were used for analysis.

Results: Compared to preimplementation there was a decrease in the number of days to diagnosis from 9 days to 6 days (p=0.008). The distribution of ultrasounds (as presented from 25th to 75th percentile) performed prior to resolution changed from [1,3] preimplementation to [1,2] postimplementation (p=0.044). There was no significant difference in days to resolution (p=0.984) or number of blood draws performed prior to diagnosis and resolution (p= 0.150 and p=0.711).

Conclusion: The implementation of a protocol standardizing management of PUL resulted in decreased time to final diagnosis and the number of ultrasounds patients required prior to diagnosis. This protocol highlights the benefits of cost-conscious patient-centered care in a common area of gynecologic practice.

A63 PRIMARY LUNG ADENOCARCINOMA IN PREGNANCY: A CASE REPORT

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Case Report: This is a unique case of metastatic primary lung adenocarcinoma diagnosed in a 25-year-old G3P2002 at 15 weeks of gestation. The patient presented with acute onset of left chest and shoulder pain. Evaluation revealed anaplastic lymphoma kinase (ALK) positive, primary lung adenocarcinoma with metastasis to the liver and right adrenal gland. Treatment with palliative Alectinib 450 mg twice daily was initiated at 18 weeks gestation and increased to Alectinib 600 mg twice daily at 27 weeks gestation. Uncomplicated delivery occurred via spontaneous vaginal delivery following scheduled induction at 39 weeks and 2 days. There are few cases of lung cancer in pregnancy, and none which describe delivery at term in a patient with metastatic disease. This case provides insight on the treatment of ALK positive metastatic lung cancer during the second and third trimesters of pregnancy without necessitating preterm delivery or cesarean section.

A64 AMBULATION DURING NEURAXIAL ANALGESIA IN OBESE PATIENTS: A PILOT STUDY

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Objective: Obese patients are known to have prolonged labors and an increased risk of cesarean delivery in comparison to their normal weight counterparts. Movement has previously been shown to have beneficial effects on the labor process; however, neuraxial analgesia is often recommended in obese women and in common practice limits mobility. The benefits of continuing to ambulate during neuraxial analgesia are not known. As prior studies have postulated a soft tissue dystocia as a potential etiology for prolonged labor among obese patients, ambulation and encouraged movement throughout the labor process may be of particular benefit for these patients. The purpose of this study was to evaluate the feasibility of ambulation with neuraxial analgesia in nulliparous obese patients admitted for labor.

Study Design: This is a pilot study conducted at a single tertiary care center. Patients with a BMI of >=35 were approached if they were nulliparous, term, and planned vaginal trial of labor. Patients were excluded if there were contraindications to ambulation, including magnesium administration. Participants were identified at >=34 weeks estimated gestational age through clinic templates and induction of labor schedules, and were approached either in person or with a standard phone consent. Combined spinal-epidural analgesia was initiated per our institution's policy, with the exception that during the latter portion of the study the test dose was eliminated in order to decrease the immediate motor block from this dose. Following epidural catheter placement, serial blood pressure measurements and motor assessments were completed to ensure safety including a straight leg test and a step stool test. Patients who passed these assessments were enrolled in the trial. Patients were encouraged to ambulate for 20 minutes of every hour while maintained on fetal and uterine telemetry. Ambulation was discouraged after complete dilation. Demographics and delivery outcomes were collected.

Results: 105 patients were identified for consent for the trial, of whom 20 were ineligible for the study, 20 were not approached, and 40 declined study participation, leaving 25 patients who were consented. Of those 25, 14 completed the study. Reasons for not completing the study included ineligible by motor assessment, BMI less than 35 at time of delivery admission, preterm delivery, withdrawal, complete dilation at time of epidural without time to ambulate, magnesium administration during labor. A total of 14 participants were enrolled in the pilot trial, of which 11 were able to ambulate. The average BMI of participants was 43 kg/m2. Patients received epidural analgesia at a median cervical dilation of 4 cm and the average time from initiation of epidural analgesia to delivery was 15.4 hours. 65% of patients enrolled had a cesarean delivery. Of the 5 patients with a vaginal delivery, there was 1 shoulder dystocia. The median time spent ambulating was 58.5 minutes, with a range of 20-230 minutes. No patients fell during the trial. While one patient developed a spinal headache, it was not thought to be related to ambulation.

Conclusions: A pilot trial of ambulation during neuraxial analgesia demonstrated no safety concerns among an obese nulliparous population. This pilot study was underpowered and is not designed to determine if there is an effect of ambulation with neuraxial analgesia on mode of delivery. Strengths of this study were interdisciplinary collaboration and biologic plausibility of decreased cesarean delivery through ambulation. Limitations included a low enrollment rate and the COVID pandemic, which halted the study as well as limited patients from being able to ambulate in the hallways. A larger study is needed to assess the efficacy of this intervention.

A65 INVESTIGATING THE RATES OF CESAREAN AND VAGINAL DELIVERIES ACROSS DIFFERENT RACES AND ETHNICITIES AT ASCENSION ST. VINCENT INDIANAPOLIS

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Background: Cesarean section remains one of the most common surgical procedures for women in the United States. Previous studies have shown higher rates in African-American and Asian women and lower rates among White and Hispanic women. The objective of this study is to investigate the rates of cesarean and vaginal deliveries across different races and ethnicities as well as languages spoken at our institution.

Methods: A retrospective chart review was completed of nulliparous women with term, singleton, and vertex deliveries between 2015-2020. Factors increasing risk for cesarean or contraindications for vaginal delivery were excluded. Binomial logistic regression analysis was used to evaluate mode and delivery indications among racial and ethnic groups as well as among primary languages spoken.

Results: White was the largest race reported (66.4%), followed by Black or African American (27.6%), then Asian (3.6%). "Other" or rather, "Non-Hispanic", was the largest ethnicity reported (85.2%). Cross-tabulating race and ethnicities, the largest group was non-Hispanic White (54%), followed by Non-Hispanic Black or African American (26.5%), then Hispanic or Latino (10.8%). Primary languages were English (91.0%), followed by Spanish (5.7%), then Other (3.3%). Preliminary results showed statistically significant differences in age, BMI, insufficient prenatal care, and specific labor dystocia indications among different races and ethnicities. There were also differences among English vs Spanish vs "Other" languages but not in rates of vaginal and cesarean deliveries. The binomial logistic regression analysis showed that BMI and most labor dystocia positively correlated with cesarean delivery, whereas race/ethnicity, language, age, insufficient prenatal care, and induction status did not change the outcome.

Conclusions: Racial and ethnic differences in mode of delivery have been previously documented in previous studies; although we did not find this at our institution. Our findings, however, show a positive relationship between Body Mass Index (BMI) and cesarean delivery, as has previously been documented.

A66 PERIPARTUM TORPOR: A CHILLING CASE REPORT AND REVIEW OF THE LITERATURE

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DOI: 10.54053/001c.121041
Purpose: To report a rare case of peripartum maternal hypothermia and bradycardia.
Methods: Case report.
Results: Torpor is a transient state of hibernation with hypothermia and bradycardia. Hypothermia is defined as an abnormally low core body temperature less than 36°C.1 Sinus bradycardia is defined as less than 60 beats/min. While occasionally hypothermia or bradycardia is seen in obstetric patients undergoing vaginal delivery, when combined together, it can be a rare, life-threatening state that requires prompt intervention to prevent adverse maternal and fetal outcomes.
A 23 year-old G2P0102 at 33+3 weeks of gestation was admitted to the high risk obstetric service for preterm labor complicated by fetal growth restriction. She had a history of preeclampsia in a previous pregnancy, but otherwise denied any chronic medical problems. Upon arrival, her vital signs showed a temperature of 37°C, a pulse of 53 bpm, and blood pressure of 126/62 mmHg. Her white blood cell count was 12.4 x 109/L and hemoglobin was 11.3 g/dL. She received betamethasone for fetal lung maturity and penicillin for Group B streptococcus prophylaxis. As her cervix continued to dilate, she received an epidural for pain management. Once she was in active labor, she became bradycardic with a pulse in the 30s-40s bpm, as confirmed by EKG. She was completely asymptomatic at this time, and fetal heart tones were reassuring with a baseline between 110's-130's bpm. She delivered vaginally with 150 mL of estimated blood loss, and her bradycardia continued postpartum even after the epidural was discontinued. When she complained of feeling cold, multiple attempts with different oral and axillary thermometers could not obtain a reading. She was warmed with forced-air warming blankets, warmed blankets, and hot packs in her groin and axilla. During this time, discussion with the NICU staff revealed that her baby was also hypothermic at 33.3°C and hypoglycemic at 28 mg/dL at birth. Other than feeling cold, the patient continued to be asymptomatic despite hypotension and bradycardia. She appeared somnolent but was responsive to questions. Her uterus was firm with minimal vaginal bleeding and no purulent or foul-smelling vaginal discharge. Repeat laboratory testing revealed a white blood count of 19 x 109/L and lactate was 3.3 mmol/L. Her comprehensive metabolic panel was unremarkable. A chest x-ray was clear. A C-reactive protein was < 0.3 mg/dL and sedimentation rate was 14 mm/h. A rectal continuous thermometer was placed, which eventually recorded a temperature at 33.3°C and upon recheck was 31.7°C. A multidisciplinary team, including Anesthesia, Internal Medicine, and Neurology, evaluated the patient due to concern for a central nervous system insult. She received fluid resuscitation and broad-spectrum antibiotics for sepsis protocol. Due to the concern for potential septic shock, the decision was made to transport her to the Medical ICU for further management. As she was leaving Labor & Delivery, her temperature had increased to 36.9°C and her pulse to 61. Thyroid studies the next day revealed a normal Free T4 of 1.00 ng/dL and a high thyroid stimulating hormone level of 9.55 uIU/mL. However, despite an extensive workup, no clear etiology of her hypothermia and bradycardia was identified. Intervention with fluids and application of forced-air warming system resolved the hypothermia in less than 6 hours without relapse. Antibiotics were discontinued after one day due to low suspicion for systemic infection. She remained vitally stable and was discharged on postpartum day 2 without further complications.
Conclusions: Maternal hypothermia is relatively common during cesarean delivery; however, very few cases report maternal hypothermia during vaginal delivery. An English language literature search for maternal hypothermia during vaginal delivery yielded less than 10 case reports – few of which identified a cause of the hypothermia – and none of which reported simultaneous maternal bradycardia. While our case is a very rare presentation and the etiology is still unknown, it highlights the importance of prompt recognition of vital sign derangements in peripartum patients as well as multidisciplinary attention.

A67 PRIMARY POSTERIOR UTERINE RUPTURE IN LABOR: CASE REPORT AND LITERATURE REVIEW

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DOI: 10.54053/001c.121043
Purpose: To report a rare case of primary posterior uterine rupture in a healthy term multigravida.
Methods: Case report.
Results: We present the case of an otherwise healthy 35-year-old gravida 4 para 3 with no reported medical or surgical history and three prior uncomplicated term vaginal deliveries who presented in labor at 39 weeks gestation. After four hours of oxytocin augmentation, the fetus was noted to have recurrent late decelerations and then became bradycardic with a baseline of 60 bpm. The patient's cervix was found to be 7 cm dilated, 90% effaced, and -1 station. Standard resuscitative measures were undertaken at which point the patient's cervix was rechecked and found to be 9 cm dilated, 90% effaced, and -1 station. Attempts at manually reducing the cervix while the patient pushed were unsuccessful. With the fetus still bradycardic with a baseline of 60 bpm, the patient was taken for an emergency Cesarean delivery. Within seven minutes of calling the emer-

gency Cesarean delivery, surgery had started. However, there was difficulty with delivering the fetus, who had flipped to transverse back down. The fetus was rotated to breech before being delivered through a "T" incision made on the uterus to facilitate delivery of the head. Three tight nuchal cords were reduced at time of delivery. Examination of the uterus after delivery of the fetus revealed a full thickness, cruciate-shaped laceration in the posterior lower uterine segment extending ~9 cm in the vertical plane, involving the vagina, and ~5 cm in the transverse plane. The rupture was repaired, and the remainder of the surgery proceeded without further complication. Blood loss was estimated at 2500 mL, and she required transfusion of 4 units of packed red cells, 2 units cryoprecipitate, 1 unit fresh frozen plasma, and 1 unit of platelets. The infant was atonic upon delivery with a weight of 3785g and APGARs of 1/5/7. Umbilical artery blood gas analysis was normal with a pH of 7.19 and a base deficit of 7.9 mmol/L. The infant initially required intubation, but quickly improved and was extubated to room air at 1 hour of life. Imaging and neurological exams indicated possible moderate encephalopathy, and the infant underwent therapeutic hypothermia for four days at which point cooling was discontinued after improvement was noted. The remainder of his NICU stay was unremarkable and he was discharged on day nine of life. The mother required 2 additional units of packed red cells during the remainder of her postpartum course, but otherwise did well and she was discharged on post-op day five.

Conclusion(s): Uterine rupture is the complete separation of all three layers of the uterus. It is a life-threatening event for both the fetus and the mother. Most uterine ruptures occur in a previously scarred uterus. Uterine rupture in a previously unscarred uterus (primary uterine rupture) is rare and estimated to occur in ~1:20,000 pregnancies. Over 90% of primary uterine ruptures occur in the anterior lower uterine segment. Although this patient did not have any reported medical or surgical history, her status as a multipara and being of advanced maternal age did pose a higher risk of primary rupture. This patient also underwent 3 ½ hours of oxytocin infusion at the time the Cesarean was called. Although she was not on oxytocin for long, its use is associated with primary uterine rupture more so than secondary rupture. Normal indicators of uterine rupture include non-reassuring fetal heart rate tracing, sudden unexplained abdominal pain, unexplained vaginal bleeding, and loss of fetal station. In this patient, fetal bradycardia was the only sign that her uterus was compromised. Although the uterine arteries were not involved in this patient's rupture, blood loss was still profound due to the extensive uterine defect. This case highlights that, while rare, uterine rupture can occur in any patient, regardless of uterine surgical history and physicians must be prepared to intervene quickly.

A68 ADNEXAL TORSION OF A 28 CM PARATUBAL CYST: A CASE REPORT

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DOI: 10.54053/001c.121045

Objective: To report a rare case of a 28 cm left adnexal torsion requiring surgical intervention including detorsion and salpingectomy

Methods: Case report.

Results: An 18-year-old nulliparous female with morbid obesity presented to the emergency department complaining of one week of sharp right lower quadrant pain with nausea and vomiting that had acutely worsened. Vital signs were notable for tachycardia, but otherwise within normal ranges. She had a significant leukocytosis. Her pregnancy test was negative. A CT abdomen/pelvis was obtained that demonstrated a large multiloculated complex cystic mass measuring 28.5 x 19.8 x 13.3 cm with possible origin from the ovaries that could represent a serous cystadenoma. Additionally, the scan was remarkable for a heterogeneous and enlarged left ovary measuring 7.6 x 5.9 x 7.2 cm, surrounded by free fluid and mesenteric edema. On examination, she did not demonstrate any surgical abdomen findings. Her pain improved with pain medication. She was admitted, tumor markers obtained, and an ultrasound ordered. The ultrasound demonstrated normal appearing right ovary with present doppler flow and a simple cyst measuring 6.6 x 5.1 x 6.1 cm. The left adnexa was noted to have a complex versus solid mass with unclear boundaries of the ovary. Also noted on the ultrasound were two large simple midline cysts measuring 10.5 x 9.1 x 11.8 cm inferiorly and 18.2 x 15.5 x 17.2 cm superiorly. No free fluid was seen within the right upper quadrant on ultrasound. The view of the left upper quadrant was suboptimal. Due to these findings, Gynecologic Oncology service was also consulted and after discussion, decision made to proceed urgently to diagnostic laparoscopy with robotic assisted cystectomy versus oophorectomy. Upon laparoscopic entry into the abdomen, a large necrotic-appearing left adnexal mass was visualized coming from the left fallopian tube. Both the left fallopian tube and left ovary were necrotic, with the left ovary being torsed numerous times. After resection of the large left fallopian tube and cyst, the left ovary was detorsed, and the decision was made to leave the ovary in situ. It still appeared necrotic, but its blood supply was intact. There was a large simple paratubal cyst on the right fallopian tube that was also drained and excised. Postoperatively, her right lower quadrant pain resolved, and she was discharged on post-operative day 1. She prescribed a two-week course of doxycycline and metronidazole as pelvic inflammatory disease could not be ruled out. At outpatient follow-up, she was asymptomatic and ready to begin working again. Her pathology report confirmed a large left paratubal cyst with associated findings of ischemia due to torsion and a large right paratubal cyst.

Conclusions: Adnexal torsion is a rare gynecologic disorder caused by the partial or complete rotation of the ovary and/or the fallopian tube on its vascular support, which can negatively impact fertility. Prompt diagnosis is key, but definitive diagnosis is only by direct visualization. The differential diagnosis for acute onset of severe pelvic pain with nausea and vomiting is broad and includes ec-

topic pregnancy, pelvic inflammatory disease, endometriosis, ruptured ovarian cyst, urologic issues and gastrointestinal issues. Commonly, ultrasound is used to help evaluate a possible torsion with several classic findings that were not noted in this case, other than a mass. The two best known risk factors for adnexal torsion are a mobile ovarian mass and a history of prior torsion. Although large ovarian masses greater than 5 cm are more likely to cause torsion, some experts hypothesize that very large masses are less likely to torse given the constraints of the pelvis. However, such was not the case here. Additionally, it has been observed that adnexal torsion typically affects the right adnexa due to theoretical protection from the descending colon on the left. Given that the case presented did not have any of the typical imaging findings for adnexal torsion and that her pain was on the right but the torsion on the left, it is important to maintain a high level of suspicion when evaluating patients with acute onset pelvic pain of any location with nausea and vomiting.

A69 A RARE CASE OF BILATERAL RETROPERITONEAL OVARIES: A CASE REPORT AND REVIEW OF THE LITERATURE

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DOI: 10.54053/001c.121044

Introduction: Retroperitoneal gynecologic tumors and cysts are rare. They are often asymptomatic or present similarly to their intraperitoneal counterpart with vague abdominal discomfort and distention. Our literature review revealed that many retroperitoneal cysts are found intraoperatively due to their benign predominance consistent with their ultrasound findings. The rarity of retroperitoneal gynecologic tumors and cysts creates uncertainty regarding the best practice management for general gynecologists caught off guard by their location when found intraoperatively. Rarer still are retroperitoneal ovaries. There are few cases of retroperitoneal ovary displacement in the literature, most often associated with female neonatal incarcerated inguinal hernia repair surgery. We found one case report involving an intraoperatively found retroperitoneal ovarian cystadenofibroma in a patient with a hernia repair performed in infancy. To our knowledge, there are no bilateral retroperitoneal ovaries described in the literature.

Objective: To report a rare case of bilateral retroperitoneal ovaries in an 11 year old female.

Methods: Case report.

Results: We present an 11-year-old female with a past medical history of Dandy-Walker malformation and hydrocephalus status post ventriculoperitoneal (VP) shunt with six laparoscopic VP shunt revisions who endorsed hirsutism and irregular, heavy, and painful menstrual periods. Her family history is significant for polycystic ovarian syndrome (PCOS), endometriosis, and Lynch syndrome. Physical exam revealed mild abdominal distention and lower abdominal tenderness. She had an elevated estradiol, luteinizing hormone (LH), and total and free testosterone. Normally, an elevated estradiol causes a negative feedback response that results in a low LH. Due to these abnormal results, a pelvic ultrasound was ordered to rule out a potential estrogen secreting ovarian tumor. Ultrasound revealed a large anechoic structure in the left adnexa not definitively separated from the ovary measuring 13.0 x 7.7 x 10.7 cm. Radiologic differential diagnosis included large simple cyst, hemorrhagic cyst, and serous neoplasm. A referral to an adolescent gynecologist was made where the patient presented five months later with 25-pound weight gain, constipation, and a hard belly. Repeat ultrasound was consistent with a left ovarian simple cyst with an increased size measuring 16.78 x 12.58 x 8.66 cm as well as a new finding consistent with a right ovarian simple cyst measuring 4.96 x 4.48 x 3.61 cm. Due to her history of severe abdominal adhesions secondary to multiple laparoscopic VP shunt revisions, likely endometriosis, and large ovarian cyst, she was referred to a gynecologic oncologist where she was consented for robotic assisted bilateral ovarian cystectomy and lysis of adhesions. In the operating room, extensive pelvic adhesions were lysed to reveal bilateral retroperitoneal ovaries. The right cyst was drained of clear fluid, revealing no internal complexity, and was completely excised. Persistent pelvic adhesions and cyst size prolonged the time required to excise the left ovarian cyst wall. Once open, papillary excrescences were seen inside the cyst raising concern for a borderline ovarian tumor. The decision was made to remove the cyst wall in its entirety regardless of increased risk of ovarian function compromise. Restoration of normal anatomy was not attainable, and her bilateral ovaries remained embedded in the side walls and superior to the iliac vessels. Pathology revealed a benign 8 cm right paratubal cyst and a benign 18 cm left serous cystadenoma with papillary excrescences.

Conclusions: Pelvic anatomy can be greatly distorted secondary to prior abdominal surgeries or certain pathologies including endometriosis and congenital abnormalities. Ultrasound cannot easily discriminate between intraperitoneal and retroperitoneal ovarian cysts but is often the only preoperative imaging obtained prior to cystectomy. Thus, many retroperitoneal cysts are found intraoperatively resulting in diagnostic and therapeutic challenges. Therefore, general gynecologists must be aware of risk factors associated with abnormal pelvic anatomy and prepared to request intraoperative consultation if needed to ensure optimized patient care and safety.

A70 POSTPARTUM BILATERAL NERVE PALSY: A HARBINGER FOR PREECLAMPSIA?

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DOI: 10.54053/001c.121042

Objective: To report a case of postpartum bilateral facial weakness that preceded the diagnosis of preeclampsia.

Introduction: Bell's palsy is a neuromuscular disorder that can cause paralysis or weakness of the face. It is the most common cause of unilateral facial weakness; however, bi-

lateral weakness is rare. Bell's palsy is one of the most common neuromuscular disorders observed in pregnancy, though the link between the two is not entirely clear. Proposed etiologies include reactivation of human herpes viruses, immune mediated inflammatory demyelination of the facial nerve, and microangiopathy as a result of systemic hypertension. There have been several case reports and studies suggesting a correlation between preeclampsia and Bell's palsy. We present a rare case of postpartum bilateral Bell's palsy in the setting of preeclampsia.

Design: Case report.

Results: Our patient is a 24 year-old G6P4116 Caucasian woman with no significant past medical history who presented with bilateral facial weakness and headache. She was postpartum day four from a spontaneous vaginal delivery of dichorionic diamniotic twins at 35 weeks at an outside hospital. She denied any elevated blood pressures during her pregnancy. Initially, on postpartum day two she had reported a severe headache that initially affected her occipital region bilaterally before migrating to her ears and forehead. At this time the patient was normotensive and was discharged home on analgesics. On postpartum day three, she returned to another emergency department with a worsening, severe headache. She was sent home with a diagnosis of anxiety. On postpartum day four, her symptoms persisted and she came to the emergency department at our facility. During our initial evaluation, her blood pressure was 170/98. She was admitted for severe preeclampsia and given IV magnesium and nifedipine. However, her headache persisted and she developed bilateral facial weakness, neck pain, and swelling.

She reported that she was unable to move her face and had difficulty smiling. Her face was expressionless. She denied nausea, vomiting, dysphagia, double vision, gait disturbances, hearing loss, fever, shortness of breath, numbness, or tingling. She denied recent travel, sick contacts, or animal or tick bites.

She was evaluated by neurology and her initial physical exam revealed intact cranial nerves, though the patient appeared to have difficulty squeezing her eyes shut and smiling. Periorbital edema was noted. Facial symmetry and sensation were intact bilaterally. She had difficulty saying the letter "P." Her MRIs of both brain and cervical spine, chest x-ray, and lumbar puncture were all normal. Our working diagnoses included bilateral Bell's palsy, Guillain-Barré and Miller-Fischer syndromes. The antibody panel drawn for Miller-Fischer syndrome subsequently resulted as negative. Our patient received three days of IVIG and was discharged on a week supply of prednisone 60mg with a taper thereafter. At discharge, she had severe bilateral facial droop. She was unable to puff out her cheeks or raise her eyebrows. Neurology recommended outpatient follow up. One month after discharge she had residual right sided facial droop, but the deficits of the left side of her face had mostly resolved.

Discussion: Current literature suggests a correlation between preeclampsia and Bell's palsy. There is some thought that elevated blood pressure leads to facial nerve compression secondary to edema or microemboli. One report suggested that the onset of Bell's palsy antepartum or postpartum may be a predictor of preeclampsia. An English language PUBMED search revealed six case reports on bilateral Bell's palsy in either the pregnant or postpartum state. Cases reported occurred in either the third trimester or within the first week postpartum. This was consistent with the onset of our patient's symptoms during her first week postpartum. In one case, neurological symptoms preceded preeclampsia. Our patient complained of headaches and neck pain prior to having elevated blood pressures. Three of these cases included twin gestations, as did our case. Outcomes varied, with some patients seeing complete resolution of symptoms within weeks to others having recurring symptoms over a year. Providers should consider the relationship between preeclampsia and Bell's palsy when treating pregnant or postpartum patients with new onset neurological symptoms. Pregnant and postpartum patients are at greater than three times increased risk for Bell's palsy and have more severe symptoms and longer recovery times compared to the average population. It is important that obstetricians and gynecologists assess for signs of preeclampsia in pregnant or postpartum patients with concerns for Bell's palsy, as well as refer patients for a complete neurological workup. Ultimately, more research is needed to further understand the relationship between preeclampsia and Bell's palsy.

A71 PRIMARY MALIGNANT MELANOMA OF THE CERVIX WITH RAPIDLY PROGRESSING METASTASES

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Introduction: Mucosal melanomas only account for 0.03% of newly diagnosed cancer cases. Female genital tract melanomas account for only 3% of all melanomas, with melanoma of the cervix accounting for less than 3% of all female genital tract melanomas. It is difficult to understand how mucosal melanomas arise as the pathogenesis is still unknown. The incidence of cutaneous melanoma has greatly increased over the years whereas the incidence of mucosal melanomas has stayed relatively steady. Given the rarity of melanoma of the cervix, a standard of care treatment has not been established. Based on the limited cases that have previously been treated, the first option is surgery for early stage melanomas with adjuvant radiation therapy indicated in some cases. The use of systemic chemotherapy is still controversial as it has not been shown to prevent metastases.

Case Report: A 66-year-old postmenopausal female presented with heavy vaginal bleeding. A transvaginal ultrasound showed a complex cystic structure in the cervix and she was referred to gynecologic oncology. She was up to date on her pap smears, and they have always been normal. Patient was found to have a fungating 4 x 5 cm mass in the upper vagina and pathology demonstrated poorly differentiated malignant neoplasm. The patient was diagnosed with

FIGO Stage IIA2 cervical cancer. Patient's initial PET/CT demonstrated hypermetabolic area in the cervix consistent with known cervical carcinoma with no other uptake in the uterus.

Weekly chemosensitization with cisplatin and external beam radiation was initiated. On clinical examination after treatment by the gynecologic oncologist, visible disease was seen confined to the cervix. An MRI of the pelvis showed response with the suspected tumor limited to the cervical stroma in the anterior and lateral portion of the cervix with no definitive parametrial tumor and no evidence of nodal metastasis. Second opinion from pathology review was received and results showed poorly differentiated malignant neoplasm immunohistochemically consistent with "melanoma". After 25 fractions of daily radiotherapy with weekly cisplatin, patient underwent exploratory laparotomy for radical hysterectomy, bilateral salpingo-oophorectomy, and pelvic lymph node sampling. Final pathology of the uterus and cervix showed invasive poorly differentiated melanoma with deepest invasion of melanoma measuring 8mm and negative surgical margins.

All lymph nodes removed during surgery were negative for malignancy. Adjuvant Pembrolizumab was started at this time. Two months postoperatively, the patient underwent CT surveillance again due to new onset chest wall and axillary nodules varying in size from 2-4 cm. Right chest wall axilla biopsy pathology was consistent with melanoma. At this time Pembrolizumab was discontinued and the patient was transitioned to Nivolumab and Ipilimumab 19 days after discontinuing Pembrolizumab.

Four months postoperatively, additional CT scans were performed showing widespread metastatic disease in the lungs, chest wall, liver, peritoneum, retroperitoneum and left eye. Patient underwent left frontal craniotomy with tumor resection, and pathology was consistent with metastatic melanoma. Subsequent to craniotomy, the patient underwent three treatments with stereotactic radiosurgery. Despite treatment, six months postoperatively, the patient's symptoms continued to progress with slurred speech, generalized weakness and abdominal pain. Ultimately, the patient passed away nine months after the diagnosis and four months after a combination of external beam radiotherapy, surgery, and vaginal brachytherapy.

Discussion: Melanoma of the cervix is a rare type of cervical cancer with poor prognosis. Globally, 5-year survival is 18.8% for stage I, 11.1% for stage II, and 0% for stages III–IV. It has been shown that median overall survival time decreases with increasing FIGO stage. Risk factors have not been identified for gynecologic melanomas or most other mucosal melanomas. Pembrolizumab is most effective for cutaneous melanomas, however, has been shown to prolong progression free survival in mucosal melanomas. The median overall survival is significantly shorter for patients with mucosal melanoma (11.3 months) as compared to patients with a cutaneous primary (23.5 months). Primary malignant melanoma of the cervix (PMMC) remains a rare tumor and the prognosis is generally poor. Radical hysterectomy, chemoradiation, and immunotherapy have all been utilized in the treatment of PMMC. Further investigation of primary melanoma of the cervix is necessary to formulate a standard of care treatment.

A72 PRENATAL MANAGEMENT OF HIGH RISK FETAL SACROCOCCYGEAL TERATOMA

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DOI: 10.54053/001c.121038

Introduction: Fetal sacrococcygeal teratomas (SCGT), the most common fetal neoplasm diagnosed in fetuses, are a rare condition with an estimated incidence of 1 in 40,0000 live births. Fetal SCGT is usually suspected when characteristic findings are seen on ultrasound such as a mass that is cystic and/or solid and is located in the sacral region. MRI may also be used to more accurately characterize the tumor and to help distinguish between SCGTs and distal neural tube defects like sacral meningomyelocele. Despite advances in ultrasound and MRI, only approximately 50% are diagnosed prenatally.

The detection of fetal SCGT is important because it changes pregnancy monitoring and management as it is associated with fetal hydrops, intrauterine death, polyhydramnios, mirror syndrome, and mortality rates as high as 43%. Once an SCGT has been identified, serial ultrasound evaluation of the fetus, placenta, and SCGT is important to identify early signs of fetal hydrops, fetal anemia, or cardiac failure and to intervene as appropriate.

Case Report: A 40-year-old G5P4004 was referred to Maternal Fetal Medicine (MFM) due to findings of a 1 cm mass near the fetal bladder on first trimester ultrasound. She had a level II ultrasound performed by MFM at 16.2 weeks where a 3.6 x 2.3 x 2.6 cm mass was identified. This mass was adjacent to the sacrococcygeal region. Due to its location and characteristic appearance, with both cystic and solid components with high vascularity, a fetal sacrococcygeal teratoma was suspected. There were no signs of hydrops or fetal anemia. At this time, the recommendation for management was: ultrasounds every 2 weeks to assess for hydrops and fetal anemia, growth ultrasound every 4 weeks, an echocardiogram by pediatric cardiology at 22-24 weeks, a fetal MRI at 28 weeks, and delivery between 37-39 weeks or earlier pending clinical course. At 24.2 weeks, she developed polyhydramnios with a maximum vertical pocket (MVP) of 10.5 cm. She had also failed her 1-hour glucose tolerance test with a value of 287 mg/dL. Due to the new finding of polyhydramnios and diagnosis of gestational diabetes, her monitoring was increased to weekly, with biophysical profile (BPP) starting at 28 weeks and weekly nonstress tests (NST) at 32 weeks.

A fetal MRI was performed at 26.4 weeks and showed a large lesion extending off the sacrococcygeal region measuring 9.6 x 6.3 x 7.7 cm that was composed of both solid

and cystic components. By 32.2 weeks, she developed severe polyhydramnios with an AFI of 36.0 cm and accelerated fetal growth due to an AC > 99th percentile. The last ultrasound she had at 34.2 weeks the SCGT measured 17.7 x 13.3 x 13.6 cm and severe polyhydramnios persisted. The patient went into preterm labor at 35.2 weeks and had a cesarean section due to known SCGT measuring greater than 5 cm. Immediately after delivery, the neonate was evaluated by the neonatal team and transferred to the Neonatal Intensive Care Unit. The infant had surgical resection of the mass and will have tumor markers, AFP and LDH, monitored for development of recurrent immature or mature teratoma. The pathology report confirmed the diagnosis for benign sacrococcygeal teratoma.

Discussion: Failure to diagnose a fetal sacrococcygeal teratoma has potentially catastrophic consequences for the fetus and mother. Maternal complications include hyperemesis, preeclampsia, mirror syndrome, preterm labor, and HELLP syndrome. Significant obstetric complications can be as high as 81%. Intrauterine fetal complications include fetal hydrops from high-output failure, fetal anemia, intratumoral hemorrhage, polyhydramnios, genitourinary obstruction leaking to hydronephrosis and or hydroureter. SCGT size >10 cm or tumor with rapid growth has > 50% perinatal mortality. Tumor characteristics associated with higher mortality rates are early diagnosis, solid components, high vascularity, tumor size > 10 cm, and rapid growth > 150 cm3/week. Another way to risk stratify these patients is by calculating a tumor volume to fetal weight ratio (TFR), which if > 0.12 at < 24 weeks is predictive of an overall poor prognosis.

When comparing this case to literature review of sacrococcygeal teratomas, the patient's fetal SCGT would be classified as high risk of mortality due to the tumor characteristics of early diagnosis, TFR at 20 weeks being 0.16, large size, rapid growth, and pronounced vascularity. Overall, in this high risk case of SCGT, the close follow up and evidence-based management with utilization and collaboration of a multidisciplinary team including Maternal Fetal Medicine, NICU, and Pediatric Surgery in a tertiary center resulted in a successful outcome.

A73 INFECTED KIDNEY STONE IN A PATIENT WITH UNDIAGNOSED ADPKD: AN UNUSUAL SOURCE OF POSTPARTUM SEPSIS

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DOI: 10.54053/001c.121036

Introduction: Autosomal dominant polycystic kidney disease (ADPKD) is one of the most common genetic diseases and has an incidence rate of 1 in 1,000-2,500. It is characterized by the development of cysts throughout the renal parenchyma and causes a progressive decline in renal function and eventually renal failure. In non-pregnant patients, common complications include hypertension, chronic pain from cysts, hematuria, urinary tract infection (UTI), and nephrolithiasis. Women who have chronic kidney disease (CKD) during pregnancy are at higher risk for both maternal and neonatal adverse outcomes including preeclampsia, worsening of renal function, preterm birth, and fetal growth restriction. Specific to ADPKD, some studies reported poor fetal outcomes and decline in maternal renal function with an increased risk of developing gestational hypertension, preeclampsia, and UTI. However, this research is not consistent and other studies suggest that there is only an increase in maternal complications if they have preexisting hypertension or elevated creatinine prior to pregnancy. This case presents a patient who was diagnosed with ADPKD as part of her workup for postpartum fever of unknown origin, and ultimately sepsis, from an infected kidney stone.

Case Report: A 29-year-old G2P0010 at 37 0/7 weeks was admitted for induction of labor for fetal growth restriction. She ruled in for preeclampsia with severe features during her intrapartum course. After her vaginal delivery, she remained in the hospital for blood pressure control. On PPD4, she ruled in for sepsis based on a fever of 102.2 F, hypotension, and tachycardia. Despite the absence of fundal tenderness or purulent lochia, patient was started on IV Gentamicin and Clindamycin empirically for endometritis. CT of the abdomen and pelvis showed severe polycystic kidney disease worse on the left and enlarged uterus with thickened endometrial echoes. Her urinalysis was positive for leukocyte esterase and white blood cells and blood cultures returned positive for gram negative rods; but still no source had been confirmed. Due to worsening sepsis, Internal Medicine (IM) was consulted, and antibiotics were changed to Cefepime and Flagyl. Nephrology was also consulted due to incidental finding of ADPKD and AKI. On PPD5, her leukocytosis worsened, and she continued to be febrile, so infectious disease (ID) was consulted. ID escalated the antibiotics to IV meropenem and suspected a gynecologic source of her sepsis. By PPD6, the blood cultures grew E. coli and by PPD7 her leukocytosis reached a peak of 30.5 103uL. She was transitioned to Cefazolin 1g IV q8hrs. On PPD 9, she was discharged home with 12 days of Ceftriaxone 2 g IV daily.

On PPD 16, however, the patient was sent into the ED for evaluation after experiencing a fever of 101.3F in her obstetrician's office and concern over retained products of conception due to a thickened endometrium noted on ultrasound. Despite undergoing dilation and curettage and continuing IV antibiotics, the fevers persisted. She began to report left sided flank pain. An MRI of the abdomen and pelvis was ordered and revealed moderate to severe left hydronephrosis due to an obstructing 6 mm stone at the left ureteropelvic junction. Urology was consulted and the patient had a cystoscopy, left retrograde pyelogram, ureteroscopy, and ureteral stent placement. During the procedure, purulence and sediment was noted in the left kidney, consistent with infected kidney stone. Urology suspected this was the source of her infection. She remained afebrile after the procedure and completed an additional week of Cefdinir. Upon discharge home, she followed up with urology and underwent an additional laser lithotripsy

and basket extraction of stones.

Discussion: While UTI and nephrolithiasis are known complications of ADPKD during pregnancy, it is important to recognize early symptoms. It is estimated that women with ADPKD have a 14% increased risk of UTI. Untreated UTIs can lead to pyelonephritis, which is associated with preterm birth, low birth weight, and pregnancy loss. A less thought about complication of ADPKD, both in the pregnant and non-pregnant population, is nephrolithiasis. It is estimated that the incidence of nephrolithiasis ranges from 10 to 36% in patients with ADPKD. Nephrolithiasis can cause obstructions, worsen UTIs, and become infected, which is what occurred with the patient described above. It is thought that having large cysts, like our patient, places them at even higher risk for nephrolithiasis due to urinary statis. Our patient had multiple risk factors for nephrolithiasis. Ultimately, we had a favorable outcome, but if her infected kidney stone was diagnosed in a timelier fashion, she could have avoided worsening sepsis and a hospital readmission.

Conclusion: In patients with ADPKD and sepsis of unknown etiology, there needs to be a high suspicion for UTI, pyelonephritis, infected nephrolithiasis, and infected cysts, as all of these are associated with increased morbidity and mortality, especially during pregnancy and the post-partum period.

A74 VARIATION OF A SINGLE PHYSICIAN'S PRIMARY CESAREAN SECTION RATE ACROSS MULTIPLE HOSPITALS

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DOI: 10.54053/001c.121034

Introduction: Cesarean section is one of the most commonly performed surgical procedures. In 2020, there were over 3.6 million births in the United States, and of these, approximately 31.8% were delivered by cesarean section. In 2015, the World Health organization issued a statement in which a 10-15% population-based cesarean rate was recommended. It was noted that any increase in the cesarean section rate above this 10-15% baseline was not associated with any reduced neonatal/maternal mortality. Shortly after the WHO's statement, a report was released noting that there was an observed improvement in maternal and neonatal mortality as cesarean section rates increased up to nearly 20%. The WHO subsequently acknowledged that there had been no standardized method for monitoring the rate of c-sections when they came to their proposed rate of 10-15%. Since their 2015 statement, the WHO has clarified their position and has explicitly stated that recommending a specific/targeted c-section rate for a hospital is inappropriate.

In February of 2021, the Joint Commission began reporting hospitals' primary cesarean section rates, giving then an "acceptable" rating if the facility's PC-02 rate was 30% or lower, or a rating of unacceptable if their rate was higher than 30%. (The PC-02 rate consists solely of the number of deliveries for women with their first full-term, singleton pregnancy with baby in vertex presentation -head down). The Joint Commission recommends a primary c-section rate of under 30%, and as hospital accreditation and reimbursement from Medicare and Medicaid is closely tied to Joint Commission accreditation, many hospitals are now working to influence their physicians in a manner that will bring about a decrease in the number of c-sections that occur at their facilities.

It is important to note that at this time neither the American Medical Association, the American Academy of Family Physicians, nor the American College of Obstetricians and Gynecologists have offered recommendations regarding what they believe the optimal c-section rate to be. The American College of Obstetricians and Gynecologists has instead taken a more epidemiological approach, and in their statement to USA Today notes, "National target c-section rates should be based on clinical data that has been risk-adjusted specifically to the hospital's patient population, and that target rates are meant to be calculated across all births, not across hospitals."

This report is the first to our knowledge to look at a sole provider's PC-02 rate across multiple hospitals.

Methods: Clinic data was reviewed from patients who saw a single practitioner, Jonathan Faro, MD, PhD, from October 1, 2021 through September 30, 2022. This provider had maintained clinical privileges at three hospitals in the Houston metropolitan area, and when counseling his patients at where they would prefer to deliver, he simply asked them their preference. The hospitals that Dr. Faro delivered at during this period were Memorial Hermann Hospital Memorial City, The Woman's Hospital of Texas, and Memorial Hermann Hospital Texas Medical Center. As this was a retrospective chart review and no identifying patient data were obtained, no IRB approval was requested.

Patients were excluded if they were not nulliparous, were not full term, did not have a singleton pregnancy or if the fetus was not in vertex presentation. Demographic data was abstracted as well from the patient's clinic record and included the patient's age, gravidity, parity, BMI at delivery, ethnicity, and presence of any co-morbidities including diabetes, hypertension, and tobacco use.

Results: From October 1, 2021 through September 30, 2022, a total of 105 patients were delivered by the physician. (This excludes patients that the physician delivered for any other physicians while on call.) 57 of these were delivered at Hospital A, 46 were delivered at Hospital B, and only 2 were delivered at Hospital C. Of these 105 patients, 19 met the criteria to be considered under the PC-02 criteria.

Review of the demographic data revealed that there were no statistically significant differences between age, ethnicity, or presence of medical co-morbidities in either group. In Hospital A, obesity did appear to be associated with greater risk of c-section.

Of the 9 patients delivered at Hospital A by the Physician, 11% resulted in c-section. Of the 8 patients delivered at Hospital B by the physician, 50% resulted in c-section. Of the 2 patients who delivered at Hospital C, none underwent c-section.

Discussion: The Centers for Disease Control and Preven-

tion established a recommended c-section rate of 23.9% as one of its healthy people 2020 goals. Shortly after, multiple organizations endorsed this, including the national Quality Forum, the Joint Commission, the Leapfrog Group, and the Centers for Medicaid and Medicare Services.

This paper illustrates three very different primary c-section rates for a single provider. With rates ranging from 0%, to 11%, to 50%, one can easily see that it may be anything but the provider who is the driving force determining the primary c-section rate. This paper indirectly suggests that there are likely multiple factors separate from the provider that contribute towards a patient undergoing a primary c-section. Focusing on applying disincentives or even punishments to providers is perhaps the greatest disservice and this approach should be abandoned.

A75 RETROPERITONEAL LEIOMYOMA AS A SOURCE OF PELVIC PAIN: A CASE REPORT AND REVIEW OF THE LITERATURE

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Purpose: Leiomyomas are benign growths originating from the myometrium of the uterus and the most common pelvic tumor in women. They are frequently a source of abnormal uterine bleeding and pelvic pain, but occasionally occur outside of the uterus. Retroperitoneal leiomyomas are exceedingly rare with only about 100 cases noted in systematic reviews and literature searches. Given its rarity, preoperative diagnosis can be challenging. Our purpose is to raise awareness of this condition by reporting a case of retroperitoneal leiomyoma as an unexpected source of pelvic pain and (2) reviewing literature for commonly seen patient presentations, preoperative diagnostic challenges, and management of retroperitoneal leiomyomas.

Case Report: Patient was a 34-year-old nulliparous woman who presented with pelvic cramping, rectal pressure, and dysmenorrhea and was found to have an adnexal mass of unclear origin on pelvic ultrasound and computed tomography. Follow-up magnetic resonance imaging (MRI) showed a heterogenous mass containing macroscopic fat next to the left ovary with possible "claw sign", but also abutting the sigmoid colon. Ovarian mass was the preoperative suspected diagnosis based on imaging. Tumor markers were negative. Patient underwent a diagnostic laparoscopy and a 7-centimeter globular mass was noted retroperitoneally along the left pelvic side wall, completely separate from the uterus and adnexa. It did not appear to involve the ureter or sigmoid colon. Given clear visualization of surrounding structures, it was carefully resected from the pararectal space given likely source of pelvic pain. Pathology resulted as leiomyoma and endometriosis.

An English language PUBMED, MEDLINE, CINAHL search for retroperitoneal leiomyomas yielded 34 case reports available for review. Five of the cases were in the United States and 29 were international. One systematic review was identified that spanned cases from 1941-2007. These case reports were then reviewed for patient characteristics, imaging findings, treatment, and follow-up to summarize common findings.

Results: Pathophysiology of extrauterine fibroids - Retroperitoneal leiomyomas may originate as an unintended consequence of the power morcellation leading to seeding of cells sprayed during shredding. Extrauterine myomas in a patient without a history of morcellation is theorized to be a pedunculated fibroid that torses on itself, detaches from the uterus, attaches to other tissue, and then is sustained through neovascularization. They may also be of primary multifocal origin, rather than metastatic or parasitic. As with intrauterine leiomyomas, there is also a small risk (<0.01%) that the fibroid may be a leiomyosarcoma.

Patient characteristics - A systemic review of retroperitoneal leiomyoma case reports revealed a mean age of 46.27 years. Seventy percent of patients had never undergone gynecologic surgery, while 29% had a previous hysterectomy or myomectomy. Of patients that still had a uterus, 29% had concurrent uterine leiomyomas.

If symptomatic, these masses can present as nonspecific or bulk symptoms depending on size and location. These include fatigue, discomfort, back and/or pelvic pain, constipation, and urinary incontinence. Around 25% of patients may be asymptomatic.

Imaging findings - As in our above case, retroperitoneal leiomyomas can be difficult to diagnose on imaging. Imaging workup for pelvic pain with concern for a mass should begin with pelvic ultrasound. MRI can be useful as an imaging modality when ultrasound has poor delineation, rapid growth is noted, or malignancy is suspected. This can additionally be helpful for surgical planning if a diagnostic laparoscopy is planned for further evaluation. As in our patient, however, MRI can also be misleading. If encountered intraoperatively, extrauterine myoma should be part of the differential for a retroperitoneal mass.

Treatment - Complete surgical excision of the mass is recommended. Depending on imaging and patient risk factors for malignancy, referral to a gynecology oncology specialist can be considered.

Recurrence is rare, but long-term follow up is recommended for surveillance. As they have been shown to have estrogen and progesterone receptors, minimizing hormone usage can be beneficial. In the case of recurrence, long-term therapy with gonadotropin-releasing hormone agonists or aromatase inhibitors could be considered.

Conclusion: Preoperative diagnosis of extrauterine leiomyoma can be extremely difficult. This case was unique in that adnexal mass was the preoperative diagnosis. MRI can be useful as an imaging modality when ultrasound has poor characterization or is concerning for malignancy. If encountered intraoperatively, extrauterine myoma should be part of the differential for a pelvic mass. Complete excision is the definitive treatment for retroperitoneal myomas. Post-excision surveillance is recommended to screen for the rare possibility of recurrence.

A76 CVD CASE SERIES: SCREENING AND RISK REDUCTION

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Undetected cardiovascular disease is one of the leading causes of complications during pregnancy in the United States. Maternal mortality reviews indicate that lack of suspicion and delays in diagnosis are the primary drivers of CVD-related mortality. Purpose of this study is to examine the effect of implementing the CVD (Cardiovascular Disease) Risk Assessment tool developed by the California Maternal Quality Care Collaborative (CMQCC) team in 2018.
Eligibility of patients in the case series was determined through CVD risk screen score of 4 or higher using a standardized stool adopted from the CMQCC. The patient was scored at the point of hospital entry. Factors used in scoring included symptoms, vitals and risk factors. Patients who scored positive were sent for further work up. This included in-depth analysis of other significant clinical factors influencing patient presentation and subsequent management.
The CV patient cases presented in this case series illustrate the benefits of early identification and implementation of standardized CVD risk assessment. There are significant benefits in early use of the CV screening tool contributing to mortality risk reduction including continued close antenatal surveillance, postpartum follow-up, and continued collaborative multidisciplinary care.
Patients with risk factors underwent continued surveillance and received appropriate specialized follow-up that allowed for improved maternal outcomes.
Proper implementation of CVD risk assessment tool for patients who are at-risk of development of CVD in pregnancy can effectively reduce adverse maternal outcomes related to cardiac disease.

A77 MANAGEMENT AND DELIVERY OF A PATIENT WITH MATERNAL MYELOMENINGOCELE: A CASE REPORT

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DOI: 10.54053/001c.121029
Objective: To report and discuss the pregnancy course and delivery of a patient with maternal myelomeningocele at term
Background: Spina bifida is a congenital malformation which results from incomplete closure of the neural tube. Open neural tube defects (NTD) comprise 80% of all NTDs. The most common open NTD is myelomeningocele (MMC), a form of spina bifida characterized by herniation of both the meninges and spinal cord. The incidence rate of MMC is approximately 1/1,000 live births worldwide, and is inversely related to socioeconomic status. There is a paucity of data on pregnant women with spina bifida, however a study by Shepard et al. investigated deliveries among 10,000 women with spina bifida and 42 million women without. This study revealed that women with spina bifida were significantly more likely to be delivered via cesarean section, even when vaginal delivery was possible. Also, pregnancy rates in spina bifida patients have risen over time.
Case Description: A 29-year-old gravida 1 female at 12 weeks gestation presented to the Maternal Fetal Medicine (MFM) clinic due to maternal MMC. Past medical history was significant for MMC, Chiari malformation type II, neurogenic bowel, and neurogenic bladder. Past surgical history was significant for MMC repair, ventriculoperitoneal shunt, spine-to-abdomen shunt, cervical spine fusion, spinal cord untethering, and club foot correction. Patient ambulated using a walker. Noninvasive prenatal testing was low-risk. The alpha-fetoprotein was unremarkable at 22 ng/ml. Ultrasound revealed unilateral fetal pyelectasis. Fetal echocardiogram showed normal anatomy and function.
The patient was admitted for 4 days at 33 weeks for a unilateral vulvar infection and hematoma that developed from repeated self-catheterization. The patient was admitted out of precaution due to past history of labial Fournier's gangrene. Wound cultures grew prevotella bivia. Infectious disease recommended outpatient oral antibiotics at discharge. Anesthesiology recommended maternal MRI prior to delivery planning. MRI showed lumbar lordosis and severe canal compromise in the lumbosacral region. The low-lying conus terminated at L3-L4. Cauda equina nerve roots extended to the sacral region. Morphology of the sacrum and coccyx was abnormal, consistent with MMC. Imaging determined epidural and spinal anesthesia carried a high likelihood of analgesic failure from scar tissue due to prior surgeries. The patient ultimately agreed to general anesthesia.
A primary low-transverse cesarean section was performed at 39 weeks 0 days. The baby was delivered without delayed cord clamping and had 1- and 5-minute APGAR scores of 6 and 9. Dense adhesions were present throughout the abdomen, which prevented uterine exteriorization during hysterotomy repair. The remainder of the surgery was uncomplicated and indwelling foley was kept in place postpartum. At 6-week postpartum visit, patient was fully healed and had resumed self-catheterization.
Discussion: Pregnant women with spina bifida require complex multi-disciplinary co-management. This patient received care from MFM, neurology, urology, anesthesiology, infectious disease, and neurosurgery. Currently, there are no universally established guidelines on the management of pregnant women with spina bifida, but general principles of management exist. In the pre-conception period, it is recommended that patients at high-risk for fetal spina bifida, including type 1 diabetics, take 4mg of folate daily. High-risk patients should take folate for at least 3 months prior to conception and up until 12 weeks' gestation. Since 9-12% of this population is affected by epilepsy,

optimizing seizure medications is prudent. Lamotrigine or Carbamazepine monotherapy is preferred, as they pose the least risk of congenital malformations.

In the antepartum period, providers should anticipate treating common comorbidities. Bladder dysfunction includes either hyper-reflexive or areflexive bladders. Intermittent self-catheterization is a viable option for those with incomplete bladder emptying. Pregnant patients with ventriculoperitoneal shunts are susceptible to displacement from the gravid uterus. Since limited mobility is prevalent in this population, risk assessments for venous thromboembolism should be completed, and prophylactic anticoagulation may be considered. Vaginal delivery is possible in some patients. However, epidural or spinal anesthesia can increase the risk of spinal cord injury in those with tethered cords or prior surgery. Patients with limited mobility may require cesarean section due to inability to position for labor.

In conclusion, MMC is rarely encountered in obstetrical contexts but is becoming increasingly more commonplace. MMC requires co-management by multiple specialties to surveil and optimize common comorbidities. In this case, the patient's pregnancy course was mainly complicated by her pre-existing neurogenic bladder and resulting vulvar wound secondary to self-catheterization. For MMC patients who are interested in pregnancy, preparations should be started in the pre-conception period, with close monitoring throughout the antepartum period to follow. Currently, there are generally accepted guidelines for managing MMC patients in pregnancy, but there is a lack of global standardization. The development of standardized treatment guidelines may be possible as more of these cases are discussed and appear in the literature.

A78 SURGICAL MANAGEMENT OF A NON-OBSTETRIC VULVAR HEMATOMA

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DOI: 10.54053/001c.121028

Purpose: To describe the successful management of a rare non-obstetric vulvar hematoma.

Background: While vulvar hematomas are common in obstetric cases, vulvar hematomas due to non-obstetric trauma are rare, representing only 0.8% of all gynecological emergencies. The vulva is made primarily of loose connective tissue richly supplied by branches of the pudendal artery, so it is susceptible to injury by multiple different types of trauma. Because non-obstetric vulvar hematomas are so rare, there is no established consensus for management. In this article, we shall present a patient who, after sustaining multiple injuries from a motor vehicle collision, developed a large vulvar hematoma that was successfully treated with surgical evacuation.

Case Description: A healthy 26-year-old female presented to the emergency department following a broadside motor vehicle collision. CT with contrast described multiple pelvic fractures as well as a small volume retroperitoneal hemorrhage anterior to the bladder. There was no evidence of bladder injury or other areas of extravasation. On hospital day 1, she underwent uncomplicated open reduction and internal fixation of pelvic and sacral ring fractures.

On hospital day 3, the patient began noticing a painful, rapidly expanding labial hematoma, and OBGYN services were consulted. Despite conservative management with ice and analgesics, the patient described the pain as 10 out of 10. On physical exam the right vulva was found to have a 14 cm hematoma expanding down to the perineum and extending to include the labia majora and labia minora. The area was extremely edematous and tender to light palpation. Swelling distorted the anatomy, occluding the vaginal introitus and obscuring the left labia. A Foley catheter was draining clear urine from the bladder. The following morning, the hematoma had continued to expand and Hgb significantly decreased, so the decision was made to proceed with surgical management.

Pre-operative antibiotics were given, and the patient was prepped and draped according to hospital protocol. Hart's line was injected with a marcaine/lidocaine/epinephrine premixed solution for hemostasis. A 3 cm vertical incision was created along Hart's line, and the space was bluntly entered using a hemostat. Clotted blood was evacuated from the labial space, and active bleeding was ligated with using Vicryl. Once hemostasis was noted, the incision was loosely closed with interrupted stitches placed widely apart to allow for drainage. The vagina and left labia were examined and found to be normal. The right labial space was packed using kerlix, and the patient was prescribed a 7-day course of oral antibiotics.

The patient tolerated the procedure well and reported no vulvar pain on post-op day 1. The vulvar packing was removed without incident, and no bleeding was noted from the incision site. The patient was reevaluated by the OBGYN team on post-op day 8 and was healing very well. She reported very little pain and had no issues with spontaneous urination. On physical exam, the hematoma was nontender to palpation and measured approximately 10 x 5 x 2.5 cm with decreased bruising and areas of discoloration. The patient was discharged with no further issues. Despite multiple attempts to schedule an outpatient appointment, the patient was unfortunately lost to follow-up.

Discussion: Non-obstetric vulvar hematomas due to non-obstetric trauma are rare, and with improper management, may lead to significant morbidity. However, there is no established consensus for management, and little literature is available for guidance. Some small studies have reported success with conservative management. Benrubi et al, however, observed that conservative management of vulvar hematomas may be associated with longer hospital stays and increased need for antibiotics and blood transfusions[10]. A recent retrospective analysis also suggests a preference for surgical management, as a significantly reduced mortality rate was observed in patients who underwent surgical intervention for non-obstetric vulvar trauma. The same study found that while the surgical cohort tended to require

a slightly longer hospital stay, there were no differences in ICU days, ventilator days, or rates of UTI between cohorts who had undergone surgical management and those who had undergone conservative management[1]. Arterial embolization has also been described as an alternative to surgical intervention in select patients, but this approach requires equipment and specialized personnel that may not be readily available to all institutions.

Some case studies suggest using rate of expansion or hemodynamic instability as indications for surgical management. Size of the hematoma may also be considered as evidence suggests vulvar hematomas with a diameter greater than 4 cm have a higher potential for skin necrosis. Even when surgical management is clearly indicated there is little data regarding an optimal surgical approach.

Conclusion: In this article, we discuss the successful surgical management and short-term follow up of a very large non-obstetric vulvar hematoma. We hope that our surgical approach can add to the small pool of literature available on these rare gynecological cases and help guide future research into developing standardized management guidelines.

Submitted: November 01, 2023 EDT, Accepted: May 31, 2024 EDT

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