1 Longitudinal Impact of COVID-19 on Maternal, Obstetric and Neonatal Outcomes Within a Single Healthcare System

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BACKGROUND: Coronavirus disease 2019 (COVID-19) during pregnancy is associated with adverse maternal and neonatal outcomes. The negative impact on pregnant women is not well understood. Our primary objective was to describe and compare the longitudinal maternal, obstetric, and neonatal outcomes Pre- and Post-COVID-19 pandemic onset within a single healthcare system.

METHODS: We performed a retrospective chart review of electronic medical records at 4 hospitals for pregnant women who gave birth between March 1, 2019-March 30, 2022. The data was divided into Pre-COVID-19 (March 1, 2019-February 29, 2020) and Post-COVID-19 (March 1, 2020-March 31, 2022). Outcomes for the two groups were compared using a t-test. P≤0.05 was considered significant.

RESULTS: The total number of births is N=18956. There were 6166 pregnant women included in the Pre-COVID-19 group and 12790 in the Post-COVID-19 group. The baseline characteristics, including mean maternal age (28.1 vs 28.2 years, p=0.275) and race, were similar. Notably, Post-COVID-19 there were more pregnancies complicated by: gestational diabetes (2.3% vs 2.9%, p=0.015), preterm birth (22.2% vs 23.5%, p=0.039), preeclampsia (1.4% vs 2.2%, p=0.001), HELLP (0.0% vs 0.1%, p=0.043), excessive bleeding (0.1% vs 0.3%, p=0.042), cephalopelvic disproportion (0.3% vs 0.5%, p=0.022), fetal intolerance to labor (4.2% vs 6.1%, p=0.000), and readmission for vaginal bleeding (4.0% vs 7.2%, p=0.049).

DISCUSSION & CONCLUSION: The COVID-19 pandemic is associated with worse maternal and neonatal outcomes even if no diagnosis was made at the delivery episode. The large number of patients included, and the population health approach our study followed, are strengths that allow for counseling on pregnancy outcomes in the Post-COVID-19 era. Our study emphasized the epidemiological impact of the pandemic on the pregnant population at our institution and highlights the need for further studies to delineate its underlying pathophysiology.

2 Medical Abortion Trends During COVID-19 at an Independent Clinic in Detroit, Michigan

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BACKGROUND: Anticipating a desire for at-home services during COVID-19, the authors hypothesized that there would be an increase in preference for medical abortions (“pill” abortion, at-home method) over surgical abortions (vacuum aspiration, in-patient setting) for first trimester voluntary terminations. There is limited information on the effects of the pandemic on a patient’s preference between medical or surgical abortion. Such research would allow healthcare professionals and policy-makers to understand factors that patients evaluate when choosing a pregnancy termination procedure.

METHODS: One of nine independent abortion clinics in Southeastern Michigan took part in the study. Retrospective, deidentified data regarding the count and type of first trimester abortions was collected. Inclusion criteria included first trimester medical and surgical abortions performed January 1, 2019 through December 31, 2020. In 2019, there was 2,221 first trimester abortions, with 1,519 surgical and
702 medical cases; in 2020, there were 2,482 first trimester abortions, with 1,503 surgical and 979 medical. A negative binomial statistical model compared the number of medical abortions by calendar year. A logistic regression time-period variable assessed for chronological trends over the 24-month period. Each calendar year was divided into quartile periods of three consecutive months. Analysis focused on Quarter 1 and Quarter 2, based on a Michigan executive order issued in March of 2020.

RESULTS: Data showed that medical abortions increased from 702 in 2019 to 979 in 2020 (p-value=0.00499). Time-period variable analysis was statistically significant (p-value=0.00824), implying a significant chronological increase across the 24-months. There was no significant increase in medical abortions in Quarter 1 from 2019 to 2020 (185 vs 215, p-value=0.79). There were 175 medical abortions in Quarter 2 of 2019 compared to 294 in Quarter 2 of 2020 (p-value=0.00067).

DISCUSSION & CONCLUSION: Understanding medical abortion trends allows clinicians to better serve their patients - potentially prioritizing telemedicine and holistic at-home care. Expanding medical abortion access via telemedicine could assist clinics/patients in overcoming various barriers, including clinic costs and distance/transportation.

Access to HPV Vaccine in an Ob/Gyn Resident Clinic: A Quality Improvement Initiative

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BACKGROUND: (HPV) is the most common STI in the world, known to cause genital warts and disease to the vulva, vagina, cervix, penis, anus, and oropharynx. Gardasil, a 9-valent HPV vaccine is >99% effective in preventing disease in patients without HPV exposure; the CDC and ACOG recommend administration to females and males, now FDA approved for 9-45 year old patients. Only 54% of women in the US are vaccinated. 4,000 women die of cervical cancer annually in the US. Studies support that physicians’ recommendations for HPV vaccination have the strongest influence on vaccine acceptance by patients and their parents. HPV vaccination of young adult females is a cost-effective, safe strategy to both prevent and reduce HPV related cancers. Our clinic did not have Gardasil available in the office.

METHODS:

Part 1: Survey Evaluating patients’ health literacy on HPV and the vaccine. English, Spanish, and Somali versions administered by medical assistants at rooming


Part 3: Vaccine administration MAs and RNs administer vaccine. Vaccination log book created to log series.

Part 4: Vaccine promotion Vaccine information for patients in office and physical reminders on all computers for staff to offer and inquire about vaccine status

Part 5: Outreach MyChart messages and phone calls direct to patients who began series to schedule follow up

Part 6: Retrospective Chart Review

RESULTS:

• Demographics by survey language:
  • English 95.7%
  • Spanish: 3.2%
  • Somali: 1.1%

• 33% knew what HPV caused clinically
• 8.5% of patients were HPV 16, 18, other HR Positive
• Mean age of vaccination: 27 yo
• 30 patients started Gardasil series
• 3 completed series
• Patient Survey Responses

30% would receive vaccine if offered in office
• Documented HPV status vs. Patient reported 84.6% of patients believed to be vaccinated, but weren’t!
• 75% of patients believed not to be vaccinated, but were!
• 31.9% of patients would receive the vaccine if it was in the clinic.
• 62.8% of patients were aware of HPV.

DISCUSSION & CONCLUSION: If preventive HPV vaccine is available in office and promoted, a percentage of patients are willing to receive it at the time of presentation. Patients in this population had high discordance between documented vs. believed HPV vaccination status. Increasing vaccine rates could reduce the incidence of cancers in the future.

The Relationship of Adiponectin and Gestational Weight Gain during Different Stages of Pregnancy among Different Ethnic Groups

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BACKGROUND: Gestational Weight Gain (GWG) is defined as weight gain between conception and birth. Adiponectin, a fat derived hormone, has an inverse relationship with weight gain. We investigated the relationship of maternal adiponectin concentration and GWG during different pregnancy stages among ethnic groups.

METHODS: Serum adiponectin levels were measured at entry (week 16) and trimester three (week 28) in pregnant women (n = 1634, age 22.0±5.3, pre-pregnancy BMI 25.7±6.3) which included Hispanic (47%), African American (37%) and Caucasian (16%) women. GWG was measured at week 24, 28, 32, and delivery and was divided into inadequate, adequate, and excessive according to Institute of Medicine guidelines. Multivariable analyses controlling for potential confounding variables were performed. IRB approval was obtained for this study.

RESULTS: Adiponectin levels differed among ethnic groups during early and late pregnancy. At entry, Hispanic (17.90±0.32 μg/ml) and African American (16.50±0.37 μg/ml) women had significantly lower levels compared to Caucasians (19.34±0.57 μg/ml; p<0.01 and p<0.05). Similar results were observed during trimester three. Women with inadequate GWG had lower adiponectin levels, compared to adequate GWG (at weeks 24, 28, 32 (p<0.05 for each)), but not at delivery. Lower adiponectin levels were found in women with excessive GWG; however, the difference was not statistically significant.
DISCUSSION/CONCLUSION: Our data suggests that ethnic differences in maternal adiponectin concentration may play an important role in the regulation of gestational weight gain.

Delayed Diagnosis of a Uterine Rupture After a Shoulder Dystocia

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INTRODUCTION: The purpose of this case is to discuss a rare intrapartum complication that was discovered and treated ten days postpartum.

DESCRIPTION: A 29-year-old gravida 2 para 1-0-0-1 presented with ruptured membranes. Her cervical exam was 4/75/-1. She had a prior vaginal delivery.

Labor was augmented with Pitocin. After 2.5 hours of pushing, a prolonged fetal heart rate deceleration led to a vacuum assisted vaginal delivery. A shoulder dystocia occurred. It was relieved with McRoberts positioning and suprapubic pressure. Apgar scores were 1 and 7. A third-degree perineal laceration was repaired. No abnormal uterine bleeding was noted.

On postpartum day 2, she became febrile to 101.3 F. IV antibiotics were given for presumed endometritis.

Due to ongoing fevers, a CT scan on postpartum day 7 revealed a 17x3.3x7.7 cm collection anterior to the uterus. Aspiration revealed a small amount of thick, dark fluid.

On postpartum day 10, an exploratory laparotomy found at least 50% of the cervix avulsed from the anterior lower uterine segment extending to the left broad ligament. A supracervical hysterectomy, bilateral salpingectomy, cystoscopy, and abdominal washout was performed. EBL was 1 liter. She was transfused 1 unit of packed red blood cells.

The patient was discharged on postpartum day 21/post-operative day 11.

DISCUSSION: This case is interesting because of the uterine rupture in an unscarred uterus after a vaginal delivery with shoulder dystocia was not diagnosed and treated until 10 days postpartum. The uterine rupture may have been causally related to the shoulder dystocia.

A Low Budget Perineal Repair Model

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BACKGROUND: We designed a low-cost model to prepare junior surgeons for the limited accessibility and visibility of perineal lacerations. This model has advantages over the classical beef tongue model including lower cost, being easier to build, and lasting longer.

METHODS: To build the model, follow these instructions:

1. Cut two 4-inch segments of pipe insulator. Layer one segment within the other; use glue to attach.

2. Use scissors to make a hole in the proximal bottom segment of the model, perpendicular to the long axis.

3. Use needle drivers to pull the caulk saver segment through the hole. This will represent the external anal sphincter.

4. Now cut off a finger of a gardening glove. Glue this onto the bottom of the proximal end of the model to represent the rectum.

5. Now that the model is complete, create a 2nd, 3rd, or 4th degree perineal repair.

RESULTS: Each of our models can made in about 5 minutes and costs $2.09 in materials per model. Our model was directly compared to the classical beef tongue model used by many programs to simulate perineal repairs. At our program, it took residents on average 15 minutes to create their beef tongue model and cost $16.50 per model which had to be used immediately and discarded afterwards due to the meat spoiling. Overall, our model was seen as a useful training tool to be used in addition to our current curriculum. It does not require significant preparation to build or use unlike the beef tongue model, and it is sufficiently cheap for medical students and residents to take home.
DISCUSSION/CONCLUSION: Many medical models are prohibitively expensive for the individual to purchase or are reserved for rare training sessions in a simulation center due to their scarcity. This is an efficient and practical model which accurately demonstrates the limited space and visibility of perineal repairs while also allowing residents to conveniently practice 3rd and 4th degree repairs, which are so infrequent in modern obstetrical practice.

8. Impacts of Social Determinants of Health on Family Planning: Contraceptive Use and Pregnancy Intention

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BACKGROUND: Social Determinants of Health (SDOH) play a crucial role in determining an individual’s access to reproductive healthcare. Given that nearly 1 million unplanned pregnancies in the U.S. result from oral contraceptive misuse or discontinuation annually, those experiencing negative impacts from SDOH may experience greater barriers to family planning (FP). Our primary objective is to assess the relationships between SDOH, contraceptive utilization and pregnancy intention among individuals using the Behavior Risk Factor Surveillance System (BRFSS).

METHODS: We conducted a cross-sectional analysis of 2017 BRFSS, our main focus was to use the SDOH module to assess differences in the utilization of FP. While sociodemographic variables related to SDOH were extracted to use as controls. We then constructed bivariate and multivariable logistic regression models to determine the associations, via odds ratios, between SDOHs, contraceptive use and FP.

RESULTS: Compared to women not experiencing SDOH, we found that individuals were less likely to have used contraceptive methods who reported running out of food (AOR: 0.65; CI:0.50-0.86), not being able to afford balanced meals (AOR: 0.64; CI:0.49-0.84) or ran out of money by the end of the month (AOR: 0.45; CI:0.32-0.64). Among women not using contraceptive methods, women who were not intending to become pregnant were more likely to report suffering from financial instability including having difficulty affording balanced meals as opposed to those women who intended on becoming pregnant.

DISCUSSION/CONCLUSION: Our study found that the food insecurity and monthly financial instability domains of SDOH were significantly associated with women who did not use any contraceptive measures but had no intention of pregnancy. With changing policies around women’s reproductive healthcare, addressing barriers to FP and contraceptive access is increasingly critical. Expanded funding for public health programs may provide a solution for women seeking contraceptive and FP counseling.

9. Novel Detection Methods for Sexually Transmitted Infection (STIs) from M. Genitalium

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BACKGROUND: Mycoplasma genitalium is a sexually transmitted pathogen, causing 25-35% of nongonococcal urethritis in males and linked to premature rupture of placent membranes in females. This pathogen is difficult to culture, requiring an alternative identification method for diagnosis. Loop-mediated isothermal amplification (LAMP) is a novel nucleic acid amplification technique that uses a set of 4 to 8 DNA primers, allowing for rapid target amplification and a viable detection method.

METHODS: Primer sets were designed using available pdhD gene G37 strain of M. genitalium (L43967.2). Alignments of the pdhD genes of four M. genitalium types were performed using Clustal Omega. LAMP primers (F3, B3, FIP, and BIP) were designed using NEB’s LAMP Primer design tool and synthesized through Integrated DNA Technologies. Loop primers (LF, LB) were designed separately...
to increase the specificity and sensitivity of the LAMP assay using the NEB LAMP Primer design tool. The final primer set was chosen based on ΔG values. The specificity of all primers was confirmed using BLAST.

Colorimetric LAMP reactions were performed using the WarmStart® Colorimetric (or Fluorescent) LAMP 2X Master Mix (DNA & RNA) (M1800S) from New England Biolabs (NEB, Ipswich, MA, USA) or the WarmStart® Fluorescent LAMP/RT-LAMP Kit (E1708S) with LAMP Fluorescent Dye (NEB #B1700). Reaction mixes were prepared as described by the manufacturer (NEB) at 65°C for 30 minutes. A lateral flow assay (LFA) using the Milenia HybriDetect LFA kit was also used. Genomic copies were calculated based on the M. genitalium genome size (580,076 base pairs).

RESULTS: The pdhD Color LAMP reaction allowed target detection of 15.97 genomic copies at a concentration of 1x10-2 pg/μL in 30 minutes. Controls that contained no target DNA or off-target DNA did not result in any noticeable amplification. Fluorescent LAMP allowed detection of a much lower target DNA copy amount, 1.6 genomic copies, which equates to a concentration of 1x10-7ng/μL, in a shorter amount of time (18 min).

A preliminary lateral flow assay (LFA) experiment for the detection of Mycoplasma genitalium successfully detected Mycoplasma genitalium DNA but not the negative control Mycoplasma hominis (ATCC 23114D).

DISCUSSION/CONCLUSION: LAMP assays maintain the high sensitivity of normal PCR assays while allowing for a more rapid diagnosis with similar sensitivity, eliminating the need for thermal cycling. To visualize our detection results, another method called LFA was used to compare our detection results to a close genomic relative, Mycoplasma hominis, which showed no detection.

We found that this assay is specific to Mycoplasma genitalium when compared to Mycoplasma hominis. The pdhD fluorescent LAMP was found to be more sensitive (1.6 genomic copies) than the Colorimetric LAMP assay (15.97 genomic copies). Fluorescent LAMP reactions were monitored for 32 minutes at 65°C with the fastest time to detection of 14 minutes containing the highest concentration of the target. Although the colorimetric method was rapid, it had the innate flaw of being indirect, whereas LFA is specific and a direct method of visualizing the product of amplification. Similarly, fluorescent lamp is a specific and direct method of measurement but requires cumbersome equipment.

Current work is underway to establish a point of care LAMP assay. We project that screening pregnant women for Mycoplasma and other organisms could potentially be a preventative measure precluding chorioamnionitis and possibly fetal loss.

## 10 Vulvar Leiomyosarcoma Masquerading as a Bartholin Gland Cyst

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**INTRODUCTION:** Primary sarcomas of the vulva are rare and make up 1-3% of all vulvar malignancies, with the most common among these being leiomyosarcomas. They usually present in women 40 to 50 years old, but cases have been reported in those as young as 14 years old. The most frequent presentation is that of an enlarging mass over the labia majora, followed by Bartholin gland area, and are often mistaken for Bartholin gland cysts. This report is to present a 29-year-old female who presented with a vulvar mass, initially suspected to be Bartholin gland cyst, found to be vulvar leiomyosarcoma.

**DESCRIPTION:** Patient is a 29 year old G2P1011 who presented with a right vulvar mass, initially measuring 9.7 cm on ultrasound, with subsequent incision and drainage and word catheter placement in the Emergency department. She had a history of Bartholin gland cyst, with no other pertinent medical history. She underwent resection of right Bartholin gland cyst and hematoma with subsequent pathology revealing cellular spindle cell neoplasm, favor leiomyosarcoma.

Pathologic features include 10 x 5.5 x 1.6 cm mass excised, with multiple areas of coagulative tumor necrosis and variable mitotic activity, mostly infrequent but up to 8-9/10 hpf. A mild proportion of the tumor showed moderate atypia. Immunostains performed showed positivity for desmin, SMA, ER and PR (80-90%). She was found to have a 1 cm residual mass at 2 week follow up. PET scan was completed with nonspecific perineal uptake without metastasis and likely physiologic uterine and ovarian uptake.

She underwent right modified radical vulvectomy and right sentinel groin lymph node dissection and dilation and curet-
tage. Pathology confirmed leiomyosarcoma with extension to medial margin and within 1 mm from deep margin, with negative endometrial and endocervical curettage. MRI was completed showing no evidence of developing metastatic disease. She underwent another modified right radical vulvo-vaginectomy with pathology revealing squamous epithelium and underlying connective tissue with fibrosis, chronic inflammation, with no diagnostic evidence of residual leiomyosarcoma. She then received radiation to vulva, for a total of 60 Gray in 33 fractions. She is undergoing surveillance every 4 months currently.

**DISCUSSION:** Vulvar leiomyosarcomas remain underrepresented in the literature due to their rarity. The largest case series to date, published in 2021, included 44 cases of vulvar leiomyosarcoma3. Because of this paucity of data, they are often overlooked and mistaken for other vulvar pathology, including Bartholin gland cysts/abscess, leading to delay in diagnosis and treatment. Additionally, as vulvar leiomyomas primarily affect women who are premenopausal, they escape pathologic evaluation upon initial presentation.

A pathologic criteria to differentiate between leiomyomas and leiomyosarcoma was developed by Nielsen in 1999, using a clinicopathologic study of 25 patients4. This was further expanded to include factors associated with higher rates of local recurrence, including lesions over 5 cm with infiltrating margins, extensive necrosis and over 5 mitoses per 10 high power fields.

In subsequent case studies, these criteria have been used to guide management with recommended management as primarily excisional with limited postoperative radiation therapy considered for local control. Recommended margins for excision are 2 cm. Chemotherapy appears to have a limited or experimental role.

Data from Akrivi shows that of 44 cases, 3 patients underwent radiotherapy in addition to excision with it used in another 5 patients for recurrence (7/44). An additional 3 studies were seen, showing use of radiotherapy following excision with no local recurrence for 1, 1.5 and 5 years respectively. Due to this, decision was made for postoperative radiation due to positive margins seen on initial surgery, as well as size on presentation based on the role of radiation therapy in uterine leiomyosarcomas. Because recurrence rates remain as high as 65-77%, including other tumor sites, further studies are needed to understand best methods to prevent recurrence.

**11 Endometrial Receptivity Testing and Subsequent Adjustment to Window of Implantation Timing Improve Pregnancy Success Rates of Women Undergoing Assisted Reproductive Technology**

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**BACKGROUND:** For decades, REI research focused solely on the creation of a viable embryo to increase pregnancy rates. Recently, research has identified the impact of endometrial adhesion molecule expression during the Window of Implantation (WOI) as playing a major role in embryo implantation.

**METHODS:** This is a retrospective case-control study of women undergoing Assisted Reproductive Technology (ART) and the effects of the Igenomix Endometrial Receptivity Assay (ERA) on pregnancy success rates following frozen embryo transfer.

**RESULTS:** ERA results showed 29 of 60 patients were normal, 20 of 60 patients were Early Receptive (WOI existing 12 hours later than expected), and 11 of 60 patients were Pre-Receptive (WOI existing 24 hours later than expected). Ninety-one percent of patients with a corrected abnormal ERA had successful pregnancies while only 72% achieved successful pregnancy without using ERA to assess for their WOI (p = < 0.01, OR 3.82).

**DISCUSSION/CONCLUSION:** Endometrial Receptivity Assay testing has a significant impact on successful pregnancy rates among patients undergoing ART. Women should be encouraged to undergo ERA testing to ensure accurate timing of their WOI for embryo transfer. While numerous medication changes can be made by the physician to improve implantation success rates, if the WOI timing is not accounted for, those changes are for naught because the en-
dometrium is not prepared to receive the embryo and subsequent embryo implantation into the endometrium will not occur. The use of ERA could save the patient tens-of-thousands of dollars and shave years off their time to achieve successful pregnancies.

12 Effects of Osteopathic Training and Medical Simulation on Lumbar Puncture Landmark Identification in American Medical Students

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BACKGROUND:

- Medical schools traditionally spend the first two years on lecture based didactics.

- SIMS (Student Initiative in Medical Simulation) is a nationally recognized organization. NYITCOM’s chapter began research on the impact of simulation in conjunction to osteopathic manipulative training on students’ ability to accurately identify clinically important landmarks.

- It is estimated that 60% of US births use neuraxial labor analgesia. The CDC reports that 31.8% of births in the US in 2020 were delivered via cesarean section. These require providers well-versed in spinal anatomy.

- The first objective is to evaluate the impact of OMM curriculum on the confidence and accuracy in identifying landmarks for LPP.

- The second objective is to evaluate the impact of skills workshops on the confidence and accuracy in identifying landmarks for LPP.

METHODS:

- This was conducted as a longitudinal study over three time points.

- Phase 1 (n=32): After spinal anatomy
- Phase 2 (n=43): After lumbar OMM
- Phase 3 (n=39): After LP simulation workshop
  - Attended LP: n=13
  - Did not attend LP: n=26

- At each time point the participants were asked to:
  - fill out a questionnaire.
  - place a marker at the level between L4 and L5.

- Data collected during these rounds included:
  - Accuracy by distance from baseline LP point (centimeters)
  - Time taken to complete the task (seconds)
  - Confidence (Likert Scale)

RESULTS: Before data collection, the true lumbar puncture point was measured on the live model by an OMM faculty member. The standard deviation away from that point was then recorded. During phase 1 (before exposure to lumbar spine OMM, while in an anatomy course), the average standard deviation from the true LP point was 3.19 cm. During phase 2 (after exposure to lumbar spine OMM), the average standard deviation from the true LP point was 2.66 cm. Finally, during phase 3 (after a simulation workshop with a lumbar puncture model), the average standard deviation from the true LP point was 1.73 cm on a male model, and 1.31 cm on a female model.

The average time to find and pin the landmark between L4 and L5 spinous processes during phase 1 was 27.85 seconds. During phase 2 of the study, the average time for first year medical students to find the lumbar puncture point was 19.88 seconds. During phase 3, after participating in the lumbar puncture workshop, the average time to pin the landmark between L4 and L5 spinous processes was 16.4 seconds on a male model, and 14.21 seconds on a female model.

The students were surveyed to assess their confidence in performing a lumbar puncture spinal tap. Confidence was assessed using a 1-5 likert scale. During phase 1 of the study, the average confidence was 2.5. After exposure to lumbar OMM during phase 2, the average confidence was 3.32. Finally during phase 3, after the lumbar puncture simulation workshop, the average confidence was 3.38 and 3.36 for the male and female model respectively.
DISCUSSION/CONCLUSION:
- This study showed that incorporation of a simulation workshop after exposure to OMM improves the confidence level of students accurately identifying the LP landmark, reduces the time it takes to locate the point, and decreases the standard deviation from the actual LP point on the model.
- Simulation can serve as a “refresher” as indicated by the difference between LP and No LP groups.
- Further study needs to be done to track retention of clinical skills further throughout the students academic career.
- Other studies can be done comparing student’s performance on male and female models and how that correlates with the gender of their OMM lab partners.

13 Proteomic Analysis Identifies Complement Factor H as a Novel Biomarker for Preeclampsia

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BACKGROUND: Preeclampsia is the leading cause of maternal and fetal morbidity and mortality. Despite decades of research, the pathophysiology of preeclampsia is still not fully understood. Clinically useful biomarkers for predicting this condition are warranted. The objective of this research is to identify novel biomarkers for preeclampsia involved in its etiology, pathophysiology, and prediction.

METHODS: Blood serum was obtained from pregnant women with preeclampsia and matched with healthy controls. Samples were subjected to nano liquid chromatography - tandem mass spectrometry analysis. Protein analysis was conducted using Mascot search engines. A p-value and a false discovery rate (FDR) of less than 0.05 were used to indicate statistical significance.

RESULTS: Sixteen preeclampsia and sixteen healthy controls were selected. No significant differences were identified in main demographics and baseline obstetric data. From 1,821 identified proteins in preeclampsia, 85 (4.2%) were significantly upregulated (abundance ratio>1.5, p<0.05), and 69 (3.7%) were significantly downregulated. Complement activation was the functional pathway more significantly associated with preeclampsia. Complement factor H was the protein with the most significant abundance.

DISCUSSION/CONCLUSION: Complement activation pathway was significantly dysregulated in antepartum preeclampsia. Complement factor H appears to be a potential novel biomarker significantly upregulated in preeclampsia. Further research in these specific protein subfamilies is warranted.

14 Post-Ablation Tubal Sterilization Syndrome (PATSS): A Case Report

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INTRODUCTION:
- PATSS was first reported by Townsend et al in 1993
- Most common presentation: Unilateral or bilateral pelvic pain associated w/ vaginal spotting, often in relation to patients’ menses
- Hypothesized pathophysiology: Lower uterine segment scarring from prior tubal sterilization and endometrial ablation -> retrograde menstruation against an obstructed fallopian tube -> visceral distention & pain
- Diagnosis: Laparoscopy or MRI
- Preferred treatment: Salpingectomy or hysterectomy w/ salpingectomy

DESCRIPTION:
- 34-year-old female presented to Near North Health with one year of worsening, severe pelvic pain, only slightly improved by Tylenol and OCPs
• **Surgical History:** Tubal ligation 2015, endometrial ablation 2020

• **Physical Exam:** The vulva appeared normal, without lesions or discharge. The vagina was normal in appearance with no evidence of cystocele or rectocele. There was no cervical motion tenderness or friability, and the uterus was normal in size and position.

• **Pelvic MRI:** Hyperintense/hemorrhagic fluid filling and distending the endometrial canal of the uterine fundus and body. Left fallopian tube dilated, high T1 signal, representing hematosalpinx. Findings consistent with PATSS.

• **Surgery:** Uncomplicated hysterectomy with salpingectomy. Under laparoscopic visualization, the fallopian tubes were dilated bilaterally. The left hydrosalpinx was larger than the right and appeared grossly dilated with blood.

• **Pathology:** Despite the grossly distended appearance of the left fallopian tube, the final pathology was negative for significant pathologic changes. The right fallopian tube demonstrated multiple para-tubal cysts. The uterus and cervix demonstrated superficial fibrosis and acute and chronic inflammation, consistent with prior endometrial ablation.

• **Outcomes:**
  - Two-week post-op visit: patient reported mild spotting with no pain
  - Four-week post-op visit: the patient continued to deny any pelvic pain, vaginal bleeding, or new complaints. She reported feeling well.

**DISCUSSION:**

• In the months following her 2020 endometrial ablation, this patient experienced pelvic pain that continuously intensified and worsened

• Based on clinical findings, MRI imaging, and intraoperative visualization of the fallopian tubes, a clear diagnosis of PATSS was made

• While histopathology of the left fallopian tube was negative for hematosalpinx or transmural inflammation, this does not eliminate PATSS as the probable diagnosis: In one recent report, pathologically confirmed PATSS has an estimated incidence of 6% while the incidence of the syndrome is likely much higher when assessed clinically

• In addition, the relief of this patient’s symptoms following hysterectomy with salpingectomy further confirms PATSS

• Up to 8% of women with prior tubal ligation followed by endometrial ablation will experience significant chronic pain within 5 years due to obstruction of menstrual blood flow from scarred fallopian tubes and uterine lining

• This clinical syndrome of PATSS is supported with MRI imaging and visualization of dilated fallopian tubes during surgery

• Early identification of PATSS is crucial in order to offer surgical alleviation of patients’ pain

• Proven PATSS risk factors include nulliparity, Black race, and younger age (<33 years old) at time of tubal ligation. The patient presented here met 2/3 of these risk factors.

• Prevention of PATSS requires further investigation, as few preventative measures are known. As technology improves, additional research must focus on the influence of newer sterilization devices and procedures on the incidence of PATSS.

**CONCLUSION:**

• PATSS is an underdiagnosed cause of chronic pelvic pain in women

• This case demonstrates the importance of identifying PATSS patients to provide symptomatic relief

• Long-term follow up to confirm continued pain relief will be monitored in this patient on an ongoing basis

• This case report adds to the growing understanding and acknowledgement of PATSS as a cause of curable chronic pain in women

15 COVID-19 Impact on Breastfeeding in Lynchburg, VA: A Retrospective Analysis

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BACKGROUND: The United States continually falls short of breastfeeding goals as established by the U.S. Department of Health and Human Services. Healthcare has been challenged significantly with the development of the new health crisis COVID-19, and obstetrics and gynecology was no exception. Pregnant women and mothers had new environmental stressors to deal with in addition to existing challenges pregnancy already entails including varying work requirements as non-essential businesses closed, potential lack of family support with varying socioeconomic status, and the adverse health outcome risk group with COVID-19 infection. It is pertinent to increase the understanding of how this pandemic and the healthcare challenges it presented have affected already existing healthcare disparities such as breastfeeding. Developing this understanding will allow healthcare providers to then explore appropriate interventions to better support breastfeeding initiation and duration in future health crises. Specifically, this research was conducted at the Women’s Health of Central Virginia clinic in Lynchburg, VA. The objective of this research is to contribute to the understanding of how the COVID-19 pandemic affected breastfeeding rates amongst mothers who gave birth during this health crisis as compared to the previous year in the Women’s Health of Central Virginia clinic in Lynchburg, VA.

METHODS: Data was collected from mothers who gave birth during the 2020 quarantine beginning in March 2020 (n = 330) through July 2020 and compared to the control group of mothers who gave birth in 2018 beginning in March 2018 (n = 444) through June 2018. The data included patient’s choice of feeding modality, feeding modality at 6 weeks postpartum and employment status. Potentially confounding variables known to be associated with breastfeeding outcomes were assessed including age, race, parity, and mode of delivery. Multiple births (twins, etc.), premature births, and anyone who was lost to follow-up were excluded from the data set. Chi square tests of independence was run for comparisons between all groups with p < 0.05 being the standard for a significant association.

RESULTS: The COVID study group (Group 2) did not have a statistically significant change in breastfeeding initiation compared to the previous year (Group 1) (p = 0.540). Additionally, there was no association between feeding modality at 6 weeks postpartum and Group 1 and Group 2 (p = 0.236). Initial feeding modality and choice of feeding modality at 6 weeks postpartum was not statistically impacted by employment status, mode of delivery, or age in either group, with the exception of employment status having a statistically significant relationship with initial feeding modality in Group 1 (p = 0.028). Parity and initial feeding modality did not show any association in Group 1 or 2. Parity and feeding modality at 6 weeks did have a significant relationship Group 2 (p = 0.048) but not Group 1. Amongst all racial groups within Group 2, breastfeeding was the most popular option compared to formula feeding at both initial and 6 weeks postpartum feeding modality (p < 0.001). Upon further analysis, when the minority racial groups were excluded (Asian and unknown) it was found that in Group 2 there was found to be a statistically significant relationship between race and feeding modality, both initially (p < 0.001) and at 6 weeks postpartum (p < 0.001).

DISCUSSION/CONCLUSION: Based on the results of this study, it cannot be proven that COVID had any impact on breastfeeding initiation or duration. Further study would need to be conducted in order to further understand the impacts of the pandemic. Some shortcomings of this research was that the sample size of each group differed once all the necessary exclusions were made. Furthermore, much of the results in the race category can be attributed to the large population difference. This study also could not follow the mothers past 6 weeks.

16 Contraceptive Beliefs and Practices of Sikh Women in 3 Southern California Religious Centers

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BACKGROUND: Sikh American women are part of an underserved community and historically have not been given adequate attention by researchers. It is important for physicians treating Sikh women to be aware of the contraceptive beliefs and attitudes that exist in this community to better serve their reproductive healthcare needs and provide culturally appropriate care. However, there are no prior studies that describe the beliefs and practices in this population. This study evaluates the contraceptive beliefs and practices of Sikh women in Southern California.
METHODS: Permission to conduct this research on an exempt basis was obtained from the Human Subjects Committee at Western University and from the Gurdwara Committees at 3 religious sites. A 23 question survey was developed and beta tested. Subjects were non-pregnant Sikh women age > 18 who responded to a personal invitation. Study participants showed support after a group invitation conducted on a platform usually catered to male leadership associated with the religious institutions. Eligible potential subjects were told that participation was voluntary and anonymous. Only data about nonidentifying demographic information, about prior contraceptive use and beliefs about what methods were collected along with answers to questions about attitudes towards menstruation and the medical care system.

RESULTS: The interview response rate was 78%; 84 Sikh women aged 18 to 55 years and older were interviewed. Most were Indian born (85%), married (74.6%), and Sahajdhari Sikhs, who were not initiated and fully conformed to the religion (56.5%). Half (50.5%) reported household income > $50,000, but 32.9% did not know their family income. Nearly half (48.6%) believed that Sikhism does not permit contraceptive use. The most commonly listed method was breastfeeding (40.5%), followed by condoms (22.9%); 29.7% said they engage in sexual relations primarily to reproduce. Most (57.8%) did not know about menstruation before menarche, 57.8% preferred a female Sikh caregiver or at least a South Asian one.

DISCUSSION/CONCLUSION: While all women deserve counseling about all contraceptive methods, clinicians should be aware that the majority of Sikhs, especially those who have migrated from India, do not believe in or need birth control. There needs to be awareness in the healthcare field about the lack of education that exists around menstruation in the Sikh community, reflecting on cultural attitudes and traditions. Further expansion of the study to groups of women across all age groups, especially younger women, in larger numbers will allow for better exploration of Sikh women’s contraceptive beliefs and practices.

Melanoma in the Vulva of a 71-Year-Old Patient: A Case Report

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INTRODUCTION:

Melanoma is a malignancy of melanocytes that arises from the basal layer of the epidermal skin cells due to uncontrolled proliferation. Cutaneous melanoma (CM) accounts for 1.7% of global cancer diagnoses and is the fifth most common cancer in the United States with 5.2% of all new cancer cases as of 2022. Mucosal melanomas (MM) account for 1.4% of all melanomas and are rare in comparison but have a poorer prognosis. In addition, MM-defined precursor lesions have not been identified at this time. On the genetic level, CM patients are more prone to single nucleotide mutations, fewer chromosomal variations, and increased UV light mutations when compared with MM groups. Furthermore, BRAF and NRAS mutations are more common in CM patients while PTEN, KIT, and CDKN2A mutations have a higher likelihood within MM-sampled patients. MMs are able to appear on any mucosal surface but tend to emerge in three common areas; vulvovaginal, the anorectum, and the respiratory tract. The signs and symptoms of MM vary based on its origin. The most common symptoms of MM of the respiratory tract are nasal obstructions, lesions, and epistaxis with more aggressive forms showing facial pain and distortion. Within the vulvovaginal region, symptoms include bleeding, itchiness, and bulging masses. Gastrointestinal MM includes masses in the oral cavity that may be pigmented and elevated. Diagnosing primary MM is often difficult due to its hidden locations, lack of early symptoms, and possible metastases. Moreover, lack of pigment and junctional changes make the diagnosis even harder with similarities of lymphoma and angiosarcoma. Immunohistochemical staining for S100, tyrosinase, and HMB-45 aid in a malignant melanocytic diagnosis. Treatment for CM and MM patients is of-
ten patient-specific with an emphasis on surgical excision while other therapies are currently being pursued.

DESCRIPTION:

A 71-year-old G2P2 Caucasian post-menopausal over 20 years female, presented to her obstetrics and gynecology (OBGYN) physician with a chief complaint of an irritating growth on her right labia for the previous two months.

Physical examination revealed a 1+ cm growth on the lower right labia adjacent to the perineum, with no significant vulvar atrophy. There was no urethral discharge. The vagina was noted to have atrophy and inflammation but was not painful. There were no suspicions of malignancy at the time of presentation; past diagnostic measures of cervical and breast malignancies were all negative. Signs of melanoma or any characteristic skin changes associated with melanoma were not found on any other region of the body at the time of presentation. Her past history included a complete transvaginal hysterectomy with anterior and posterior colporrhaphy for a third degree uterine prolapse with cystocele and rectocele 30 years prior. She also had a past history of fibrocystic changes of the breast bilaterally, left breast nodular density 15 years prior (which was being follow by a breast specialist), menopausal syndrome, senile vaginitis. Her last pap smear was three years prior and was normal. She also had a history of hypertension and hypothyroidism for which she is taking medication, a small hiatal hernia, degenerative disease in the lumbar spine, pyelonephritis, and hepatitis. She had no family history of breast, gynecological, or skin cancers. The differential diagnosis for a vulvar mass is benign nevus, Dysplastic nevus, Squamous cell carcinoma of the vulva and melanoma.

The patient underwent an office biopsy with H&E and melanin staining that reported a malignant melanoma. The biopsy report states there was a malignant melanoma with no definite presence of ulceration. Lymphovascular or perineural invasion was not demonstrated. There were also focal changes suggestive of regression phenomena. 1 mitosis per square millimeter was noted and inflammatory response was minimal. There was also no evidence of precursor melanocytic lesion. Complete excision of the lesion with appropriate margins of normal surrounding tissue was warranted/recommended.

The patient was further referred for a pre and post contrast abdominal CT scan to see if there was possible any abnormalities that could be related to the melanoma. The CT scan showed nothing abnormal and revealed no retroperitoneal lymphadenopathy. Approximately one month after the initial diagnostic biopsy, the patient underwent a wide local excision via an ambulatory in hospital procedure. The gross findings of the tumor showed a 2.7 x 1.8 x 2 cm polyloid piece of black and tan tissue having a smooth surface. The tumor had a breslow thickness of 4.3 mm Accessory finding of the tumor included ulceration, a mitotic rate of 9 mitoses/mm2 and lymphovascular invasion. Neurotropism, tumor infiltrating lymphocytes and tumor regression was not identified. The surgical pathology report confirmed a right vulvar mass with nodular melanoma with superficial ulceration, significant lymphovascular invasion in the right vulvar region. However the margins were negative for invasive or in-situ melanoma. The hospital pathologist did an added immunohistochemical study for braf v600 and it was negative.

The patient presented 1 week post wide local excision for a post op check. The patient’s incision was healing very well. A pelvic examination revealed no abnormalities, the vagina had no tenderness, erythema, vesicles, lesions or discharge. A pelvic examination revealed no abnormalities. At this time, the patient was referred to a Gynecologic Oncologist where approximately 1 month post operation, the patient underwent a biopsy for reevaluation. This biopsy revealed a melanoma in the right vulva, measuring at least .83 mm in thickness. Immunological testing of the specimen revealed positive p16, HMB45, and melanin-1A supporting the diagnosis of melanoma.

DISCUSSION:

Melanoma has multifactorial etiology which includes genetic mutation and ultraviolet radiation. The genetic mutations are often related to BRAF, NRAS, PTEN, KIT and CDKN2A genes, though other genes have also been implicated. Melanoma is commoner in the elderly population but can also be seen in younger populations. After age 50 it seems to be commoner in males but before age 50 it is commoner in females.

Other risk factors include dysplastic nevi (Atypical mole), congenital Melanocytic nevi, xeroderma pigmentosum, whites with red or blond hair, first degree family history of melanoma, decreased or weakened immunity. Once a malignant melanoma is diagnosed and graded, an appropriate treatment plan for the individual patient must be prepared. Currently there are numerous treatment options available for such cancers ranging from surgical excision, photodynamic therapy, chemotherapy, immunotherapy, targeted drug therapy, or a combination of approaches.
The goal of all these is to maximize the benefit of treatment and minimize adverse effects experienced by the patient. For most melanomas, surgery is the primary treatment of choice. A review of melanoma treatment outcomes has shown that the surgical excision of these tumors improves survivorship regardless of their location. There is a greater efficacy associated with solitary lesions, much like in this case, as there is difficulty in excising metastatic tumors at distant sites. With this in mind, other adjunct therapies can be incorporated to further improve survivorship. Most commonly, the treatments chosen are immunotherapy with interferon or ipilimumab. Interferon α-2b is a signaling molecule that activates T-cells to promote anti-tumor activity. In melanoma specifically, Interferon α-2b stimulates major histocompatibility complex class I in the target cells and immune cells which leads to a dose-dependent apoptotic effect. On the other hand, ipilimumab is an anti-CTLA-4 antibody that promotes anti-tumor activity. CTLA-4 is an inhibitory checkpoint in the activation of T-cells and regulates immune response and this disinhibition by ipilimumab allows for the proliferation of T-cells. While surgery with supplemental immunotherapy is the typical route of treatment, other previously mentioned options can be considered depending on the needs of the patient.

Melanoma of the vulva is rare, but cases are well documented. One case looked at a 70-year-old woman from India diagnosed with this malignancy. She presented with non-tender swelling of the labial region for 2 months. She also complained of white, non-foul smelling, and not blood-stained discharge of the vagina over this same time period. Medical and surgical history were non-significant and on examination her vitals were within normal limits. The mass was confirmed as melanoma via histology and was subsequently treated through surgical excision. This case presented a tumor of similar severity and location to ours. Both patients were of similar age, and both were treated surgically. Traditionally, malignant melanoma is thought of as a disease of the sun. UV radiation exposed areas such as the lower extremities in women and the trunk in men are most commonly affected. Cases such as ours challenge this ideology and show that the disease may find its way even into the most sun shielded parts of the body. While uncommon in the vulva, melanoma is deadly, so proper diagnosis and treatment are critical. We share this case with the aim of showing that even though presentation of this disease is rare, careful consideration must be given to its possibility as its prognosis is poor if overlooked.