Obstetrics/MFM:

Abstract 1

Title: Factors associated with Primary Elective Cesarean Deliveries after Induction of Labor in Low-risk Nulliparous Singleton Pregnancies

Authors: Katherine Livatova DO, Padmalatha Gurram MD, & Joyce Lee DO

Institutions of the Authors: (1) Good Samaritan University Hospital, Department of OBGYN West Islip, NY & (2) Good Samaritan University Hospital, Department of Maternal Fetal Medicine, West Islip NY

Aim: The aim of this study is to identify the clinical characteristics of women who elected for primary cesarean delivery (CD) when undergoing an elective induction of labor (IOL) at term with no medical or obstetrical indications.

Methods: This study is a retrospective study of nulliparous women scheduled for IOL at > 39.0 weeks during 2012 to 2022. Clinical characteristics, maternal and neonatal outcomes of women opting for elective primary CD after a trial of labor during a scheduled elective IOL (Group1) were compared to women who had a normal spontaneous vaginal delivery after a scheduled elective IOL (Group2). Elective CD is defined as a primary CD per maternal request in the absence of indications. CD performed for obstetric and medical indications, failed inductions and women who opted for elective CD before induction were excluded. IRB obtained.

Results: 42 women in Group1 and 187 women in Group2 were eligible. Women in Group1 were AMA (P=0.01), Obesity class 2 & 3 (P<0.05), English speaking (P=0.03). Group 2 were < 35 years of age, normal BMI and Spanish speaking (P<0.05). Race/ ethnicity and Insurance is similar (P>0.05).Group1 had Bishop scores <5 (P=0.01), received > 2 induction agents (P=0.00), less oxytocin (P=0.01), intact membranes (P=0.00), received less pain medications (P=0.00) and length of induction greater than 24 hrs (P=0.01). Group1 had higher postpartum hemorrhage and ICU admissions (p=<0.05). Neonatal outcomes were similar. There is no difference between solo and group practice.

Conclusions: AMA, Obesity, Bishop scores, length of induction are associated with primary elective CD after a trial of labor during scheduled elective IOL.

Abstract 2

Title: Influence of a Novel Nutritional Supplement on Postpartum Mood

Authors: Sadia Arshad, Eduardo Fernandez Albinana, & Megan L Gilbert

Institutions of the Authors: Exeltis USA Inc, Laboratorios Leon Farma SA; The Centre for Addiction and Mental Health (CAMH)

Aim: Up to 80% of mothers experience postpartum baby blues (PBB), a common postpartum mood state characterized by mood swings, anxiety tearfulness, and fatigue in the first two weeks after delivery. We conducted a pivotal clinical study for the development of a postpartum mood supplement.

Methods: A single-center, double-blind, randomized, placebo-controlled trial of (n=52) and a placebo drink (n=52) conducted in Canada (N=104) between January 2019 and December 2022 examined the role of this supplement on PPB. Dosing schedule and active ingredients are shown in Table 1. Main inclusion criteria were age 18–45, self-report of good health, pre-pregnancy body mass index (BMI) of 18.5–40 (kg/m2), and normal cardiovascular vital signs. Main exclusion criteria included history of a major depressive episode (MDE), psychiatric illness, or substance use disorder in the past 10 years. Participants were permitted to breastfeed. Stein Maternity Blues Scale scores of ≥3 was considered positive for PPB. Individuals with a major depressive episode prior to supplement use or with allergic reaction to first dose were excluded from analysis. Chi-square tests were used to determine p-values.

Table 1. Nutrition Supplement dosing schedule and active ingredients.

Dose Number	Dose Timing	Active Ingredients
1	Night of postpartum day 3	Blueberry Extract
2	Morning of postpartum day 4	Blueberry Extract
3	Night of postpartum day 4	Blueberry Extract, 2g L-tryptophan
4	Morning of postpartum day 5	Blueberry Extract, 10g L-tyrosine

Results: On postpartum day 5, depressed mood induction procedure (MIP) and PPB were assessed. There was no significant effect on primary outcome MIP on visual analogue scale for depressed mood (mean difference = −0.39 mm, 95% CI: −6.42 to 5.65 mm) (includes participants with MDE). The Stein Maternity Blues Scale (SMBS), an exploratory PPB measure, had scores that were lower in the active treatment (n=49) group compared with placebo group (n=52) (4 v. 2, p = 0.0009). In the treatment group, 69.4% of participants did not report PPB compared to 48.1% of participants in the placebo group ($p<0.05$). The most reported adverse events for supplement exposure group were drowsiness (15.4%), dry mouth (7.7%), headache (5.8%), and sweating (5.8%). The most reported adverse events for the placebo exposure group were drowsiness (21.2%), headache (21.2%), restlessness (9.6%), and dry mouth (7.7%).

Conclusions: This blueberry and amino acid mood support supplement may present well-tolerated, over the counter, option to provide postpartum mood support for mothers in the United States.

Abstract 3

Title: MFM & Obstetrics – Focused Prenatal Care: Universal Need for Reentry Women

Authors: Radha Vyas1, Governor James McGreevey2, & Gloria Bachmann1

Institutions of the Authors: (1) Rutgers Robert Wood Johnson Medical School, Women's Health Institute, New Brunswick, NJ & (2) New Jersey Reentry Corporation

Aim: Currently, there are over 190,600 women incarcerated in the United States.1 One significant barrier faced upon their reentry is access to comprehensive prenatal care. Laws exist to mitigate some of the reproductive health challenges these women face, but they are often not comprehensive, not standardized, or neglected among the numerous other logistical difficulties faced by previously incarcerated pregnant or soon-to-be pregnant women, especially since many of them fall into the high risk category.3,5 The New Jersey Reentry Corporation (NJRC) is a non-profit agency that works to remove these and other barriers for previously incarcerated individuals. Defining specific prenatal needs as soon as possible can help determine optimal prenatal interventions for this subset of women.

Methods: Data on the NJRC's website was utilized. PubMed articles with search terms "women" AND "'prenatal care'" AND ("incarceration" OR "reentry") were also reviewed.

Results: Many women will have planned or unplanned pregnancies shortly following discharge from correctional facilities and thus require prenatal care. Their needs are many, including housing, reliable transportation, medical insurance access, and mental health services.3,4 Prenatal care with a focus on ongoing mental health conditions, unmanaged medical concerns, and substance use disorders should also be top priority to prevent adverse pregnancy complications and outcomes.4,5,6 The NJRC, which oversees individuals being released from incarceration settings, conducted a survey of 159 women involved with the justice system at Edna Mahan and other prisons across New Jersey regarding their health care while incarcerated. 60.6% rated the quality of the care received as "poor" while 33.1% rated it as "fair," with just 6.3% rating it as "good" or "very good".2 Similarly, 75.1% of participants shared that it was "very hard" or "hard" to access health care in prison.2 Action items of the NJRC are to provide interventions that promote more consistent health care to reentry women, including early prenatal care, as soon as they are back in the community. Incarceration care should also include screenings for high risk pregnancies and provide resources for prenatal health care, such as references to community-based low-cost clinics, as soon as reentry occurs.3,4,6

Conclusion: Women involved with the justice system need comprehensive health care, especially prenatal care, both during incarceration and upon their reentry; resources, in general, are often limited for these women. Programs like the NJRC that are focused on assisting reentry women, and their prenatal needs, should be widely implemented to identify and eliminate barriers.

Abstract 4

Title: MFM and Obstetrics: Risk Factors and Determinants of Peripartum Hysterectomy in Patients with Severe Maternal Morbidity

Authors: Katherine Livatova DO, Anh Nguyen DO, Keith Downing MD, & Padmalatha Gurram MD

Institutions of the Authors: Good Samaritan University Hospital in West Islip New York

Aims: To evaluate incidence of peripartum hysterectomy (PH) in patients with severe maternal morbidity (SMM) and determine clinically significant risk factors associated with PH and SMM. SMM was defined as any single SMM event including patients who received >4 units of packed red blood cells (pRBC), repeat laparotomy, sepsis, organ damage, ICU admission requiring treatment or diagnostic or therapeutic procedures besides observation, intubation not related to anesthesia, thromboembolism, amniotic fluid embolism, disseminated intravascular coagulation, stroke, oliguria, pulmonary disease, maternal death.

Methods: This is a retrospective study of women that had a SMM event between 2013 to 2023. SMM qualifiers were identified using ICD-10 codes from hospital discharge data. Women with any single SMM event who underwent PH within 6 weeks of delivery were included. Women with PH

and no SMM qualifiers were excluded. Risk factors associated with SMM and PH (Group1) were compared to SMM without PH and SMM (Group2). Chi square, Multivariable logistic regression and risk ratios were estimated.

Results: 223 women with SMM were identified. Group1 had 35 (15.4%) and Group2, 188 (84.3%) women. SMM qualifiers in Group1 were requiring greater than 4 units of pRBC, repeat laparotomy, organ damage and ICU admissions (P=0.000) and Group2 were Hypertensive emergencies, stroke, seizures, thromboembolism and pulmonary edema (P<0.05). Other SMM qualifiers were similar. Group1 are more likely to be AMA, have BMI of 35-39.9, private insurance, short interval pregnancy (SIP), anemia , >1 cesarean delivery (CD), myomectomy, twins, emergency CD and postpartum hemorrhage (P<0.05). Group2 are more likely to have Medicaid, normal BMI, no previous CD, no SIP, and deliver between 35 to 36.6 weeks (P<0.05). There is no difference in race, ethnicity, prenatal visits IVF, diabetes and smoking (P<0.05).

Conclusion: Risk factors associated with PH and SMM are private insurance, AMA, BMI 35 -39.9, SIP, twins, prior myomectomy, anemia, number of CD, emergency CD and postpartum hemorrhage. Being able to identify clinical risk factors and characteristics of patients who are more likely to have severe maternal morbidity and peripartum hysterectomy can help develop prediction models to improve overall patient outcomes.

Abstract 5

Title: Combined Cesarean Section and Splenectomy in a Patient with Massive Splenomegaly

Authors: Samantha Stone, MD, Jenci Hawthorne, MD, Katherine Byrket, MD, & Edward Miller, MD

Institutions of the Authors: (1)University of Missouri General Surgery, Columbia, MO, (2) University of Louisville Department of OB/GYN, Louisville, KY, & (3) University of Louisville Department of Maternal Fetal Medicine, Louisville, KY

Aim: The aim of this case is to provide novel insight into the management and outcomes of patients with idiopathic massive splenomegaly in pregnancy.

Methods: This study is a case report with a review of the current literature on the reported cases of splenomegaly in pregnancy, splenectomy in pregnancy, and cesarean section with splenectomy. This case describes a history of pancytopenia and massive splenomegaly in a pregnant patient who underwent extensive workup with no clear etiology. This case additionally describes the course of care for this patient, including a combined cesarean section with splenectomy. We searched PubMed for all English language articles from 2000 to 2023, with search terms including "splenomegaly in pregnancy," "splenectomy in pregnancy," and "cesarean section and splenectomy."

Results: The current literature surrounding cases of splenomegaly in pregnancy often reveal infectious etiology such as that of malarial infection or an autoimmune component such as idiopathic thrombocytopenic purpura. In the case of our patient, an extensive infectious disease workup was completed in addition to evaluation for hematologic, inflammatory, and neoplastic causes with no clear etiology uncovered. Delivery was indicated at a gestational age of 34 weeks and 2 days due to severe constant pain in the patient in addition to the risk of spontaneous splenic rupture during the labor process and pushing; our multidisciplinary team concluded that it was safer for both mother and baby to proceed with cesarean delivery and splenectomy in the early pre-term. Our patient's pancytopenia improved within hours of spleen removal and has remained stable to date in outpatient follow-up. Baby Boy completed a NICU course of 22 days after requiring some surfactant and respiratory support due to prematurity as well as monitoring due to maternal splenomegaly and thrombocytopenia.

Conclusions: This case provides an opportunity for novel insight into the management of patients with idiopathic splenomegaly in pregnancy. It also reveals future points of investigation; it is essential to continue establishing clear delivery indications for these patients. Additionally, it is imperative for prospective studies to assess long term impacts on both mother and child following a combined splenectomy and cesarean delivery in the setting of pancytopenia.

Abstract 6

Title: The Relationship Between Atopic Dermatitis, Pregnancy and Melanin-Rich Skin: Considerations for Prenatal Diagnosis, Counseling and Treatment for a Diverse Population

Authors: Indira Rayala and Mehar Maju, MPH
Institutions of the Authors: (1) School of Medicine, University of Washington, Seattle, WA, USA & (2) School of Medicine, University of Washington, Seattle, WA, USA

Aim: Globally, atopic dermatitis (AD) is the most common skin disorder in pregnancy and accounts for 36-59% of obstetric skin disease. The prevailing theory suggests the Th-1 to Th-2 immunity shift during pregnancy leads to AD exacerbations in gravid patients. Surprisingly, AD improves during pregnancy for some. The impact of AD must also be contextualized by a health equity lens, given its increased prevalence and severity in Black and Latinx populations. However, current understanding of its disproportionate impact on gravid patients of color remains obscure.

Methods: A systematic review of Pubmed and Web of Science was conducted. Keywords included atopic dermatitis, pregnancy, and persons of color. Approximately 250 studies were reviewed and 22 studies were selected based on relevance after review of titles and abstracts. In total, 15 manuscripts met inclusion criteria which included the following: (1) published in English and (2) AD course in pregnancy, (3) AD treatment in pregnancy, or (4) AD in melanin-rich skin.

Results: Results suggested that 30-50% of gravid patients with pre-existing AD experienced an exacerbation of symptoms while 20% experienced improvement. Literature on pathogenesis maintained that the progression of AD during pregnancy is due to a transition from cell-mediated to humoral immunity. A few studies explored treatment modalities for gravid populations. There was minimal data on AD sequelae in melanin-rich gravid patients.

Conclusions: Current literature indicates the Th1 to Th2 immune response shift, fueled by the increase in estrogen and progesterone, can exacerbate pre-existing AD and cause de novo AD in gravid patients. Maternal AD is also positively associated with premature rupture of membranes and staphylococcal neonatal septicemia. Clinical understanding regarding the associated predisposing factors remains unclear, complicating providers' ability to identify and diagnose at-risk individuals. Data on treatment modalities for AD in pregnancy is sparse, likely due to difficulties in researching gravid populations for maternal and fetal safety concerns. Preferred treatment options are also biased as clinicians and patients are often conservative with continuing prepartum dermatological medications for fear of harming the fetus. Additionally, the paucity of data on the disease progression and treatment on gravid patients of color leaves uncertainty about this health inequity. This underscores the need for (1) providers to counsel prepartum patients on AD progression, safe treatments, and establish this counseling as a fixture in prepartum protocol and (2) ongoing assessment with a global health equity lens to enable personalized prepartum AD guidance and management for all patients.

Abstract 7

Title: Assessing the Relationship Between Pre-Pregnancy BMI and the Institute of Medicine's (IOM) Weight Gain Recommendations in Pregnancy

Authors: Joshua Bellisario, DO, Daniel Baghdasarian, MD, & Hindi Stohl, MD

Institutions of Authors: Harbor-UCLA Medical Center Department of Obstetrics and Gynecology

Aims: As the obesity epidemic continues to worsen across the globe, interest in preventative measures has grown, especially for pregnant patients. Obesity in pregnancy, as well as excessive gestational weight gain, is known to be associated with increased antepartum and intrapartum morbidity for both mother and baby. The Institute of Medicine (IOM) has published gestational weight gain recommendations for patients based on pre-pregnancy BMI. The purpose of this study is to determine if there is a statistically significant difference in the pre-pregnancy BMI of those who fall below, within, or above the IOM's weight gain recommendations.

Methods: This is a retrospective study conducted via chart review among patients who delivered during the third trimester at Harbor-UCLA medical center from 2015-2018. Patients must have presented to care prior to 20 weeks gestation. Patients must have had a starting hemoglobin A1c < 6.4%.

Results: A total of 427 patients were analyzed. 127 gained less weight than recommended by the IOM in pregnancy, 117 gained the recommended weight, and 183 gained more than the recommended weight. The average pre-pregnancy BMI in each group was calculated; those falling below the recommended weight gain had an average BMI of 28.34, those gaining the recommended weight had an average BMI of 27.72, and those gaining more than the recommended weight had an average BMI of 28.44. The standard deviation of each group was noted to be wide at 7.09, 6.11, and 5.88, respectively. An analysis of variance (ANOVA) was performed and there was found to be no statistically significant difference of BMI between groups.

Conclusion: This study showed that there was no significant difference in the pre-pregnancy BMI of those who were able to stay within their recommended weight gain goal when compared to those who gained above or below. This may be an important finding for obstetricians and prenatal care providers, who may express bias in deciding which patients may be at risk of increased gestational weight gain solely based on starting BMI. It is important to take note that based on this study, individuals at any BMI may be at risk of excessive gestational weight gain, and that this topic should be discussed in detail with all pregnant patients.

Abstract 8

Title: Rethinking Perinatal Counseling and Management in "Lethal" Osteogenesis Imperfecta: A Single-Center Experience

Authors: Megan Raymond[1], Joanna Costa[2], Ricki Carroll[2,3], Andrea Schelhaas[2], Cristina McGreal[2], Sarah Little[2], Jeanne Franzone[2,3], Daria Willis[3], Jason Baxter[1,2,3], & Margaret Chou[2]

Institutions of Authors: (1) Thomas Jefferson University Hospital, Pennsylvania, (2) Nemours Children's Hospital, Delaware, & (3) Sidney Kimmel Medical College at Thomas Jefferson University, Pennsylvania

Aim: To describe the management and outcomes of pregnancies and neonates with prenatally diagnosed osteogenesis imperfecta (OI) born in a single specialized center where parents sought resuscitation and medical intervention after birth.

Methods: Between 2019-2024, we iterated process improvement cycles in prenatal and delivery management/technique for suspected or confirmed fetal OI. We collected data on all patients, including general patient characteristics, prenatal ultrasound and genetic findings, prenatal and delivery management, delivery room resuscitation, survival, and respiratory support at the time of discharge.

Results: A total of nine patients were included; five presented on referral with a diagnosis of "lethal," "likely lethal," or "type II" OI based on sonographic or genetic data. Eight of 9 fetuses had fetal growth restriction with normal umbilical artery dopplers, 5 had estimated fetal weight (EFW) < 3%ile. On average, EFW within 14 days of birth underestimated birthweight by 25%. There were no fetal demises. Six presentations were breech. Shared decision-making determined timing and mode of delivery. All patients were born by cesarean section between 37w1d and 38w5d. The average birthweight was 2601g (median 2560g). No patient required advanced airway support or cardiopulmonary resuscitation in the delivery room. Eight infants were admitted to the neonatal intensive care unit on nasal continuous positive airway pressure (nCPAP) with FiO2 ≤0.40. One patient required 2L nasal cannula FiO2 0.30 on admission to the NICU. Eight infants had a 5-minute Apgar score of ≥8. All patients survived to hospital discharge; all are currently living. Five infants required no respiratory support at discharge; One patient was on nasal cannula, two patients were on nCPAP, and one patient left with a tracheostomy. The average length of stay was 74 days (median 46 days, 14-366 days).

Conclusions: Prognostication of neonatal outcomes in the setting of patients prenatally diagnosed with OI is challenging. Many families are counseled to either termination or non-intervention at birth, with few long-term outcomes reported in the literature for patients who received resuscitation and life-extending interventions at birth. Given advances in medical and surgical care of individuals with OI, counseling for a prenatal diagnosis should be nuanced, non-directive, and concordant with individualized goals of care. In addition to the options of termination or comfort care, the option for multidisciplinary antenatal counseling with thoughtful perinatal care and life-sustaining neonatal care should be offered.

Figure 1. Perinatal management approach to osteogenesis imperfecta

Pregnancy Stage		Management
Diagnosis of Condition	Terminology	Classify osteogenesis imperfecta as "moderate" or "severe" rather than "lethal"
	Diagnosis and Counseling	Nuanced, non-directive, and concordant with individualized goals of care
		Multidisciplinary team approach with longitudinal care program at quaternary hospital, including orthopedics, neonatology, and genetics
	Genetics	Offer invasive prenatal diagnostic testing and genetic counseling to patient
Pregnancy Management	Antepartum Surveillance	Serial growth ultrasound starting at 28 weeks, monitor for in-utero fractures

		Interpret fetal growth restriction[±], umbilical artery dopplers, and antenatal surveillance in setting of known skeletal dysplasia when deciding delivery timing, optimize delivery close to term
	Delivery Mode	Shared decision-making regarding delivery mode; trial of labor after cesarean if congruent with goals of care
		Avoid external cephalic version and operative vaginal delivery
Intrapartum	Surgical Technique	Generous skin incision
		Low transverse uterine incision, extend hysterotomy with bandage scissors rather than manual traction
		Attempt en caul delivery of as much of the fetus as possible
		Directional fundal pressure along axis of fetus
	Delivery Technique	Avoid pincer movements or single point fulcrum, favor whole hand maneuvers over the entire torso or extremity
		Avoid extension or excessive flexion of fetal neck, especially during breech delivery
Delivery Room Management and Resuscitation	Infant Handling	Minimize handling/stimulation with drying and bulb suction
		Delayed cord clamping if condition permits
		Hand off to Neonatology on a baby blanket in en bloc fashion
	Neonatal Management	Baby warmer with egg crate in place
		Standard neonatal resuscitation with modifications
		Umbilical line, clustering of interventions, pain management

[±] In the only fetus not diagnosed with growth restriction in our series, femur length was measured in multiple line segments along fractured bone, rather than one single straight-line distance between calipers on end to end of bone.

Abstract 9

Title: Trauma Patients who are Pregnant: Can we Improve Care?

Authors: Jennifer E. Geller & Gloria A. Bachmann

Institutions of the Authors: Rutgers Robert Wood Johnson Medical School

Aim: Physical trauma impacts 1/12 pregnant women and is associated with maternal and fetal severe morbidity and mortality. Over the years, multiple societies have developed guidelines focusing on optimal management of these trauma patients who are in various stages of pregnancy. These guidelines are presented here, and future areas of improvement are suggested.

Method: Practice management guidelines (PMGs) and recommendations from all societies regarding best care of pregnant trauma patients were queried. **Results:** Seven distinct guidelines and recommendations were noted from six societies. Two societies were specific to ObGyn — the Society of Obstetrics and Gynecology in Canada (SOGC) and the American College of Obstetrics and Gynecology (ACOG). The American College of Emergency Physicians and the Emergency Medicine Residents Association both published pieces, without formal recommendations on the treatment of pregnant trauma patients, while the Eastern Association for the Surgery of Trauma (EAST) put out two sets of PMGs, one in 2005 and the other in 2010. The American Academy of Family Physicians released a set of guidelines with evidence graded as B and C. ACOG's recommendations were part of a larger recommendation set of caring for patients who have experienced trauma but offer limited actionable management steps, whereas SOGC's guidelines in 2015 listed 31 specific recommendations including: a) considering all females pregnant until proven otherwise, b) inserting an NG tube into semi-conscious or unconscious pregnant patients, c) using thoracostomy tubes 1-2 intercostal spaces higher than usual, d) restricting pressor use if the patient is unresponsive to fluids, e) after mid-pregnancy moving the gravid uterus off of the IVC to increase venous return, f) using O- blood and KB testing, and g) monitoring all viable pregnancies over 23 weeks for 4 hours with electronic fetal monitoring. AAFP lowers this threshold to 20 weeks to monitor for 4 hours, and both SOGC and AAFP underscore the importance of intimate partner violence screenings in patients. EAST's guidelines are the oldest with their most recent being in 2010 (with a former in 2005 still online). They recommend fetal monitoring in patients 20 weeks or over for at least 6 hours, but like SOGC notes that all female patients should have a B-HCG performed.

Conclusion: There appears to be a need for universal recommendations by all relevant professional societies who address this issue and for these societies to communicate with each other. Minimizing interdisciplinary deviations would enhance optimal care pregnant patients with trauma receive.

Abstract 10

Title: "3D-MOM" 3D-Models for Obstetrical Management, a new era for Placenta Accreta Spectrum Education

Authors: Rachael Sampson MD FACOG, Patricia Rojas Mendez MD FACOG, Sidney Davis BS, & Deena Elkafrawi MD FACOG

Institutions of the Authors: SUNY Upstate Medical University, Department of Obstetrics & Gynecology, Division of Maternal-Fetal Medicine, Syracuse, New York

Aims: Research Question: Will the incorporation of three-dimensional printed models improve severe maternal morbidity (SMM) at a single institution site? Assess patient's satisfaction when customized 3D-models are utilized for counseling. Assess resident and MFM fellow satisfaction when models that allow for accurate interpretation of relevant anatomy are utilized for preoperative planning and education.

Methods: Prospective longitudinal study to assess patient and trainee satisfaction with 3D-printed models for recruited patients with diagnosis of Placenta Accreta Spectrum (PAS)/Cesarean Scar Ectopic Pregnancy (CSEP) at our Regional Perinatal Center (RPC). 3D-printed models from ultrasound and MRI utilized for preoperative counseling, interdisciplinary surgical planning, and education. 3D-models allow clinicians to clarify placental implantation and invasion to surrounding organs. Advanced planning assists with incision selection, bleeding-risk assessment and predicting candidates for conservative treatment without hysterectomy, therefore preserving fertility in focally adherent placentas.

Results: Pre-implementation baseline data of selected SMM:

Year	Number of Unplanned Hysterectomies	Number of Total Births	Percentage of Hysterectomies per Total Births
2017	5	3790	0.13%
2018	6	3841	0.16%
2019	5	3760	0.13%
2020	3	3749	0.08%
2021	8	3751	0.21%
2022	13	3682	0.35%
2023	19	3601	0.53%
7-Year Total	59	26174	0.23%

Conclusions: To date, the fellows in the Division of Maternal-Fetal Medicine have utilized 3D-ultrasound images they personally acquired at the RPC for preoperative planning in the illustrated cases (see figures 1-5). The qualitative experience to date has been positive, with favorable subjective feedback regarding expanded experience in reading two-dimensional MRI, in addition to ultrasound. We anticipate that future work with tangible 3D-printed models will facilitate appreciation of complex anatomy and pathology in a way that can successfully be applied to births in our institution. Future endeavors will evaluate how this program translates into decreased complications and improved maternal-fetal outcomes.

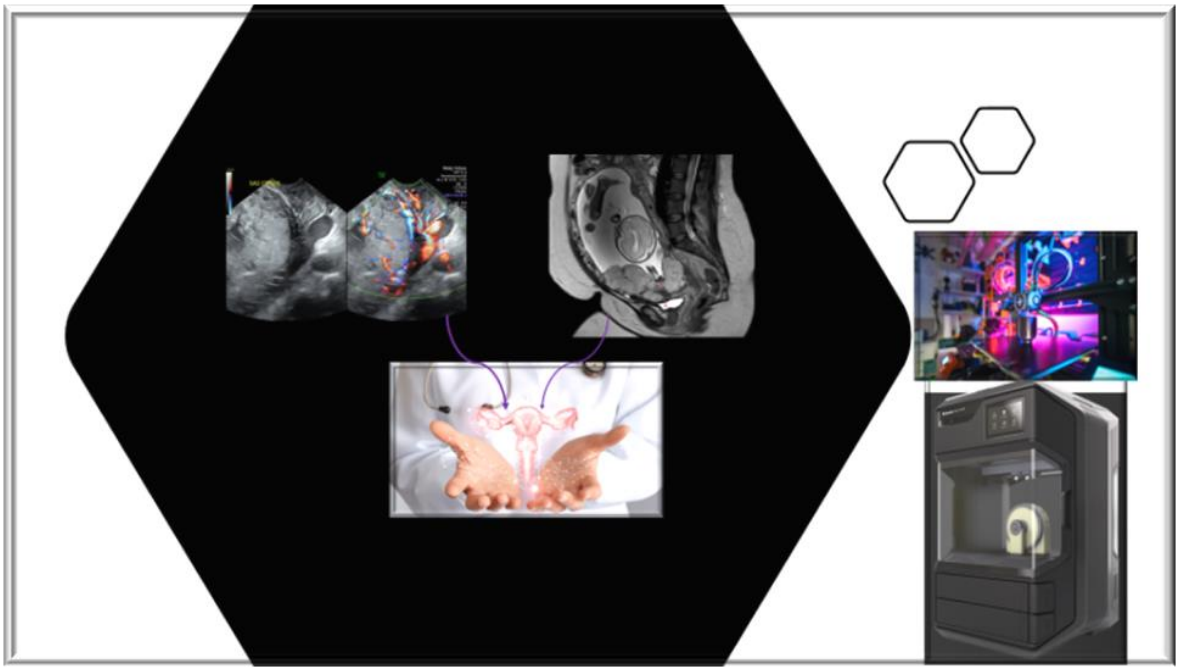

Figure 1. Schematic illustrating the present patient-centered counseling with (a) 2-D ultrasound in gray scale with color mapping followed by review of (b) magnetic resonance imaging. Application of 3-dimensional printing can render (c) tangible hand-held model for patients during antenatal diagnostic sessions with maternal-fetal medicine specialists.

Figure 2. Examples of 3-D printed models used in academic departments at SUNY Upstate Medical University.

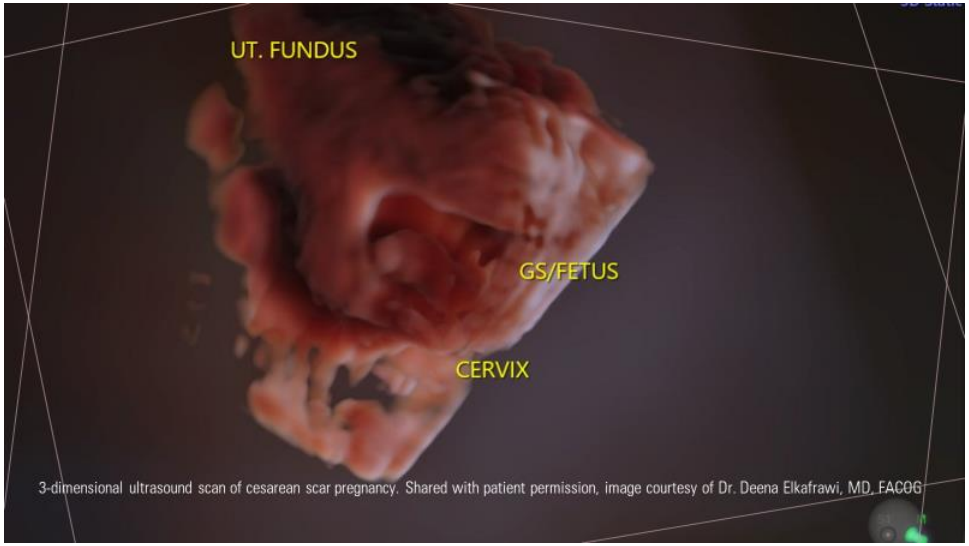

Figure 3. 3-Dimentional ultrasound scan of cesarean scar ectopic pregnancy.

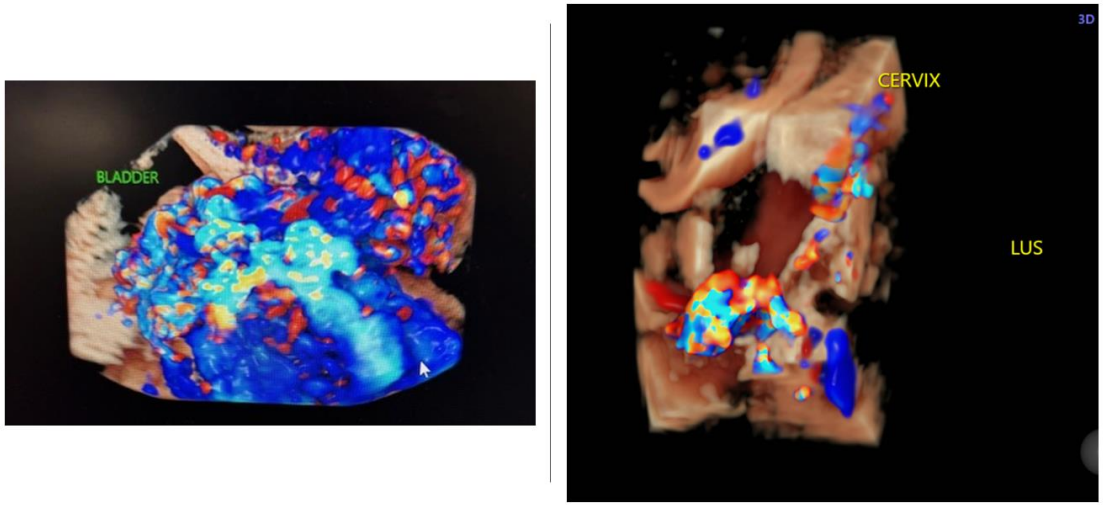

Figure 4. 3-Dimentional ultrasound scan of Placenta Accreta Spectrum at 24 weeks 1 day. Shared with patient permission. Image courtesy of Dr. Deena Elkafrawi, MD, FACOG.

Figure 5. Gross pathology of severely invasive Placenta Accreta.

Abstract 11

Title: Effect of Music Listening on Shortening the Time for a Biophysical Profile Assessment of Pregnant Women: A Randomized Control Trial

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Objective: To compare the duration of the biophysical profile assessment (BPP) between pregnant women who listened to music and those who did not listen to music.

Materials and Methods: This study recruited a cohort of 50 pregnant women with low-risk pregnancies and gestational ages over 32 weeks. The participants were selected from the Department of Obstetrics and Gynecology at Queen Savang Vadhana Memorial Hospital between February and December 2022. Participants were divided into two distinct groups: the experimental group (n=25) and the control group (n=25). The experimental group was equipped with headphones playing music, while the control group wore headphones without music. The assessment was conducted until both groups fulfilled the BPP criteria. Unpaired t-test and Chi-square test were employed to compare continuous and categorical variables between the two groups. A $p < 0.05$ was considered statistically significant.

Results: The study found that using music during BPP led to a reduction in the overall evaluation time or the time required for each component. The experimental group during the assessment exhibited a significantly shorter testing time (4.88 ± 2.42 minutes) compared to the control group (7.04 ± 4.22 minutes, p=0.013).

Conclusion: The study demonstrated that the inclusion of music in the assessment process leads to a significant reduction in total BPP assessment time while simultaneously enhancing maternal satisfaction. Nevertheless, further research is required to elucidate the underlying mechanisms of this phenomenon and investigate strategies for integrating music into the assessment process.

Abstract 12

Title: Is A History of Maternal Abdominoplasty Associated with Prenatal Ultrasound Detected Fetal Growth Restriction?

Authors: Shelly, Thai MD[1], Phuong C. Nguyen, MD[2], Meera Thakkar, MD[3], & Dina El-Kady, MD[1]

Institution: Mount Sinai South Nassau[1], Medstar Georgetown University Hospital[2], & University of Illinois College of Medicine[3]

Aims: To determine if pregnancy after abdominoplasty is associated with Ultrasound detected Fetal Growth restriction and adverse maternal and fetal outcomes.

Methods: This is an IRB approved, retrospective chart review from 2018 to 2022 at a single institution. Singleton pregnancies conceived post abdominoplasty procedure were selected for analysis. A total of 43 patients were identified and were matched 1:2 with a control cohort based on year of delivery and BMI. Outcome variables (Table 1) were analyzed for each group. Data analysis was performed using T-test and Chi-Square calculations. Odds ratio with 95% confidence interval were calculated for primary outcome. Significant values are considered $p<0.05$.

Results: A total of 43 patients were identified to have had an abdominoplasty procedure prior to their pregnancies. As compared to controls, women who had an abdominoplasty tended to be older (age 33 vs 30; p-value 0.04). More Hispanic women had abdominoplasty as compared to non Hispanic Women (62% vs 13% $p < 0.05$). Rates of Chronic Hypertension (10% vs. 1.7%), Gestational Diabetes (20% vs 12%), and Cesarean section (41% vs. 29%) were higher as compared to the control group, however this did not reach statistical significance. Rates of ultrasound determined fetal growth restriction (16% vs 2% $p < 0.05$) were higher compared to control group, which was statistically significant.

Conclusions: Maternal history of abdominoplasty is increasingly being encountered during pregnancies. There is a paucity of literature regarding the effects of this cosmetic procedure on maternal and fetal outcomes. This study alludes to the possibility of increased risk of adverse perinatal outcomes, especially with prenatally detected fetal growth restriction associated with this procedure. The increased risk of suspected fetal growth restriction may be related to the physical constriction of the maternal abdomen in preventing adequate growth or affecting ultrasound dependent measurements. Further research is needed to further elucidate these findings.

Table 1: Comparison of Characteristics of Cohort w/ Abdominoplasty vs No Abdominoplasty.

Odds Ratio of Abdominoplasty on Rates of Cesarean Section, Estimated Fetal Weight

	Abdominoplasty N = 29	**No Abdominoplasty N = 58**	**P -value**
Age (years)	33.4 $\pm$ 5.3	30.4 $\pm$ 4.9	**0.042**
BMI	33.7 $\pm$ 5.3	33.7 $\pm$ 5.2	0.50
Gestational Age at delivery (weeks)	38.2 $\pm$ 1.9	38.3 $\pm$ 1.4	0.3640

Race **White** **Black** **Hispanic** **Other**	 7 (24%) 4 (13%) 18 (62%) 0	 33 (57%) 6 (10%) 8 (13%) 11 (19%)	 **0.0005**
cHTN	n=3 (10%)	n=1(1.7%)	0.0831
Smoker	n=2 (6%)	n=1(1.7%)	0.5728
History FGR	n=2 (6%)	n=0	0.1609
GDMA	n=6 (20%)	n=7 (12%)	0.7689
Pre-eclampsia	n=3 (10%)	n=13 (22)	**0.0116**
Vaginal Delivery	n=17 (58%)	n=42 (72%)	0.2115
Cesarean	n=12 (41%)	n=17 (29%)	0.2115
	Odds Ratio	**CI**	**P -value**
Cesarean	1.95	0.85-4.5	0.11
Ultrasound Detected Fetal Growth Restriction	6.81	1.31-35.3	**0.01**

Abstract 13

Title: Genetics, Prenatal Genetic, Prenatal Genetic Diagnosis: Evaluating Pregnancy Termination Rates for Fetal Chromosome and Single Gene Disorders

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Aim: To report pregnancy termination rates following a variety of abnormal prenatal diagnoses and determine which factors may influence this decision.

Methods: We conducted a retrospective chart review of pregnancies diagnosed with a genetic abnormality at a single institution from January 2012 to April 2023. The type of prenatal diagnosis and whether the patient terminated or continued the pregnancy were collected in addition to thirteen demographic factors. Data analysis consisted of multivariate logistic regression comparing each variable to the outcome of elective termination.

Results: Of the 2,120 patients that underwent prenatal diagnostic testing, 332 received an abnormal prenatal diagnosis and had a single intrauterine viable pregnancy at the time of results disclosure. The overall termination rate was 61.5% (204/332). When compared with sex chromosome abnormalities, trisomy 18/trisomy 13/triploidy (adjusted Odds Ratio [aOR] 6.35, 95% Confidence Interval [CI] 1.93-20.90) and trisomy 21 (aOR 4.39, 95% CI 1.58-12.24) had higher odds to terminate, while copy number variants (CNVs) with likely benign phenotype (aOR 0.17, 95% CI 0.03-0.99) had lower odds to terminate. Black paternal race and ethnicity had a lower rate of termination (aOR 0.08, 95% CI 0.03-0.23) compared to their White counterparts. Earlier gestational age at diagnosis was associated with higher odds of termination (aOR 0.84, 95% CI 0.78-0.90).

Conclusions: Termination rates varied by type of abnormal prenatal diagnosis, including aneuploidy, copy number variants (CNVs), and single-gene disorders. Paternal race and ethnicity, and gestational age at diagnosis also impacted the decision to terminate a pregnancy with an abnormal diagnosis.

Abstract 14

Title: Optical genome mapping for prenatal diagnosis of fetal structural anomalies

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Aim: Optical genome mapping (OGM) is a powerful tool for structural variation detection. This study aimed to determine the utility of OGM in prenatal diagnosis of fetal structural anomalies.

Methods: Totally, 150 cases of fetal structural anomalies were investigated prospectively performing OGM in parallel with chromosomal microarray analysis (CMA) and karyotyping. Clinically relevant structural variations identified by OGM but undetectable by karyotyping and CMA were validated by long-rang PCR plus Sanger sequencing.

Results: Overall, clinically relevant chromosome aberrations were identified in 24 (16.0%) cases using OGM, including one with triploidy, nine with aneuploidies, 11 with pathogenic or likely pathogenic copy number variations, two with translocations and one with aneuploidy co-exist with translocations. In comparison, OGM not only detected all the chromosome aberrations identified by CMA or karyotyping, but also provided additional detection of one (1/150, 0.7%) case of cryptic balanced translocation. Furthermore, OGM provided the breakpoint information for three duplications and revealed one tandem direct duplication, one inverted duplication and one paired duplication flanking a cryptic inversion.

Conclusions: Our study suggests that OGM is a reliable, comprehensive and high-resolution technology with an acceptable turnaround time that has the potential to be the first-tier test for prenatal diagnosis of fetal structural