management of neonatal cardiological emergencies. The morbidity and mortality associated with surgery depends essentially on the severity of the malformation. In fact, the improvement of prenatal diagnosis has not been associated with an increase in the number of medical interruptions of pregnancy, but rather with improved prognosis of certain anomalies, such as transposition of the great arteries. Early diagnosis and referral to pediatric cardiac center for proper management will improve the outcome.

Keywords: Congenital heart disease, fetal echography, prenatal diagnosis, mortality

PP-018 Body mass index change in pre-pregnancy normal weight women and fetal growth

Zoran Mestrovic[1]

[1]University Hospital Split , Obstetrics and Gynecology Department, Split, Croatia

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Objective: Optimal gestational weight gain has not yet been fully clarified and remains one of the most controversial issues in modern perinatology. The proportional but independent correlation of maternal pregestational body height and mass with gestational weight gain has long been demonstrated. The role of optimal weight gain during pregnancy is beyond dispute because it influences, directly or indirectly, the occurrence of many gestational, peripartum and postpartum complications. However, the catch is that greater gestational weight gain quite frequently decreases one peripartum/perinatal risk (e.g. likelihood of preterm delivery and hypotrophy), while at the same time increasing another one (e.g. likelihood of preeclampsia and macrosomia). Therefore, the recommended gestational weight gain cannot be the same for all women with the same BMI (body mass index). In the present study, BMI change in pregnant women was investigated as an input-output factor in the context of quantitative and qualitative assessment of fetal growth.

Methods: The study included 16,751 motheers and their neonates. Mothers with singleton term pregnancies (37th to 42nd week of gestation) with normal pregestational body weight and BMI (18,5-25 kg/m2) were enrolled. Pregnancies complicated with any type of diabetes mellitus, preeclampsia, Rh or other immunization, fetal hydrops, neonatal malformations, still births or early neonatal deaths, and those with incomplete medical documentation were excluded. Fetal growth assessment from body mass according to gestational week was performed by comparison of the measured values and the standards developed at the same institution. The x^2-test was employed on analyzing dependence of the variables that could be categorized qualitatively.

Results: Gestational weight gain was classified according to two criteria, i.e. weight gain expressed in kilograms and BMI change. Study women were divided into two-kilogram groups according to body weight change expressed in kilograms. When BMI was used as a measure of body mass change, groups were definedby 1kg/m² change. Statistical difference between the values obtained and the presumed 10% incidence of LGA (large for gestational age) and SGA (small for gestational age) newborns per group was calculated for each group. The incidence of SGA declined, while the incidence of LGA newborns increased with the maternal BMI change increase. On cumulative analysis of the incidence of SGA and LGA neonates according to maternal BMI groups, all differences between the measured and expected values were statistically significant, with the only exception of gestational BMI change of 6-7 kg/m² (SGA 8.9% vs. LGA 9.3%;x^2=2.65;p=0.26). Decrease in gestational weight gain was associated with an increased incidence of SGA newborns.

Conclusion: Utilizing BMI change as an output factor will reduce the error caused by disregarding the body height variation in women with the same BMI. We are fully aware that our study cannot offer definitive recommendations for optimal gestational weight gain, but we are positive that it offers a new perspective for additional efforts towards the main goal of developing a formula for optimal gestational weight gain calculation for each individual women, thus providing due conditions to achieve the most favorable perinatal outcome.

Keywords: Body mass index change, pregnancy, small for gestational age, large for gestational age

PP-019 Comparing neonatal outcomes of pregnant women treated for opioid use disorder (OUD) with mono-buprenorphine to neonatal outcomes of pregnant women treated for oud with combination Buprenorphine + Naloxone

Ashlyn Hodges[1], Martin Olsen[1], Lori Moore[1], Nicole Lewis[2]

[1]East Tennessee State University, Quillen College of Medicine, Department of Obstetrics and Gynecology, Johnson City, United States
[2]East Tennessee State University, Quillen College of Medicine, Department of Obstetrics and Gynecology, Knoxville, United States

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Objective: Over 20,000 U.S babies each year are diagnosed with Neonatal Abstinence Syndrome (NAS). These neonates require Neonatal Intensive Care Unit attention and are at risk for long term developmental

issues. Buprenorphine and methadone are standard treatments for opioid use disorder (OUD) during pregnancy, with buprenorphine being preferred due to its lower overdose risk and milder NAS symptoms. There has been insufficient investigation, however, into the comparative effectiveness of buprenorphine + naloxone (combination therapy), versus buprenorphine alone (mono therapy). Combination therapy has lower potential for misuse and diversion. The goal of this retrospective study was to determine if combination buprenorphine + naloxone therapy is an improved alternative for OUD in pregnancy by evaluating differences in neonatal outcomes in patients on combination therapy and also patients on mono therapy.

Methods: Four categories of mothers and infants were reviewed: 1- Mothers treated with mono-buprenorphine in our University Medication Assisted Therapy clinic, 2- Mothers treated with combination buprenorphine + naloxone in our clinic, 3- Mothers receiving prenatal care from our clinic but receiving mono-buprenorphine from an outside MAT clinic, and 4-Mothers receiving prenatal care from our clinic but receiving combination buprenorphine + naloxone from an outside MAT clinic. A total of 458 mother baby pairs underwent chart review assessment. We compared the following neonatal outcomes of the infants from each group: sex, weight, gestational age (GA) at delivery, APGAR scores at 1 and 5 minutes, infant ICD10 codes at delivery, highest Finnegan score, admission to and length of stay in the NICU, necessity of morphine replacement therapy, infant urine drug screen (UDS) results, and breastfeeding difficulties. We also compared mother's data between the groups: dosages, therapy changes, GA at delivery, pregnancy complications and maternal risk factors, gravida and parity, clinic and delivery UDS results, and maternal BMI throughout pregnancy.

Results: Conclusions were determined with a proportion test, chi squared tests, and if needed, a Fisher's exact test. P-values were adjusted using Benjamini Hochberg procedure. The combination therapy groups have a statistically significant lower proportion of NICU admissions than the mono therapy groups (p-value = 0.02789). No evidence that buprenorphine/naloxone administration provides any risk to maternal health was uncovered. Additional analysis indicates that the mean final buprenorphine dose for the women treated in the ETSU MAT clinic is lower than the mean final buprenorphine dose for the women who were treated in community clinics.

The participants were also analyzed based on buprenorphine dose and placed into three sub-categories: Subcategory A: 0-2 mg, Subcategory B: 3-7 mg, and Subcategory C: >8 mg. Analysis demonstrates that the mean final buprenorphine dose for women who received mono therapy is statistically greater than the mean final dose for women who were treated with combination therapy (p-value < 0.0001 and t = 5.6298). Proportional and Fisher's analyses also indicates that the proportion of infant drug screens that result as "clean" are significantly less for Subcategory A compared to Subcategory B, meaning it is more likely that the infant has a negative UDS at delivery when their mother is on a lower buprenorphine dose of 0-2 mg rather than a higher dose of 3-7 mg.

Neonatal Outcomes Compared	
Weight	Breastfeeding Difficulties
Gestational Age at Delivery	APGAR Scores at 1 and 5 mins
Infant ICD 10 Codes at Delivery	Highest Finnegan Score
Admission to NICU	Length of Stay in NICU
Morphine Replacement Therapy	Infant Drug Screen Results
Maternal Outcomes Compared	
Dosages of Treatment	Pregnancy complications and maternal risk factors
Gravida and Parity	Clinic UDS Results
Maternal BMI by Trimesters	Delivery UDS Results

The proportion of NICU admissions is significantly less for infants whose mothers are on a buprenorphine dose of 0-2 mg than those whose mothers are on a dose of 8 mg (p-value = 0.005607). The proportion of NICU admission is also significantly less for infants whose mothers are on 3-7 mg as compared to infants whose mothers are on a dose of more than 8 mg (p-value = 0.046515). However, NICU admission for dosage subcategory A and subcategory B (proportion): (p-value = 0.389) indicated that there is no statistical difference in the proportion of NICU admission between these two lowest dosage groups (< 8 mg).

Conclusion: We conclude that women who were treated with combination therapy for OUD in pregnancy were associated with a significantly lower proportion of NICU admissions for their infants than those treated with mono therapy. Moreover, a lower final buprenorphine dose was associated with both a higher proportion of clean infant UDS's and a lower proportion of NICU admissions. These results indicate that combination therapy and tapered doses of buprenorphine could be associated with better neonatal outcomes.

Keywords: Opioid use disorder, medication assisted therapy, neonatal outcomes, neonatal abstinence syndrome, pregnancy, opioid use disorder in pregnancy, buprenorphine, suboxone, subutex, NICU

PP-020 Comparative review of major guidelines on cervical cerclage

Sonia Gkiouleka[1], Ioannis Tsakiridis[1], Eirini Boureka[1], Apostolos Mamopoulos[1], Apostolos Athanasiadis[1], Themistoklis Dagklis[1]

[1]Aristotle University of Thessaloniki, School of Medicine, Faculty of Health Sciences, Hippokrateion Hospital Third Department of Obstetrics and Gynecology, Thessaloniki, Greece

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Objective: The aim of this study was to review and compare the most recently published major guidelines on the indications, contraindications, techniques and timing of placing and removal of cervical cerclage, which represents one of the limited effective measures currently available for the prevention of preterm labor caused by cervical insufficiency contributing in the reduction of neonatal morbidity and mortality rates, worldwide.

Methods: TA descriptive review of guidelines from the American College of Obstetricians and Gynecologists, the Royal College of Obstetricians and Gynaecologists, the Society of Obstetricians and Gynaecologists of Canada and the International Federation of Gynaecology and Obstetrics on cervical cerclage was carried out.

Results: There is consensus among the reviewed guidelines regarding the recommended techniques, the physical examination-based indications for cervical cerclage, the contraindications as well as the optimal timing of placement and removal. All medical societies also agree that ultrasound-indicated cerclage is justified in women with history of prior spontaneous preterm labor or mid-trimester loss and a short cervical length detected on ultrasound. In addition, following cerclage, serial sonographic measurement of the cervical length, bed rest and routine use of antibiotics, tocolysis and progesterone are unanimously discouraged. In case of established preterm labor, cervical cerclage should be removed, according to the American, the English and the Canadian guidelines. Furthermore, the Royal College of Obstetricians and Gynaecologists and the Society of Obstetricians and Gynaecologists of Canada agree on the prerequisites that should be met before attempting CC. These two guidelines along with the International Federation of Gynaecology and Obstetrics recommend history-indicated cerclage for women with three or more previous preterm deliveries and/or 2nd trimester pregnancy losses, while the American College suggests the use of cerclage in singleton pregnancies with one or more previous 2nd trimester miscarriages related to painless cervical dilation or prior cerclage due to painless cervical dilation in the 2nd trimester. The role of amniocentesis in ruling out intra-amniotic infection before rescue cerclage remains a matter of debate. As for preterm premature rupture of membranes, the Royal College points out that if it occurs between 24 and 34 weeks of gestation and there are no signs of infection or preterm labor, cerclage removal should be delayed for 48 hours in order to allow in utero transfer.

	ACOG	RCOG	SOGC	FIGO
History-indicated CC	Recommended for singleton pregnancy with ≥1 previous 2nd trim pregnancy loss related to painless cervical dilation (no labor or abruptio placentae) OR prior cerclage due to painless cervical dilation in the 2nd trim.	Recommended for women with ≥3 previous PTL and/or 2nd trim pregnancy losses. Not recommended for twin pregnancies.	Recommended for women with ≥3 previous extreme PTL or 2nd trim pregnancy losses (no other cause identified). Not recommended for twin pregnancies.	Recommended for women with ≥3 previous PTL or 2nd trim pregnancy losses.
Ultrasound-indicated CC	Recommended for singleton pregnancy with prior spontaneous PTL at <34w AND currently short CL (<25 mm) before 24w. Not recommended without such history or twin pregnancies.	Recommended for women with short CL (≤25 mm) before 24w AND ≥1 prior spontaneous PTL or mid-trim loss. Not recommended without history or in case of cervical funneling without shortening or twins.	Consider if CL≤25mm before 24w AND ≥1 prior spontaneous PTL or possible cervical insufficiency. Not recommended if short CL without such history or twin pregnancies.	Recommended for short CL (<25 mm) before 24w AND ≥1 prior spontaneous PTL or mid-trim loss. Not recommended if short CL without history. Consider in high-risk women without history or twin pregnancies with CL<15mm.
Physical examination-indicated CC (Rescue CC)	Recommended for singleton pregnancy with painless cervical dilation in the 2nd trim (exclude uterine activity and intraamniotic infection).	Individualized decision.	Consider in case of dilation 1-4cm before 24w +/- fetal membrane exposure and in twin pregnancies with cervical dilation >1cm prior to viability.	Consider in case of cervical shortening and dilatation with fetal membrane exposure.

Conclusion: Cervical cerclage is an obstetric intervention used to prevent miscarriage and preterm labor in women considered as high-risk for these common pregnancy complications. The development of uniform international practice protocols for the insertion of cervical cerclage seems of paramount importance and will hopefully improve the outcomes of such pregnancies.

Keywords: Cervical cerclage, cervical insufficiency, preterm delivery, preterm labor, preterm birth, cervical pessary, progesterone, PPROM, guidelines, management