A Randomized Controlled Trial to Assess Prophylactic Methylergonovine in Patients Undergoing an Intrapartum Cesarean Section
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OBJECTIVE: To evaluate whether the administration of prophylactic methylergonovine in addition to oxytocin in laboring patients undergoing an intrapartum cesarean section reduces the needs for additional uterotonic agents.

STUDY DESIGN: This was a single center randomized controlled trial of laboring patients undergoing an intrapartum cesarean section. Patients were randomized 1:1 to receive either intravenous oxytocin 300 mU per minute plus 1 ml of intramuscular normal saline or intravenous oxytocin 300 mU per minute plus 0.2 mg (1ml) of intramuscular methylergonovine. The primary outcome was the need for additional uterotonic agents. To detect a 2-fold decrease in the need for additional uterotonics (42% vs 21%) with a 2-sided type 1 error of 5% and power of 80%, a sample size of 76 patients per group was estimated.

RESULTS: From June 2019 to February 2021, 160 patients were randomized - 80 were assigned to prophylactic methylergonovine plus oxytocin, 80 were assigned to oxytocin alone. Patients who received prophylactic methylergonovine required significantly less additional uterotonics compared to participants who received oxytocin alone (20% vs 55%, RR 0.36, 95% CI 0.22 - 0.59).

Comparing secondary outcomes between groups, participants receiving methylergonovine were more likely to have an improvement in uterine tone (80% vs 41.2%, RR 1.94, 95% CI 1.46 - 2.56), a lower incidence of postpartum hemorrhage (35% vs 58.8%, RR 0.6, 95% CI 0.42 - 0.85) decreased need for a blood transfusion (5% vs 22.5%, RR 0.22, 95% CI 0.08 - 0.63), and lower mean quantitative blood loss (996 ml vs 1315 ml, P = 0.004).

CONCLUSION: The administration of prophylactic methylergonovine in addition to oxytocin in laboring patients undergoing an intrapartum cesarean section reduces the need for additional uterotonic agents. Validity of the conclusion is supported by the results of the secondary endpoints.

Circulating microparticle proteins predict pregnancies complicated by placenta accreta spectrum
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OBJECTIVE: To establish the potential for predictive profiles of circulating microparticle (CMP) proteins of pregnancies complicated by placenta accreta spectrum (PAS).

STUDY DESIGN: This is a nested 1:2 case-control study of maternal plasma samples collected at both 24- and 34-weeks’ gestation between...
Panels were ranked by mean area under the curve (AUC). Potential was identified in proteins. From these candidate proteins, a panel with high predictive potential was identified using an iterative cross-validation procedure. Panels were ranked by mean area under the curve (AUC).

RESULTS: Thirty-five cases and 70 controls were analyzed including 27 cases of grade 1, 7 cases of grade 2, and 1 case of grade 3b PAS. Within the 24-week samples, five CMP proteins distinguished PAS from controls with a mean AUC of 0.83. These proteins included heat shock proteins, histone related proteins, and proteins with activity in extracellular matrix adhesion, cell motility and placental specific angiogenesis. For the top 34-week panel, the mean AUC was lower at 0.78. Proteins with placentation activity were common to both panels but those involved with DNA damage repair and inflammatory activity were specific to the latter panel.

CONCLUSION: This is the first time CMP proteins obtained from maternal plasma have been used to classify PAS and represents the best predictive characteristics for PAS biomarkers of any kind in the contemporary literature. While some proteins are common to both second and third trimesters, there are differences in the activities of members of the respective panels. This suggests an evolution of PAS with increasing gestation and that the second trimester may be more informative for antenatal PAS detection.

**42 Early versus Expectant Artificial Rupture of Membranes Following Foley Catheter Ripening: A Randomized Controlled Trial**

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OBJECTIVE: Early amniotomy (AROM) shortens the duration of spontaneous labor, but the use of AROM intervention following labor induction remains understudied. Our objective was to evaluate whether early amniotomy reduces the duration of labor among individuals undergoing combined Foley catheter and misoprostol (FC-M) labor induction (IOL).

STUDY DESIGN: A randomized clinical trial was conducted from November 2020 through May 2021 comparing amniotomy with one hour of Foley catheter expulsion (early AROM) to expectant management. Randomization was stratified by parity. Labor management was standardized among participants. Individuals undergoing IOL at ≥37 weeks with a singleton gestation and cervical dilation ≤2cm were included. Our primary outcome was time to delivery. Kruskal-Wallis, Pearson chi-square and Cox survival analyses with intent-to-treat principles were performed.

RESULTS: 160 patients (79 Early AROM, 81 expectant management) were randomized. Early AROM achieved a faster median time to delivery compared to expectant management, (Early AROM: 11.1hrs vs. Expectant: 19.8hrs, p<0.001). A greater proportion of individuals in the early AROM group delivered within 24hrs (Early AROM: 86% vs Expectant: 70%, p=0.03). There was no difference in the cesarean delivery rate between the two groups (Early AROM: 22% vs Expectant: 31%, p=0.25). Individuals were 1.5 times more likely to deliver following early AROM after censoring for Cesarean delivery and adjusting for parity, (Hazard Ratio [HR] 1.5, 95% confidence interval [CI] 1.4-1.7). There were no significant differences in maternal and neonatal outcomes.

CONCLUSION: We found that early AROM was superior to expectant management following combination FC-M induction. Early amniotomy resulted in twice the chance of delivering compared to expectant management. Therefore, early AROM should be the preferred method of labor management in term IOL.

**43 Expression and actions of Adrenomedullin at the uterine-placental interface**

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