

273 ASSISTED REPRODUCTIVE TECHNOLOGIES AND PREECLAMPSIA IN MULTIPLE GESTATION: A MULTIVARIABLE LOGISTIC REGRESSION ANALYSIS ANNE LYNCH¹, ROBERT MCDUFFIE JR², JAMES MURPHY³, KENNETH FABER⁴, MIRIAM ORLEANS⁵; ¹Kaiser Permanente, Research and Development, Denver, CO; ²Kaiser Permanente, Obstetrics and Gynecology, Denver, CO; ³National Jewish Medical and Research Center, Biostatistics, Denver, CO; ⁴Kaiser Permanente, Reproductive Endocrinology, Denver, CO; ⁵University of Colorado Health Sciences Center, Preventive Medicine and Biometrics, Denver, CO

OBJECTIVE: To determine the relationship of assisted reproductive technologies and ovulation-inducing drugs with preeclampsia in multiple gestations.

STUDY DESIGN: This historic prospective cohort study was conducted in 528 multiple gestations who delivered at a Colorado health maintenance organization between January 1994 and November 2000. Using multivariable logistic regression analysis, we determined if women who conceived a multiple gestation as a result of assisted conception were at a greater risk of preeclampsia than those who conceived spontaneously. The main covariates included in the analysis were maternal age and parity.

RESULTS: There were 328 spontaneously conceived and 200 assisted multiple gestations. Twins accounted for 502 (95%) of the multiple gestations, 25 (4.7%) were triplets and there was one set of quadruplets. Sixty-nine multiple gestations occurred following treatment with assisted reproductive technologies. Human menopausal gonadotrophins (hMG) and clomiphene citrate were associated with 39 and 92 of the multiple gestations respectively. Preeclampsia was a complication of pregnancy in 97 (18%) mothers. Adjusted for maternal age and parity, women who received assisted reproductive technologies were two times more likely to develop preeclampsia (OR = 2.1, 95% confidence interval (CI) 1.1, 4.1, $P = .03$). The adjusted odds ratios of nulliparity and maternal age for preeclampsia were 2.3 (95% CI 1.4, 3.7, $P = .0008$) and 1.1 (CI 1, 1.1, $P = .02$), respectively. Although the incidence of preeclampsia was greater in mothers who received clomiphene citrate and hMG, this association did not reach statistical significance.

CONCLUSION: Women with multiple gestations who receive assisted reproductive technologies experienced a higher incidence of preeclampsia than those who conceived spontaneously. These women need specialized prenatal care and interventions to prevent, identify, and treat this serious complication of pregnancy.

275 HOSPITAL VARIATION IN THE INCIDENCE OF MAJOR PUERPERAL INFECTION FOLLOWING DELIVERY BY CESAREAN SECTION DAVID WEBB¹, JENNIFER CULHANE², JAY GREENSPAN³, JORGE TOLOSA²; ¹Philadelphia Department of Public Health, Research, Philadelphia, PA; ²Thomas Jefferson University, Obstetrics and Gynecology, Philadelphia, PA; ³Thomas Jefferson University, Pediatrics, PA

OBJECTIVE: To determine the extent to which incidence of major puerperal infections (MPI) following C-section varies by hospital of delivery and if such variation is independent of patient characteristics or known clinical risk factors for post C-section infection.

STUDY DESIGN: This is a population based cohort study using computer merged data elements from electronic birth records and hospital discharge summaries for Philadelphia resident births occurring between 1/94 and 12/97. Analysis was restricted to live birth deliveries by C-section with birthweights between 2500 and 4500 grams ($n = 7,333$). Major puerperal infection (MPI) was defined using ICD-9 diagnostic codes. Cases with STDs, HIV, chorioamnionitis, anemia, diabetes, and preeclampsia were excluded. Logistic regression analysis was used to control for race, education, age, Medicaid status, parity, type of C-section (primary/repeat) and birth weight. Incidence rates of MPI were calculated for 15 hospitals. The 4 hospitals with the lowest incidence were selected as the reference group.

RESULTS: The overall C-section rate was 15.3% (10%-22%), 40% to Medicaid enrollees; 33% white and 46% nulliparous. Overall incidence of MPI was 980 in 10,000 (range 128-3333). Compared to the reference category, women sectioned in one area hospital were 21 times more likely to be diagnosed as having MPI. Women at 6 additional hospitals had 4 to 12 times the odds of being diagnosed with MPI.

CONCLUSION: We found very large hospital variation in the incidence of reported MPI following c-section even after adjustment for patient mix. Differences in adherence to recommended procedures for infection prevention and control and/or in diagnostic and therapeutic decisions by physicians could explain this findings.

274 MATERNAL THYROID DISEASE DURING PREGNANCY AND SUBSEQUENT CONGENITAL ANOMALIES AMONG PROGENY ADAM WOLFBERG¹, DAVID NAGEY²; ¹Brigham and Women's Hospital, Department of Obstetrics and Gynecology, Newton, MA; ²Johns Hopkins University, Gynecology and Obstetrics, Baltimore, MD

OBJECTIVE: Previous research offers contradictory data regarding the incidence of congenital anomalies among children born to mothers who had thyroid disease during their pregnancy. We sought to evaluate this correlation.

STUDY DESIGN: Using an institutional database, we identified all women who delivered a baby at our institution between December 1994 and June 1999 who had ever been diagnosed with a thyroid disorder. We performed a chart review for all of these patients (168) and their infants. We excluded 53 women who did not have hyper- or hypothyroidism during pregnancy, but were included in the original database because of goiter or a history of thyroid disease. Of the 115 women still included, there were 129 pregnancies with 136 fetuses at our institution.

RESULTS: We identified 31 anomalies among the 136 fetuses delivered during the study period. 23.5 percent of infants born to hypothyroid mothers had a diagnosed anomaly. 21.8 percent of infants born to hyperthyroid mothers had an anomaly. The incidence of cardiac anomalies was significantly elevated in children of hypothyroid mothers, but not hyperthyroid mothers. Subgroup analyses designed to minimize selection bias did not produce significantly different results.

CONCLUSION: Women with thyroid disease during pregnancy were significantly more likely to deliver a child with a congenital anomaly than would be expected among the general population.

276 COST-EFFECTIVENESS OF INDUCTION AFTER PRETERM PREMATURE RUPTURE OF THE MEMBRANES IAN GRABLE¹; ¹Beth Israel Deaconess Medical Center, Maternal-Fetal Medicine, Boston, MA

OBJECTIVE: To design a decision analytic model to evaluate the optimal length of time for expectant management after preterm premature rupture of the membranes between 32 and 36 weeks gestation and to determine the most cost-effective management.

STUDY DESIGN: Using Data, Version 3.0, five models were created for 32 to 36 weeks gestation. Probabilities for delivery and maternal and neonatal major and minor morbidities were obtained from two medical center databases created for outcomes analysis. Cost data were collected from the Health Care Microsystem database and was based on 1996 dollars.

RESULTS: The base case analysis demonstrated that the optimal time of delivery to minimize major morbidity was 34-36 weeks gestation and all morbidity was 35-36 weeks, depending on the gestational age at the time of rupture. Latency morbidity, defined as infectious complications in the neonate within 48 hours of delivery, was the major driving force of the model. When considering only major morbidity, the most cost-effective approach between 32-34 weeks was to deliver one week after rupture due to the increase in latency morbidity after one week. At 35-36 weeks, the most cost-effective approach was to deliver at presentation. By adopting the most cost-effective approach, with 1000 cases of ruptured membranes between 32-34 weeks, 87 cases of major morbidity can be avoided with an additional cost of only \$106,000.

CONCLUSION: The current method of treating all patients with ruptured membranes similarly and delivering at 34 weeks gestation is not risk minimizing or cost-effective. By delivering one week after rupture at 32-34 weeks and immediately at 35-36 weeks, significant morbidity can be avoided.