

## **Comparison of Perinatal Outcomes in Twins Conceived by Artificial Reproductive Techniques and Spontaneous Conception - A Secondary Analysis of ESPRiT study data**

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**OBJECTIVE:** To compare perinatal outcomes of twin pregnancies conceived by assisted conception with those of natural conception.

**STUDY DESIGN:** Evaluation of Sonographic Predictors of Restricted growth in Twins (ESPRiT) is a multicentric prospective observational study conducted in eight maternity centres in Ireland, by the Perinatal Ireland Research consortium. Of 1001 twin pregnancies completing the study over a 24 month period, method of conception was available for 874 twins. Statistical comparisons were made between methods of conception and types of artificial reproductive techniques (ARTs) for demographics, baseline characteristics and perinatal outcomes.

**RESULTS:** There were 636 (73%) spontaneously conceived twins and 238 (27%) conceived by ART in the study. Nearly all (97%) of the ART twins were dichorionic as compared to 74% dichorionic twins of those conceived naturally. The ART group was older with a maternal age of 35 years as compared to 31 years for the spontaneous conception group ( $p < 0.0001$ ). The ART group was also more likely to be nulliparous (70% vs 40%,  $p < 0.0001$ ) and were less likely to be smokers (4% versus 15%,  $p < 0.0001$ ). There were no significant differences between the obstetric features such as preeclampsia, gestational diabetes, antepartum haemorrhage or preterm delivery. There were 16(1%) neonatal deaths in the naturally conceived group and 3(0.6%) in the assisted conception group ( $p=0.124$ ) We found no difference ( $p$ -value  $> 0.05$ ) in gestational age at delivery for the ART group (median 37.0 vs 36.9 weeks), birth weights (median 2538g vs. 2523g), birth weight discordance (median 10% vs. 9% discordance) or neonatal admission rates (44% vs. 46%). Other perinatal outcomes were compared and found not to be statistically significant, including hypoxic

ischemic encephalopathy, periventricular leukomalacia, necrotising enterocolitis, respiratory distress syndrome, sepsis and a composite of these outcomes including neonatal deaths (total 15% vs. 19%,  $p > 0.05$ ). We compared perinatal outcomes between the different types assisted conception groups (composed of 1% artificial insemination, 72% in vitro fertilization 10% intracytoplasmic sperm injection and 17% ovulation induction conception) and found no evidence of a difference in perinatal outcomes.

**CONCLUSION:** This study found maternal, neonatal and perinatal outcomes in twins conceived naturally and by assisted conception were comparable.