

Pregnancy and Birth Outcomes of Single versus Multiple Embryo Transfer in Gestational Surrogacy Arrangements: A Systematic Review

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Abstract : Background: Adverse maternal and perinatal outcomes of multiple pregnancies resulting from multiple embryo transfers (ET) has become significant concerns. This is particularly relevant for gestational carriers since they usually do not have infertility issues. Single embryo transfer (SET) therefore has been encouraged to assist reproductive technology (ART) practice in order to reduce multiple pregnancies. Objectives: This systematic review aims to investigate the pregnancy and birth outcomes of SET and multiple ET in surrogacy arrangements. Search methods: This study is a systematic review. Electronic databases were searched from CINAHL, Medline, Embase, Scopus and ProQuest for studies from 1980 to 2017. Cross-references and national ART reports were also manual searchings. Articles without restriction of English language and study types were accessed. Carrier cycles involving in SET and multiple ET were identified in database searching. The main outcome measures including clinical pregnancy, live delivery and multiple deliveries per gestational carrier cycle were compared between SET and multiple ET. Mantel-Haenzel risk ratios (RRs) with 95% confidence intervals (CIs), using the numbers of outcome events in SET and multiple ET of each study were calculated using RevMan5.3. Outcomes: The search returned 97 articles of which 5 met the inclusion criteria. Approximately 50% of carrier cycles were transferred a single embryo and 50% were transferred more than one embryo. The clinical pregnancy rate (CPR) was 39% for SET and 53% for multiple ET, which was not significantly different with $RR = 0.83$ (95% CI: 0.67-1.03). The live delivery rate was 33% for SET and 57% for multiple ET which was not significantly different with $RR = 0.78$ (95% CI: 0.61-1.00). The multiple delivery rate per carrier was greater risks in the multiple ET carrier cycles ($RR = 0.4$, 95% CI: 0.01-0.26). There were 104 sets of twins (including one set of twins selectively reduced from triplets to twins) and 1 set of triples in the multiple ET carrier cycle. In the SET carrier cycles, there were 2 sets of twins. Significance of the study: SET should be advocated among surrogate carriers to prevent multiple pregnancies and subsequent adverse outcomes for both carrier and baby. Surrogacy practice should be reviewed and surrogate carriers should be fully informed of the risk of adverse maternal and birth outcome of multiple pregnancies due to multiple embryo transfers.

Keywords : assisted reproduction, birth outcomes, carrier, gestational surrogacy, multiple embryo transfer, multiple pregnancy, pregnancy outcomes, single embryo transfer, surrogate mother, systematic review

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