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[Intervention Review]

Number of embryos for transfer following in-vitro fertilisation or intra-cytoplasmic sperm injection

Zabeena Pandian¹, Siladitya Bhattacharya², Ozkan Ozturk³, Gamal Serour⁴, Allan Templeton⁵

¹Obstetrics & Gynaecology, Aberdeen Maternity Hospital, Aberdeen, UK. ²Department of Obstetrics and Gynaecology, Aberdeen Maternity Hospital, Aberdeen, UK. ³Academic Department of Obstetrics and Gynaecology, University College London Hospitals, London, UK. ⁴The Egyptian IVF-ET Center, Al Azhar University, Cairo, Egypt. ⁵Department of Obstetrics and Gynaecology, University of Aberdeen, Aberdeen, UK

Contact address: Zabeena Pandian, Obstetrics & Gynaecology, Aberdeen Maternity Hospital, Foresterhill, Aberdeen, AB25 2ZD, UK. ogy211@abdn.ac.uk, z.pandian@abdn.ac.uk.

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ABSTRACT

Background

Multiple embryo transfer during IVF has increased multiple pregnancy rates (MPR) causing maternal and perinatal morbidity. Elective single embryo transfer (SET) is now being considered as an effective means of reducing this iatrogenic complication.

Objectives

To determine in couples undergoing IVF/ICSI (intra-cytoplasmic sperm injection) whether:

(1) elective transfer of two embryos improves the probability of livebirth compared with:

- (a) elective single embryo transfer,
- (b) three embryo transfer (TET) or
- (c) four embryo transfer (FET).

(2) elective transfer of three embryos improves the probability of livebirth compared with:

- (a) elective single embryo transfer, or
- (b) elective four embryo transfer.

Search methods

We searched the Cochrane Menstrual Disorders and Subfertility Group's trials register (searched March 2008), the Cochrane Central Register of Controlled Trials (Cochrane Library, Issue 1, 2008), MEDLINE (1970 to 2008), EMBASE (1985 to 2008) and reference lists of articles. Relevant conference proceedings were hand-searched and researchers in the field contacted.

Selection criteria

Randomised controlled trials were included.

Data collection and analysis

Two reviewers independently assessed eligibility and quality of trials.

Main results

For the update in 2008 five trials compared DET with SET. DET versus TET and DET versus FET were evaluated in a single small trial each. The difference in cumulative livebirth rates (CLBR) after DET and those after SET followed by transfer of a single frozen thawed embryo (1FZET) was not statistically significant (OR 0.81, 95% CI 0.59 to 1.11; $p=0.18$). There was no statistically significant difference in CLBR after a single fresh cycle of DET versus two fresh cycles of SET (OR 1.23, 95% CI 0.56 to 2.69, $p=0.60$). The live birth rate (LBR) per woman in a single fresh treatment was higher following DET than SET (OR 2.10, 95% CI 1.65 to 2.66, $p<0.00001$). The MPR was lower following SET (OR 0.04, 95% CI 0.01 to 0.11; $p<0.00001$). The CLBR following two fresh cycles of DET versus two fresh cycles of TET (OR 0.77, 95% CI 0.22 to 2.65, $p=0.67$) and CLBR after three fresh cycles of DET versus three fresh cycles of TET showed no statistically significant differences (OR 0.77, 95% CI 0.24 to 2.52; $p=0.67$). There were no statistically significant differences between DET and TET in terms of LBR (OR 0.40, 95% CI 0.09 to 1.85; $p=0.24$) and MPR (OR 0.17, 95% CI 0.01 to 3.85; $p=0.27$). DET led to lower LBR than FET but the difference was not statistically significant (OR 0.35, 95% CI 0.11 to 1.05; $p=0.06$).

Authors' conclusions

In a single fresh IVF cycle, SET is associated with a lower LBR than DET. However there is no significant difference in CLBR following SET + 1FZET and the LBR following a single cycle of DET. MPR are lowered following SET compared with other transfer policies. There are insufficient data on the outcome of two versus three and four embryo transfer policies.

PLAIN LANGUAGE SUMMARY

Number of embryos for transfer following in-vitro fertilisation or intra-cytoplasmic sperm injection

Women undergoing in vitro fertilisation (IVF) with multiple embryo transfer face an increased risk of twins and triplets. The social and economic consequences of multiple pregnancies are significant, as are risks to the mother and baby. Single embryo transfer can minimise the risk of multiples. This review of trials found that elective single embryo transfer (SET) resulted in fewer multiple pregnancies than double embryo transfer (DET), but the pregnancy and livebirth rate per fresh IVF cycle was lower. The cumulative livebirth rate associated with SET followed by a single frozen and thawed embryo transfer (1FZET) was comparable with that after one cycle of DET, whilst still maintaining a significantly lower rate of multiple births.