

Cochrane Database of Systematic Reviews

Cleavage stage versus blastocyst stage embryo transfer in assisted conception (Review)



Blake DA, Proctor M, Johnson N, Olive D, Farquhar CM, Lamberts Q. Cleavage stage versus blastocyst stage embryo transfer in assisted conception. *Cochrane Database of Systematic Reviews* 2005, Issue 4. Art. No.: CD002118. DOI: 10.1002/14651858.CD002118.pub2.

www.cochranelibrary.com



[Intervention Review]

Cleavage stage versus blastocyst stage embryo transfer in assisted conception

Debbie A Blake¹, Michelle Proctor², Neil Johnson³, David Olive⁴, Cindy M Farquhar³, Quirine Lamberts³

¹Biotechnology Research Institute, Auckland University of Techology, Auckland, New Zealand. ²Psychological Service, Department of Corrections, North Harbour, New Zealand. ³Department of Obstetrics & Gynaecology, University of Auckland, Auckland, New Zealand. ⁴San Francisco, California, USA

Contact address: Debbie A Blake, Biotechnology Research Institute, Auckland University of Techology, 19 Mount St, Auckland, New Zealand. debbie.blake@aut.ac.nz.

Editorial group: Cochrane Gynaecology and Fertility Group.

Publication status and date: Unchanged, published in Issue 3, 2007.

Citation: Blake DA, Proctor M, Johnson N, Olive D, Farquhar CM, Lamberts Q. Cleavage stage versus blastocyst stage embryo transfer in assisted conception. *Cochrane Database of Systematic Reviews* 2005, Issue 4. Art. No.: CD002118. DOI: 10.1002/14651858.CD002118.pub2.

Copyright © 2007 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

In the past decade, advances in the understanding of nutrient requirements of embryos, has led to the evolution of culture media designed to support extended culture of embryos in vitro from the standard procedure of 2 to 3 days (for early cleavage embryo transfer) to 5 to 6 days (blastocyst culture). The rationale for blastocyst culture is to improve the synchronicity of uterine and embryonic development and provide a mechanism for self-selection of viable embryos. Since the initial widespread introduction of blastocyst culture in 1998, there has been conflicting reports about the clinical benefits of this technique.

Objectives

To determine if blastocyst stage embryo transfers (ETs) affects success rates compared with cleavage stage ETs and investigate what factors may influence this.

Search methods

We searched the Cochrane Menstrual Disorders and Subfertility Group Specialised Register of controlled trials. We also searched the Cochrane Controlled Trials Register (CENTRAL) (*The Cochrane Library*), MEDLINE, EMBASE and Bio extracts. Attempts were made to identify trials from the National Research Register, the Clinical Trials Register and the citation lists of review articles and included trials. The last search date was May 2005. The first or corresponding author of each included trial was contacted for additional information.

Selection criteria

Trials were included if they were randomised and compared the effectiveness of early cleavage versus blastocyst stage transfers.

Data collection and analysis

Of the 45 trials that were identified, 16 trials met the inclusion criteria and were reviewed. Primary outcomes were rates of live birth, clinical pregnancy and multiple-pregnancy rates per couple. Secondary outcomes were rates of miscarriage, failure to transfer embryos, freezing, implantation and high order pregnancy and per cycle data. Quality assessment and data extraction were performed independently by two review authors. Meta-analysis was performed using odds ratios (OR) for dichotomous outcomes and weighted mean differences for binary outcomes with 95% confidence intervals (CI).



Main results

There was no evidence of a difference in live-birth rate per couple between the two treatment groups (7 RCTs; OR 1.16, 95% CI 0.74 to 1.44 [Day 2/3 34.3% vs. Day 5/6 35.4%]); in the clinical pregnancy rate per couple (15 RCTs; OR 1.05, 95% CI 0.88 to 1.26 [Day 2/3 38.8% vs. 40.3%]) even for good prognosis patients (6 RCTs: OR 96% 1.06 CI 0.83 to 1.34). There was also no difference in multiple-pregnancy rate per couple (12 RCTs; OR 0.85, 95% CI 0.63 to 1.13) particularly in trials where equal numbers of embryos were transferred in both groups (6 RCTs: OR 0.91, 95% CI 0.63 to 1.32). There was no evidence of a difference in high order multiple-pregnancy rates per couple (5 RCTs; OR 0.44, 95% CI 0.15 to 1.33) or miscarriage rate per couple between the two groups (9 RCTs; OR 1.33, 95% CI 0.89 to 2.01). Rates of embryo freezing per couple was significantly higher in Day 2 to 3 transfers (9 RCTs; OR 0.45, 95% CI 0.36 to 0.57). Failure to transfer any embryos per couple was significantly higher in the Day 5 to 6 group (10 RCTs: OR 3.21, 95% CI 2.15 to 4.81[Day 2/3 3.5% vs D 5/6 10.1%]), but was not significantly different for good prognosis patients (7RCTs, OR 1.58 95% CI 0.65 to 3.82).

Authors' conclusions

There is no evidence of a difference in live birth or pregnancy outcomes between Day 2 to 3 and Day 5 to 6 transfer of embryos. Blastocyst transfer was associated with an increase in failure to transfer any embryos in a cycle and a decrease in embryo freezing rates. In the absence of data on cumulative live birth rates resulting from fresh and thawed cycles, it is not possible to determine if this represents an advantage or disadvantage.

PLAIN LANGUAGE SUMMARY

Keeping embryos a few days longer in the laboratory before transfer has not been shown to lead to more pregnancies than regular IVF In vitro fertilisation (IVF) is fertilisation (egg and sperm creating an embryo) in a laboratory (in a 'test tube'). With regular IVF, embryos are transferred into the woman's uterus two to three days after fertilisation (at the cleavage stage). An alternative technique delays transferal until five to six days after fertilisation (at blastocyst stage). This may be better timing and allow choice of more viable embryos. The review of trials found no evidence that more women will have a pregnancy or baby with blastocyst transfer than with regular IVF. There were however, differences in the chance of a failure to have embryos frozen or transferred in a treatment cycle.