

Live birth rate following frozen-thawed embryo transfer is higher for day 5 than day 6 blastocysts.

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Introduction: It is well established that during fresh embryo transfer cycles, pregnancy rates are significantly higher when transferring blastocysts expanded on day 5 (D5) compared with those developing on day 6 (D6) because of a better endometrial-embryonic synchronization. However, controversy persists regarding the issues of frozen-thawed blastocyst transfers. Indeed, it is still unclear whether the day of the blastocyst expansion and vitrification has an influence on the pregnancy rate. The aim of this study was to compare live birth rate after a frozen-thawed blastocyst transfer at D5 or D6.

Materials/Patients and methods: This retrospective cohort study was conducted in a tertiary care university hospital between January 2012 and December 2015. All single frozen-thawed blastocyst transfers were included and women received artificial endometrial preparation using exogenous oestrogen and progesterone.

A total of 1347 frozen – thawed blastocyst transfers cycles were allocated to 2 groups according to the day of the blastocyst expansion (Group D5, n=994; Group D6, n=353). Study endpoints were live birth rate (LBR) and early miscarriage rate following frozen-thawed blastocyst transfer at D5 or D6. Statistical analyses were conducted using univariate and multivariate logistic regression models.

Results: The LBR was significantly increased in the D5 group compared to the D6 group [294/994 (29.6%) vs. 60/353 (17.0%); $p < 0.001$]. No significant differences were found between groups in term of early miscarriage rate ($p = 0.862$). However, more good embryos (defined as a B3-B4 or B5 embryo \geq BB according to the grading scale proposed by Gardner) were transferred in the D5 group than in the D6 group [807 (81.2%) in D5 group vs. 214 (60.6%) in D6 group; $p < 0.001$].

After multivariate logistic regression taking into account potential confounders as women age, number of previous IVF/ICSI procedures, the day of the blastocyst expansion (D5 or D6) and its quality, blastocyst expansion at D6 was independently associated with a significant decrease in LBR compared to D5 expanded-blastocyst (OR 0.52; 95% CI 0.38-0.72; $p < 0.001$).

Conclusion: Live birth rate following a frozen- thawed blastocyst transfer is significantly lower with day 6 than day 5 blastocysts.

Keywords : Live birth rate; Blastocyst; frozen-thawed embryo transfer

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