

Hatching Rate after Vitrification at Blastocyst Stage : Efficiency of Artificial Reduction of the Blastocoelic Cavity before Vitrification

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Objectives

The purpose of this study was to assess the efficiency of 'artificial shrinkage' (i.e. artificial reduction of the blastocoelic cavity) before vitrification of mouse blastocysts.

Methods

Expanded blastocysts were vitrified in 20% ethylene glycol, 20% dimethyl sulfoxide and 0.5 mol/L sucrose before plunging the electron microscopy (EM) grids directly into liquid nitrogen. Artificial shrinkage was induced in expanded blastocysts using a 30-gauge needle and manipulation. Post-thaw recovery, re-expansion and hatched rate of vitrified blastocysts were examined.

Result

The re-expansion rate of no artificial shrinking group was 93.1%. After artificial shrinkage using of 30G syringe and manipulation, 64.9% and 66.8% of vitrified blastocysts were re-expanded respectively. The hatched rates were improved after artificial shrinkage procedure (17.6% and 13.4%) compare with the no artificial shrinking group (11.7%).

Conclusion

Compared with the conventional vitrification procedure, the artificial shrinkage of blastocysts by syringe or manipulation improves the hatching rate after vitrification but the efficacy of method compared with the rate of re-expansion after no artificial shrinkage is still not optimal and needs farther investigation.