

EFFICIENCY OF VITRIFICATION AT CLEAVAGE STAGE EMBRYOS COMPARED TO SLOW FREEZING

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Purpose: The aim of this retrospective study was to compare the clinical outcomes of vitrification versus traditional slow freezing for cryopreservation of human cleavage-stage embryos (Day2/Day3).

Materials and Methods: This study includes women undergoing cryotransfer on cleavage-stage embryos that were cryopreserved by classical slow cooling procedure (Group1) or vitrified by Cryotop method (Group2). In the vitrification group, embryos were vitrified using 15% ethylene glycol, 15% DMSO, and 0.5M sucrose with Cryotop and warming using series of solution (2.0M / 0.5M sucrose). After post-thawed, embryos were assessed to determine their integrity and the number of surviving blastomeres. Embryos were considered to be survival if >50% of the blastomeres were intact. Survived embryos were transferred into the uterus of a synchronized cycle. Pregnancies were determined by plasma β -HCG levels at day 13 to 14 after embryo transfers and clinical pregnancies confirmed with sac later. Main outcome measures included survival rate, clinical pregnancy rate and implantation rate after thawing. Two-tailed student t-test and chi-square test were performed for mean values and proportions respectively.

Results: There were 55 thawed cycles in group 1 and 47 thawed cycles in group 2. The survival rate of embryos was superior to vitrification comparing to slow freezing (94.6% vs. 69.4%, $p < 0.05$). Clinical pregnancy and implantation rates were 21.8% (12/55) and 7.0% for group1 versus 38.3 % (18/47) and 20.8% for group2, respectively, $p < 0.05$ for both.

Conclusion: This study shows clearly that vitrification methods improve the survival rates of embryos with a higher proportion of intact survived embryos should be responsible for the better clinical outcome. We believe that vitrification is valuable for establishing more efficient cryopreservation of human cleavage-stage embryos and may increase the success per started cycle.