American Society for Reproductive Medicine（68th Annual Meeting）
San Diego（USA）、2012.10.19-24

A closed vitrification system enables an aseptic vitrification without impairing the developmental competence of human embryos

A.Amo[1], S.Hashimoto[1], S. Hama[1], K.Osumi[1], K. Ito[1], Y Nakaoka[1], Y.Morimoto[1]
[1]IVF Namba Clinic, Osaka, Japan

OBJECTIVE: To avoid the risk of contamination, we compared the developmental competence of human embryos vitrified with an open vitrification system (OVS) and with a closed vitrification system (CVS).

DESIGN: prospective randomized human study

MATERIALS AND METHODS: This study was approved by the local IRB of IVF Namba clinic. In experiment 1 and 2, vitrified embryos donated from patients who completed fertility treatment and gave informed consent. In experiment 1, 66 embryos at pronuclear stage were divided randomly into 2 groups after warming: OVS (Cryotop, Kitazato medical) and CVS (Rapid-I, Vitrolife) and were re-vitrified using OVS or CVS. After warming, embryos development and blastocysts cell number were assessed. In experiment 2, 60 vitrified-warming blastocysts were divided randomly into 3 groups (OVS, CVS, and non-revitrified) and were assessed the proportion of dead cell by staining with Hoechst and Propidium iodide. In experiment 3, 27 high grade blastocysts were randomly divided into two groups and were vitrified using OVS (13) and CVS (14). After warming, single blastocyst transfer was performed.

RESULTS: There were no differences between OVS and CVS in the survival rates (100% vs. 97%, respectively), the blastulation rates (Day 5: 50% vs. 50%; Day 6: 68% vs. 56%, respectively), the rate of good blastocyst (Day 5: 32% vs. 22%, Day 6: 47% vs. 41%, respectively), and the mean cell numbers (137 vs. 138) in experiment 1.The proportion of dead cell in blastocyst re-vitrified by CVS (31%) was the same level as OVS (38%) and non-revitrified (32%) respectively in experiment 2. In experiment 3, the implantation rate of blastocyst which was vitrified using CVS (79%) was the same level as that using OVS (54%).

CONCLUSIONS: The closed vitrification system overcame the majority of the problems associated with direct liquid nitrogen contact in the open system without impairing the developmental competence.

SUPPORT: None.