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A follow-up study of children born by blastocyst transfer vitrified using a closed system

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OBJECTIVE: To assess the clinical outcome of single blastocyst transfer vitrified using a closed vitrification system (CVS).

DESIGN: Prospective clinical study

MATERIALS AND METHODS: This study was approved by a local IRB of IVF Namba Clinic. To compare outcomes after the transfer of embryo vitrified using a Rapid-i[®] (Vitrolife Sweden AB, Göteborg, Sweden, CVS) and a Cryotop[®] (Kitazato Corporation, Tokyo, Japan; an open vitrification system: OVS), 460 patients who were scheduled to undergo single vitrified-warmed blastocyst transfer under a hormone-replacement cycle between 7 November 2011 and 21 January 2013 were randomly divided into two groups (CVS: 135 and OVS: 325). Blastocysts that were scored at least 3BB by Gardner's criteria were vitrified and warmed. After embryo transfer, their clinical outcomes were investigated. Statistical differences between two groups were analyzed using an unpaired Student's t-test.

RESULTS: There were no statistical differences in the mean age of female donors (CVS: 35.3 vs. OVS: 35.9 years old) and in the mean endometrial thickness (CVS: 11.3 vs. OVS: 11.3 mm). There were no significant differences between CVS and OVS in the implantation rate (CVS: 50.3% vs. OVS: 49.5%), in the fetal heart beat rate (CVS: 44.4% vs. OVS: 45.8%), in the ongoing pregnancy rate over 8 weeks (CVS: 79.4% vs. OVS: 80.1%) and in the incidence of chromosomal abnormalities of abortuses (CVS: 50.0% vs. OVS: 63.2%). A total of 58 babies were born at the present time. The birth weight of babies, the gestational age, and malformation rate in the CVS (2863g, 267.4 days, and 4.3%, respectively) were also similar to those in the OVS (3084g, 275.2 days, and 0%, respectively).

CONCLUSIONS: Our results indicate the feasibility of vitrifying human embryos in a closed system which is supposed to avoid contamination risks, without impairing developmental competence.

SUPPORT: None.