Pregnancy results following initiation of a blastocyst vitrification program.

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Introduction:
Preservation of blastocysts is a routine part of in vitro fertilization treatment and has traditionally been accomplished using slow freezing with low concentrations of cryoprotectants. Vitrification has recently emerged as an alternative procedure in the preservation of oocytes and embryos and it may confer some time saving and survival advantages over the traditional procedure for blastocyst cryopreservation.

Objective:
The goal of this study was to establish a routine vitrification program for the preservation of blastocysts that would allow good survival and implantation rates following warming.

Materials and Methods:
Patients with blastocysts remaining after transfer were offered blastocyst vitrification on day 5 and/or 6 post retrieval. Blastocysts at various stages of development (early, expanding, expanded and hatching) were vitrified using a kit (Irvine Scientific, Santa Ana, CA) and stored individually in cryotips immersed in liquid nitrogen. No artificial collapsing of blastocysts or other manipulation was performed during the procedure. Blastocysts were warmed on the equivalent of Day 4 in either a natural or controlled cycle and transferred after a short incubation. Pregnancy testing was performed 10 days later.

Results:
Blastocysts were stored for 215 patients and 44 of these have subsequently undergone warming cycles. 94/107 (88%) blastocysts were recovered with a survival rate of 97% (91/94). Forty patients have had pregnancy testing with 20 of these being positive. From these, 17 are ongoing, 2 were chemical pregnancies only, and one ended as a SAB. The implantation rate per embryo transferred was 27% (18/67 but with some results pending).

Discussion:
Although blastocysts have been vitrified for a high number of patients, the number of warming cycles is low as patients are slow to return for their embryos. All of the patients that have undergone a warming cycle so far, failed to establish a viable pregnancy in their fresh cycle. The rate of positive pregnancies (50%) and implantation (27%) are acceptable in this patient population with this new technique. Blastocyst vitrification may be viable procedure for long term embryo preservation.

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