Title: Improvement in expanded blastocyst vitrification outcome by the use of a pre-vitrification intervention and non-intervention technique
Objective: Hatching allows better exposure of the expanded blastocele to the cryoprotectants. This allows better dehydration of the blastocele. Blastocoele aspiration permits complete removal of the fluid content thereby minimizing the chances of inadequate dehydration and ice formation. Our objective was to compare the effect of hatching and the blastocoele aspiration on the blastocyst post-warming results following vitrification.

Design: Prospective in vitro study

Materials and Methods: Fourteen expanded blastocysts were used as a fresh control. Seventy expanded blastocysts were divided into 3 groups: group 1: blastocoele (n = 22) were aspirated then immediately vitrified; group 2: blastocyst (n = 22) were vitrified without intervention; and group 3: expanded blastocysts (n = 12) vitrified after they were spontaneously hatched. Vitrification was done using vitrification media and cryotip loading devices (Irvine Scientific, Santa Ana, CA). After warming, blastocysts were incubated for 4 hours in 5% albumin enriched HTF media at 37°C with 5% CO₂. All blastocysts were then fixed in 3% formaldehyde. For DNA damage, blastocysts were incubated with TUNEL staining for 1 hour at 37°C to stain DNA damaged nuclei. Blastocysts were mounted in Vectashield containing DAPI to stain blastomeres nuclei. The percentage of TUNEL positive blastomeres were assessed in each group after imaging by confocal microscopy.

Results: 1) Both blastocoele aspiration and spontaneous hatching significantly improved the post-warming results following vitrification of expanded blastocysts, 2) the extent of DNA damage in blastocoele aspirated and spontaneously hatched blastocysts were comparable. The table summarizes the percentage of DNA integrity in the different study groups.

Conclusions: Post-warming results for vitrification of expanded blastocysts can be improved by either blastocoele aspiration or by spontaneous hatching.

Support: None