THE OPTIMAL STAGE TO PERFORM VITRIFICATION FOR HUMAN BLASTOCYST CRYOPRESERVATION: A RETROSPECTIVE STUDY
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OBJECTIVE:
To compare clinical pregnancy and neonatal outcomes after transfer of blastocysts vitrified-warmed in different developmental stages.

Methods:
Totally 1784 FET cycles with the transfers of 2461 blastocysts vitrified-warmed in developmental stage 3, 4, 5 or 6.

RESULT(S):
The overall blastocyst survival rate was 98.20% (2461/2506) without any difference between blastocysts in developmental stage 3, 4, 5 and 6: 96.51% (83/86), 98.34% (2255/2293), 97.53% (79/81) and 95.05% (44/46) respectively (P>0.05). Among the survival embryos, the highest damage rate of 18.07% was observed in blastocysts vitrified-warmed in stage 3, followed by 13.64% in stage 6, 7.59% in stage 5 and 6.65% in stage 4 (P<0.05). Significantly improved implantation rates and clinical pregnancy rates were observed in blastocysts vitrified-warmed in advanced developmental stage: 20.48% and 17.44% in stage 3, 40.44% and 34.85% in stage 4, 45.57% and 38.27% in stage 5, 65.91% and 54.35% in stage 6 respectively. Similar live-birth rates were achieved for blastocyst transfers vitrified-warmed in stage 3, 4, 5 and 6: 17.31% (9/52), 28.91% (248/858), 18.52% (5/27) and 50.00% (6/12) respectively (P>0.05). However, significantly improved live-birth weight were evident for embryo transfer using blastocyst vitrified-warmed in stage 5: 4110.00±387.94g which was the heaviest among the four stages (2933.33±745.82, 3180.00±695.88 and 3383.33±420.32 g in stage 3, 4 and 6 respectively, P<0.05).

CONCLUSION(S):
Embryo transfer of blastocysts which were vitrified-warmed in developmental stage 5 yields the best clinical pregnancy and neonatal outcomes. Stage 5 should be the optimal stage for blastocyst cryopreservation.