

P123. Blastomere biopsy of incomplete compacted human morula can improve the embryo cryopreservation outcome

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Context: The study of embryo cryoresistance at morula stage is crucial for the assisted reproductive technologies (ART), since at this stage of in vivo development the embryo enters an uterine cavity. Post-cryopreservation embryos with an incomplete compaction of blastomeres may have a low survival rate.

Objective: to estimate the survival and blastocyst formation rate of post-cryopreservation embryos at the morula stage with preliminary biopsy of blastomeres non-included in morula compaction.

Methods: The embryos were vitrified by Kuwayama. A biopsy of blastomeres non involved in embryo compaction was carried out after double mechanical hatching.

Patient(s): 98 couple with infertility marriage experience over 5 years underwent treatment by ART were retrospectively analyzed.

Intervention(s): The human embryos on day 4 of in vitro development were divided into 4 categories according to the level compaction: 1- fully compacted morula; 2, 3, 4 - percentage of blastomeres and fragments not included in morula compaction occupy 25, 50, 75 % of embryo volume, respectively.

Main Outcome Measure(s): Removal of aberrant sites will allow increasing the embryo cryopreservation outcome.

Results: Fresh morulas in categories 1-4 developed into optimal blastocyst in (98.8 \pm 7.9), (85.3 \pm 8.2), (69.7 \pm 11.7), (22.4 \pm 4.9)% of the total, respectively. Survival rate of post-cryopreservation morulas in these categories was (97 \pm 3.2), (85 \pm 4.1) and (50 \pm 5.8) and (38.2 \pm 4.4) % and blastocyst formation rate after freeze-thawing was (95.4 \pm 4.6) %, (71 \pm 6.2), (44 \pm 9.9), (12 \pm 5.8)% respectively. Removal of blastomeres and extracellular fragments of incomplete compacted morula prior to embryo cryopreservation, led to an increase their post-thawing survival rate up to (93.1 \pm 4.1) and (75 \pm 8.8)% and blastocyst formation rate up to (85.2 \pm 10.4), (59.4 \pm 5.2) in categories 2 and 3, respectively. Morulas with even greater aberrant compaction had the lowest survival rate (35.2 \pm 5.4)% and cleavage potential after freeze-thawing was (19.7 \pm 4.8)%.

Conclusions: Investigated indexes in post-cryopreservation incomplete compacted morula depends on the aberrant compaction degree is most likely due to the negative effect of necrotic factors of the damaged blastomeres and fragments non-included in embryo compaction. Biopsy of these parts can prevent negative cryopreservation impact and improve survival and blastocyst formation rate of incomplete compacted morulas category 2 and 3.

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