

EMBRYO SPLITTING COULD NOT SERVE AS A POSSIBLE OPTION TO IMPROVE OUTCOME OF ART

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Purpose: The aim of this study is to test the clinical value of embryo splitting by investigating the developmental potential of single blastomere from splitted mice 4-cell embryos to the stage of blastocyst. We will compare the quality and quantity of blastocyst from splitted blastomere to un-splitted embryo.

Materials and Methods: 6-8 weeks ICR mice were superovulated and mated with a single fertile male of the same strain. 2-cell embryos were obtained by sacrificing the mice and flushing their fallopian tubes 2 days after mating. These 2 cell embryos were cultured in group (x4) with HTF plus 12% fetal bovine serum. When these embryos reach the 4 cell stage, their zona pellucida were removed and every single blastomere was isolated by repeated pipetting in Ca/Mg++ free medium. The isolated blastomeres (study group) and the intact embryos (control) were then cultured to see their blastocyst formation rate and blastocyst quality.

Results: A total of 936 embryos were collected from 75 stimulated mice, 524 of them were considered as morphologically intact, top grade embryos at their 4-cell stage. From these, 356 embryos were used for isolation of blastomere. The remaining 168 embryos were cultured as controls. A total of 1312 single blastomeres were obtained and in-vitro cultured. Among which, 620 blastocysts were harvested from the original embryos compared to 136 blastocysts from the control group. The overall blastocyst formation rate was 174.2% (620/356) in the study group compared to 81.5% (136/168) in the control group. There were 43.3% (268/620) top grade blastocysts in the study group compared to 91%(123/136) in the control group. Taking together, the percentage of top grade blastocyst per original embryo in the splitting group is 75.4%(174.2%x43.3%) compared to 74.2% (81.5%x 91%) in the control group.

Conclusion: Embryo splitting can increase the number of blastocyst. However, the percentage of available, top grade blastocysts remains the same when compared to the un-splitted embryo. Application of embryo-splitting may not be a cost-effective technique to improve the clinical outcome in IVF treatment.