

The Impact of Cleavage Stage Biopsy on Blastocyst Development

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Objective: To evaluate the impact of blastomere biopsy on mouse embryos at cleavage stage and the cofactors that may affect the blastocyst development.

Design: An Experimental Animal Study.

Setting: Department of Obstetrics and Gynecology, University of Monash, Melbourne, Australia.

Method: Cleavage stage of mice embryos at four cells (group 1) and eight cells were biopsied; the eight-cell embryos either had one cell (group 2) or two cells removed (group 3). The effect of biopsy on the embryo was compared with the control group (group 4, no biopsy).

Result: The rate of hatched blastocyst was significantly better in group 4 (77.27%) compared to group 1 (50%) (P-value=0.0023) and similar to group 2 (66.7%) and group 3 (64 %). There was no significant impact on the number of blastomeres removed in eight-cell stage and blastocyst development. The overall hatched blastocyst rate was significantly lower in the biopsied embryos incubated in the $\text{Ca}^{2+}/\text{Mg}^{2+}$ free medium for more than 15 minutes, P-value=0.0455.

Conclusion: Biopsy of cleavage-stage embryos at eight-cell stage have less adverse impact on blastocyst viability compared to biopsy at four-cell stage. The incubation of embryos in $\text{Ca}^{2+}/\text{Mg}^{2+}$ free medium for more than 15 minutes reduced blastocyst development.