

## FULLY HATCHED BLASTOCYSTS ACHIEVE SUPERIOR EUPLOIDY RATES AND IMPLANTATION SUCCESS FOR PGT-A

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**Introduction:** Assisted hatching of embryos for PGT-A allows blastocysts to fully hatch in culture prior to single euploid embryo transfer (SEET). Fundamentally, do aneuploidy rates, day of development and implantation rates differ between vitrified zona-intact and hatched blastocysts? **Experimental Methods:** Patients electively enrolled in ICSI/blastocyst biopsy/vitrification-all cycles using a single physician between January 2016-July 2018. Applying NGS for PGT- A, aneuploidy rates were compared between blastocyst stages. Post-warming and SEET, subsequent implantation was determined by ultrasound to confirm the presence of a fetal sac. Chi-square analysis assessed differences between developmental stages ( $p < 0.05$ ). **Results:** 878 cycles produced 8,408 zygotes and a 54% blastocyst yield. 835 SEETs (n=669 zona-intact blastocysts, n=166 hatched blastocysts) achieved a 73% overall implantation rate, with no difference between zona-intact (74%) and hatched blastocysts (69%). Biopsied blastocysts were fully hatched 5%, 31%, and 55% of the time on days 5,6, and 7, respectively. Hatched embryos were more prevalent ( $p < 0.05$ ) on days 6/7, and euploidy rates statistically lower for zona-intact versus hatched embryos at 38% versus 52%, respectively. **Conclusion:** Hatched blastocysts exhibited superior euploidy rates and implantation warranting their progressive application for SEET. Performance of atraumatic biopsies with robust cellular material is imperative for improving PGT-A profiles and overall efficacy. As modern embryology laboratories develop further improved culturing, handling and biopsy techniques of hatched embryos, physicians and clinics should elect these embryos without concern for decreased results. We have identified that vitrification method and biopsy technique may alter the efficacy of utilizing hatched blastocysts. Overall, this study supports continued use of PGT-A, extended blastocyst culture and SEET. Support:None