

Euploid Rates Do Not Decrease Following Re-Biopsy of an Undetermined Embryo

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Abstract

OBJECTIVE: Preimplantation genetic testing for aneuploidy (PGT-A) is being performed more readily in patients undergoing in-vitro fertilization (IVF). However, a small percentage of biopsies, up to 5-6%, return with undetermined results, which have been difficult to interpret. Previous studies had suggested that these embryos were more likely to be aneuploid after re-biopsy, as they were thought to have poor quality DNA. This study aims to determine if the euploid rate is decreased after re-biopsy of previously uninformative results.

DESIGN: The design of this study is a retrospective chart review of patients who underwent embryo biopsy for PGT-A which then returned with indeterminate results. Those that chose to undergo re-biopsy were evaluated.

MATERIALS & METHODS: This study was performed at a private fertility practice. Samples underwent whole genome amplification followed by next generation sequencing, consistent with practice protocols. A two-sided chi-square test was used to compare initial and re-biopsy euploid rates.

RESULTS: A total of 33 embryos were re-biopsied and analyzed. Only 1 (3%) did not survive thawing. Another 9% (3/33 samples) returned again with no results. 15 of the 33 samples (45%) resulted with euploid PGT-A after re-biopsying due to no results on the first biopsy, 42% were aneuploid. The euploid rates for the re-biopsy specimens were not significantly different compared the practice's initial biopsy euploid rate of 53% ($P=0.39$). 9 of the 15 embryos that were euploid after re-biopsy have been transferred, with 7 resulting in clinical pregnancies.

CONCLUSIONS: With increased use of PGT-A in patients undergoing IVF, a larger number of patients in which initial undetermined results can be expected. While previous literature has suggested these embryos are more likely to be aneuploid, this analysis refutes that statement. Almost half of the samples analyzed in this study were found to be euploid on repeat biopsy, which was not statistically different from the initial euploid biopsy rate. Additionally, only one embryo did not survive the thawing process. Of the re-biopsied embryos that have been transferred, 7 of 9 have resulted in clinical pregnancies, suggesting likely minimal structural damage. Therefore, re-biopsy should be offered to all individuals who receive initially indeterminate results.

SUPPORT: None.