

# OUTCOMES OF CHAOTIC EMBRYO REBIOPSY IN A HIGH-VOLUME FERTILITY NETWORK

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## Introduction

A chaotic result following preimplantation genetic testing for aneuploidy (PGT-A) indicates that 6 or more chromosomes with copy number variations were detected in the biopsy sample. The positive predictive value (PPV) of aneuploid results is typically high; however, the PPV for a chaotic result may be reduced, such that rebiopsy and retesting can be considered based on embryo quality<sup>1</sup>. Embryos with euploid results on rebiopsy after an initial chaotic result may be considered for transfer; however, the reproductive potential of these embryos is unknown.

## Objective

To examine the rebiopsy and transfer outcomes from embryos with initial chaotic results on PGT-A in a large fertility network.

## Materials and Methods

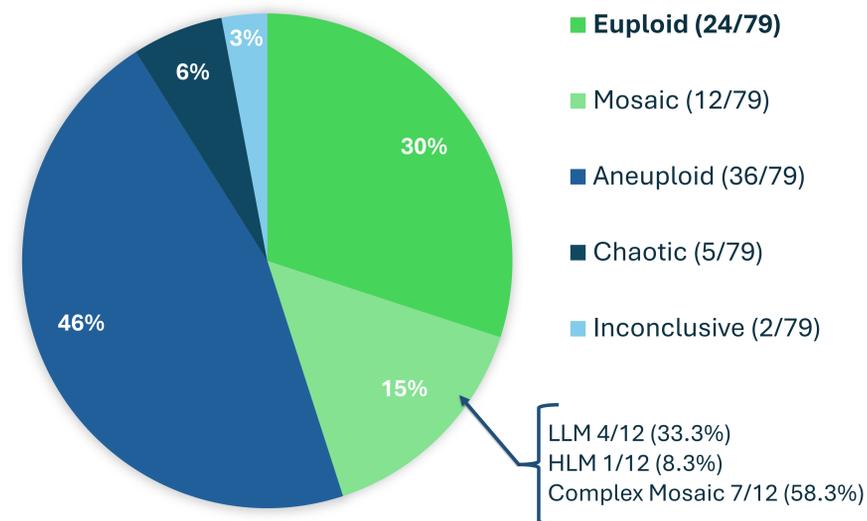
A single PGT lab performed PGT-A testing on both initial and rebiopsied trophoctoderm samples from blastocyst stage embryos using Ion ReproSeq PGS kit for Next Generation Sequencing for 24 chromosome aneuploidy screening. Embryos with initial chaotic results that were rebiopsied between February 2022 and October 2023 were identified. Embryos were revitrified following the second biopsy procedure. Results of PGT-A on rebiopsy samples and outcomes of subsequent euploid embryo transfer were observed. Embryos with euploid results on rebiopsy were considered for transfer.

## Results

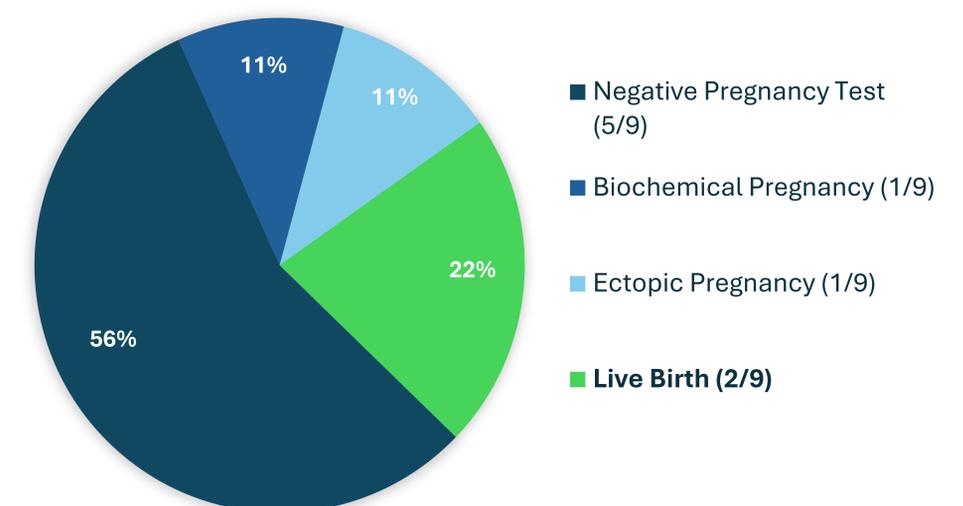
To date, 92/684 (14%) patients with initial chaotic results on PGT-A requested rebiopsy and repeat PGT-A. Of 92 embryos with initial chaotic results, 79 (86%) were rebiopsied, and 13 did not meet criteria for rebiopsy after warming and further culture. Of the 79 embryos rebiopsied, 24 (30%) had euploid results, 36 (46%) had aneuploid results, 12 (15%) had mosaic results, 5 (6%) had chaotic results again and 2 (3%) had inconclusive results.

Of the 24 embryos with euploid results on rebiopsy sample, 9 were transferred with 2 (22%) resulting in the live births of apparently healthy infants. The outcomes of the remaining 7 transferred embryos are as follows: 5 (55%) had negative pregnancy tests (including 2 double embryo transfers (DETs) where the second embryo had initial euploid results), 1 (11%) had a biochemical pregnancy (DET with an initial euploid), and 1 (11%) had an ectopic pregnancy.

## Rebiopsy Results of Blastocysts After Initial Chaotic Result



## Transfer Outcomes of Blastocysts with Euploid Rebiopsy Results



## Conclusion

- Rebiopsy of embryos with initial chaotic PGT-A results allowed for the transfer of embryos previously deemed not suitable for transfer based on clinic policy.
- To support greater patient opportunity for live birth outcomes, fertility clinics could consider rebiopsy of embryos with initial chaotic results and transfer of embryos with subsequent euploid results.
- Patients should be counseled:
  - There may be reproductive potential for embryos with subsequent euploid results after initial chaotic results
  - Outcome data are currently limited, more studies are warranted
  - Live birth rates appear to be lower than that of embryos with initial euploid results.

## References

<sup>1</sup>Rabkina L, et al. Concordance of chromosomes within re-biopsy samples of embryos following initial chaotic results. Fertil Steril 2022;118:e350.

## Acknowledgments

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