



AMERICAN SOCIETY FOR REPRODUCTIVE MEDICINE
2024 SCIENTIFIC CONGRESS & EXPO

PATIENT DECISION MAKING WHEN FACED WITH THE CHOICE OF MOSAIC EMBRYO TRANSFER

Emily Clarke, Hajera Naveed, Teresa Cacchione, Morgan Baird, Joseph Lee, Anate Brauer, Daniel Stein, Alan Copperman

1. Reproductive Medicine Associates of New York, New York, NY
2. Icahn School of Medicine at Mount Sinai, New York, NY

OBJECTIVE:

While mosaic embryo transfer (MET) has become increasingly common, it is widely understood that this decision results in lower implantation and higher miscarriage rates compared to euploid embryo transfer (1). Most patients considering MET undergo genetic counseling (GC) due to the small risks observed in offspring. There is limited research on patient decision making regarding MET, subsequent treatment options, and clinical outcomes (2). This study assesses patient characteristics associated with the decision to undergo MET and outcomes as compared to patients who instead attempt subsequent oocyte retrieval(s) with in vitro fertilization (IVF).

MATERIALS AND METHODS:

This single center study included all patients who completed an IVF cycle with preimplantation genetic testing for aneuploidy, had only mosaic embryo(s) available for transfer, and underwent GC to discuss MET between March 2020 and August 2023. Cohorts included patients who underwent MET or those who decided not to transfer and instead underwent a subsequent retrieval cycle aimed at obtaining a euploid embryo. Outcomes included patient demographics at time of GC, MET outcome, and subsequent retrieval outcome(s). Wilcoxon rank and chi-square were used for statistics with $p < 0.05$ considered significant.

RESULTS:

163 patients were included. After GC, 49 patients (30.0%) were lost to follow up. Of the remaining 114 patients, 40 initially elected for MET (35.1%) and 74 elected for another IVF cycle (64.9%) ($p < 0.01$). Compared to those who underwent a subsequent oocyte retrieval, patients opting for MET were of similar age (40.4 ± 3.7 vs 39.2 ± 3.4 years, $p = 0.1$) and anti-Mullerian hormone levels (1.9 ± 2.0 vs 1.8 ± 1.7 ng/mL, $p = 0.6$). Patients who opted for MET had previously undergone more oocyte retrievals compared to those who decided against MET (2.3 ± 1.9 vs 1.3 ± 1.4 retrievals, $p < 0.01$). Patients who underwent MET had an ongoing pregnancy / live birth



rate (LBR) of 37.5%; while patients who opted for another oocyte retrieval (n=74), produced ≥ 1 euploid embryo (n=44; 59.5%) and underwent transfer (n=40; 90.9%) had a LBR per transfer of 42.5% (p=0.6). Of patients who decided against MET but did not produce a euploid embryo after their next IVF cycle (n=30), 50% continued onto multiple subsequent IVF cycles. Of those patients, 20% (n=3) produced a euploid and achieved live birth. Of those who initially chose not to undergo MET, but did not achieve a euploid embryo or live birth after subsequent retrieval(s) (n=50), 13 patients eventually underwent MET with LBR of 69.2%.

CONCLUSIONS:

Most patients facing the decision to transfer a mosaic embryo opt for another oocyte retrieval, and are likely to have undergone fewer retrievals in the past compared to patients who opt for MET initially. When a new euploid embryo is obtained, patients have similar chances of live birth compared to those who chose MET. Patients who have unsuccessful subsequent IVF cycles and ultimately return for MET have high chances of live birth.

IMPACT STATEMENT:

Nearly 2/3 of patients whose only embryos are found to be mosaic undergo at least one more oocyte retrieval prior to embryo transfer. Ultimately, both cohorts frequently achieve success when they move to embryo transfer.

REFERENCES:

1. Viotti M, et al. Using outcome data from one thousand mosaic embryo transfers to formulate an embryo ranking system for clinical use. *Fertil Steril*. 2021 May;115(5):1212-24.
2. Besser AG, McCulloh DH, Grifo JA. What are patients doing with their mosaic embryos? Decision making after genetic counseling. *Fertil Steril*. 2019 Jan;111(1):132-7.