The influence of mosaicism and blastocyst grading on ongoing pregnancy rate

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ABSTRACT

Introduction: Pre-implantation genetic testing for aneuploidies (PGT-A) is used widely to improve outcomes especially for women of advanced age. However, with technological advancements in the field came a new issue – mosaicism, which complicated the blastocyst selection process. **Objectives:** To determine the effect of mosaicism and blastocyst grading on ongoing pregnancy rate (OPR). **Materials and Methods:** A total of 975 frozen PGT-tested single blastocyst transfers from 2022-2024 were analysed retrospectively, with an ongoing pregnancy defined as the presence of a fetal heartbeat at ≥ 12 weeks. The type and degree of mosaicism, number of mosaic chromosomes, and blastocyst grading were investigated. **Results:** The type of mosaicism and number of mosaic chromosomes did not significantly affect the OPR. The degree of mosaicism was divided into 10% increments, and a sharp cut-off after 50% was seen in the OPR. The degree of mosaicism had a significant effect (p=0.035), with euploid and ≤50% mosaic blastocysts not differing significantly, whereas >50% mosaic blastocysts showed a significant 0.76 times lower odds for ongoing pregnancy compared to euploid blastocysts (p=0.031). The blastocyst grading was found to significantly affect the OPR as well, with Poor-quality blastocysts showing 48% decreased odds for an ongoing pregnancy compared to Good-quality blastocysts (p=0.000). Good-quality blastocysts did not show a statistical difference compared to Fair-quality blastocysts. **Conclusion:** Thus, to rank blastocysts for transfer, euploid and ≤50% mosaic blastocysts should take priority over >50% mosaic blastocysts, while Good- and Fair-quality blastocysts should be transferred before Poor-quality blastocysts, regardless of their type of mosaicism and number of chromosomes affected.