BATTLE OF THE SEXES: RATE OF ANEUPLOIDY AND CLINICAL OUTCOMES ARE NOT AFFECTED BY EMBRYO SEX IN A LARGE COHORT STUDY

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Introduction

Embryo sex has been implicated in aneuploidy risk, with prior studies suggesting higher rates in female embryos, particularly among patients of advanced maternal age (1,2). These findings point to potential biologic vulnerability related to oocyte-derived meiotic errors and highlight the importance of maternal factors when interpreting sex-specific aneuploidy (1,3). This study examined sex-based differences in aneuploidy across a large cohort and evaluated whether embryo sex influences clinical outcomes following euploid single embryo transfer.

Objectives

To determine whether embryo sex is associated with aneuploidy rates and whether this relationship is modified by maternal or paternal age, and to evaluate whether clinical outcomes differ by embryo sex among euploid embryos transferred.

Methods

This retrospective cohort study included patients who underwent in vitro fertilization with preimplantation genetic testing for aneuploidy (PGT-A) from 2020-2025 at a single academic fertility center. 11,937 blastocysts were analyzed from 1,889 patients Embryos with autosomal aneuploidy or autosomal mosaicism were included, while those with sex chromosome aneuploidy or mosaicism were excluded. The primary outcome was autosomal aneuploidy rate; secondary outcomes included pregnancy rate, clinical intrauterine pregnancy rate, and biochemical miscarriage rate.

Statistical comparisons used Pearson's chi-square and multivariable logistic regression model, with significance defined as $p<0.05$.

Results

Figure 1: : Embryo Sex by Maternal Age

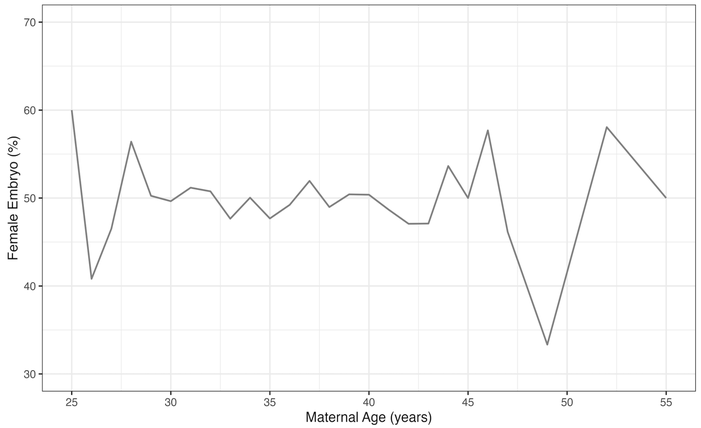
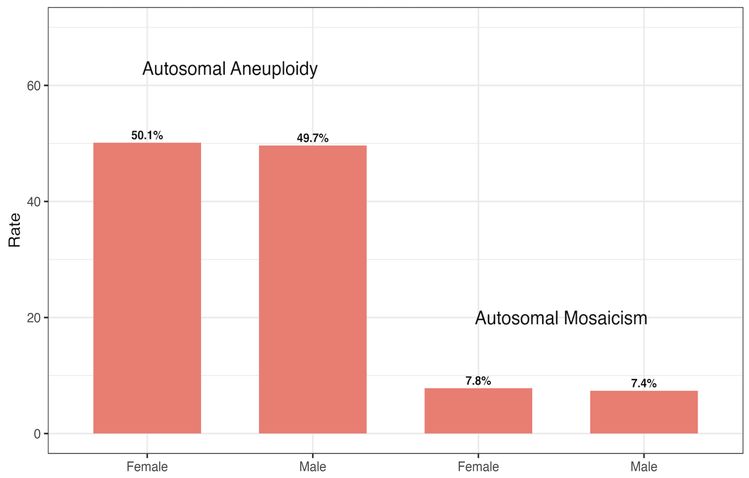


Figure 2: Aneuploidy Rate by Sex



Results

Table 1: The Multivariable Logistic Regression Model

Characteristic	OR	95% CI	p-value
Embryo Sex			
Male	—	—	
Female	1.01	0.94, 1.09	0.72
Maternal Age	1.15	1.13, 1.16	<0.01
Paternal Age	1	1.0, 1.00	0.53
Biopsy Day			
D5	—	—	
D6	1.62	1.50, 1.75	<0.01
D7	2.08	1.75, 2.47	<0.01
Transfer Cycle			
Frozen	—	—	
Fresh	0.53	0.30, 0.91	0.02

Conclusion

Embryo sex was not associated with aneuploidy frequency or clinical outcomes after single euploid embryo transfer. These findings contrast with earlier reports suggesting sex-based differences and indicate that variation between male and female embryos may not meaningfully influence embryo competence. Understanding the role of embryo sex in aneuploidy and implantation may improve patient counseling, particularly for those of advanced maternal age.

References

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