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METHOD OF SPERMATOZOA RECOVERY DOES NOT CORRELATE WITH EMBRYONIC MOSAICISMIN PATIENTS WITH SEVERE MALE FACTOR INFERTILITY

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OBJECTIVE:

The prevalence of embryo mosaicism does not seem to be determined by the same rules that govern embryo aneuploidy, as it is neither associated with meiotic errors nor maternal age. Recent publications found higher mosaicism rates in patients with severe male factor infertility, although the underlying biological mechanism remains unknown. Some authors suggest that surgical retrieved sperm improves ploidy outcomes in patients undergoing invitro fertilization (IVF) with preimplantation genetic testing for aneuploidy (PGT-A) by reducing free oxygen radicals and DNA fragmentation. However, there are currently no publications associating rates of embryonic mosaicism to the source of sperm. Hence, the objective of this study is to examine the association between embryonic mosaicism and the method of spermatozoa recovery in infertile couples with severe male factor infertility undergoing IVF/PGT-A.

MATERIALS AND METHODS:

This retrospective, single center academic center study included all couples with severe male factor infertility undergoing IVF-PGT-A from 2019 to 2023. Cohorts were separated based on the source of sperm (testicular (TESE) vs. ejaculate). Cases with history of vasectomy, frozen/thawed semen samples, and patients harboring chromosomal rearrangements were excluded from the analysis. Primary outcome was embryo mosaicism status, secondary outcome included the level of mosaicism. Demographic characteristics, cycle characteristics and embryologic data were collected. Student's t-test, chi-square test, Wilcoxon rank test and multivariate logistic regression were used for data analysis.

RESULTS:

A total of 1591 blastocysts derived from 432 IVF/PGT-A cycles were analyzed. 141 cases (n=471embryos) utilized testicular sperm and 291 (n=1120 embryos) used ejaculate sperm. Male and female age were significantly higher in patients that used testicular sperm compared

to ejaculate sperm (44.2±4, 38.5±7, p=0.0007; 36.1 ±3, 35.3±4, p=0.04 respectively). No other significant differences were found in demographic and stimulation parameters between cohorts. Patients that underwent TESE had lower fertilization and blastulation rates compared to ejaculate sperm (62.2%, 73.2%, p=0.004; 66.8%, 71.4%,p=0.02 respectively) Embryonic mosaicism rates were comparable between the two populations (TESE0.9 % n=43/471; ejaculate 1.0% n=119/1120, p=0.69). When analyzing the grade of mosaicism both cohorts had on average more high-level than low level mosaic embryos (TESE 65.5%, ejaculate 64.7%,p= 0.32; TESE 34.5%,ejaculate 35.3%, p=0.68). After adjusting for male patient's and female patient age, fertilization and blastulation rates, there was no association with surgically extracted sperm and lower odds of embryonic mosaicism (OR 0.79, CI95% 0.5-3.1).

CONCLUSIONS:

Embryo mosaicism rates were comparable among severe male factor couples undergoing IVF/PGT with TESE versus fresh ejaculate.

IMPACT STATEMENT:

The method of spermatozoa recovery does not appear to influence the rate of embryonic mosaicism in patients with severe male factor infertility.

REFERENCES:

N/A