

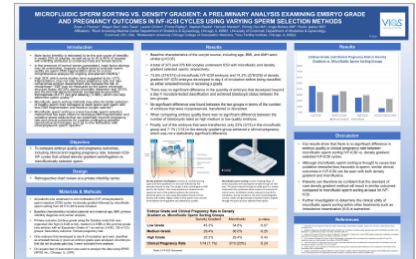


**Track:** Assisted Reproductive Technology, Clinical Infertility

**Poster Session:** IVF Outcome Predictors

## (P-550) MICROFLUIDIC SPERM SORTING VS. DENSITY GRADIENT: A PRELIMINARY ANALYSIS EXAMINING EMBRYO GRADE AND PREGNANCY OUTCOMES IN IVF-ICSI CYCLES USING VARYING SPERM SELECTION METHODS

 Monday, October 19, 2020  4:30 PM – 6:00 PM



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**Objective:** To determine differences in embryo quality and clinical pregnancy rates in cycles using microfluidic sperm sorting as compared to cycles using density gradient centrifugation. **DESIGN:** Male factor infertility is estimated to be the sole cause of infertility in nearly 20% of couples. In the presence of normal semen parameters, male infertility may be overlooked. DNA fragmentation tests have been recently utilized to allow for a more comprehensive analysis of male factor infertility for ongoing unexplained infertility and to evaluate sperm quality. Microfluidic sperm sorting methods may allow for selection of healthy sperm, including those with less DNA fragmentation and reactive oxygen species. This is a promising area of investigation to improve pregnancy rates and clinical outcomes for couples undergoing assisted reproductive technologies (ART). **MATERIALS AND**

**Methods:** A retrospective cohort analysis was performed on patients who underwent density gradient IVF-ICSI cycles followed by microfluidic sperm sorting IVF-ICSI cycles. Baseline characteristics included paternal and maternal age, BMI, primary infertility diagnosis and semen analysis. The primary outcome was embryo grade using the Gardner scale that was organized into high (3-6 AB or AA), medium (2-6 BB or BA) and low grade (any embryo with an Expansion Grade of 1 as well as 2-6 BC, CB or CC) groups. The secondary outcome measured was clinical pregnancy rate. Results were analyzed by chi-square test of association.

**Results:** Patients that underwent both density gradient and microfluidic sperm sorting IVF-ICSI cycles were identified. Within this patient population, 373 and 376 MII oocytes underwent ICSI with

microfluidic and density gradient selected sperm, respectively. 73.5% (274/373) of microfluidic IVF-ICSI embryos and 74.2% (279/376) of density gradient IVF-ICSI embryos developed to day 4 of incubation before being classified as either arrested/morula or receiving a grade. All embryos that did not incubate past day 3 were excluded from analysis. There was no significant difference in the quantity of embryos that developed beyond a day 4 morula/arrested classification and achieved blastocyst status between the two groups. Similarly, there was no significant difference between the two groups in terms of the number of embryos that were cryopreserved (34.3% vs. 30.0%), transferred (4.7% vs. 5.0%) or discarded (65.7% vs. 70.0%), respectively. When comparing embryo quality there was no significant difference between the number of blastocysts rated as high (29.4% vs. 25.2%), medium (36% vs. 29.5%) or low (34.6% vs. 45.3%) quality between the two groups. Finally, out of the embryos that were transferred, only 23% (3/13) in the microfluidic group and 7.1% (1/14) in the density gradient group achieved a clinical pregnancy which was not a statistically significant difference.

**Conclusions:** There is no significant difference in embryo quality or clinical pregnancy rate between microfluidic sperm sorting IVF-ICSI vs. density gradient selected IVF-ICSI cycles. Both methods are promising options to improve clinical outcomes for patients undergoing ART.