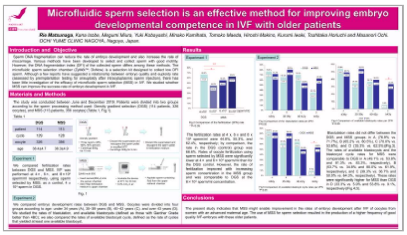
**Track:** Assisted Reproductive Technology, Clinical Infertility

**Poster Session: IVF Outcome Predictors**

# (P-498) MICROFLUIDIC SPERM SELECTION IS AN EFFECTIVE METHOD FOR IMPROVING EMBRYO DEVELOPMENTAL COMPETENCE IN IVF WITH OLDER PATIENTS.

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

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**Objective:** Sperm DNA fragmentation can reduce the rate of embryo development and also increase the rate of miscarriage. Various methods have been developed to select and collect sperm with good motility. However, the DNA fragmentation index (DFI) of the collected sperm differs among these methods. The microfluidic sperm selection chamber (ZyMōt™; DxNow) is a selection kit designed to collect low DFI sperm. Although a few reports have suggested a relationship between embryo quality and euploidy rate (assessed by preimplantation testing for aneuploidy after intracytoplasmic sperm injection), there has been little investigation of the efficacy of microfluidic sperm selection (MSS) in IVF. We studied whether MSS can improve the success rate of embryo development in IVF. **DESIGN:** The study was conducted between June 2019 and December 2019. Patients were divided into two groups according to the sperm processing method used: DGS (114 patients, 326 oocytes), and MSS (113 patients, 356 oocytes). For both groups, IVF was performed using selected sperm. **MATERIALS AND**

**Methods:** We compared the rates of fertilization, blastulation, and available blastocysts (defined as those with Gardner Grade better than 4BC); we also compared the rates of available blastocyst cycle, defined as the rate of cycles that yielded at least one available blastocyst. IVF was performed using sperm selected by MSS; as a control, $4\times10^4$ sperm/ml was used for IVF in the DGS group.

**Results:** The fertilization rates using 4×, 6×, and 8×104 sperm/ml in the MSS group were 44.8%, 55.3%, and 62.4%, respectively; by comparison, the rate in the DGS (control) group was 66.6%. Rates of oocyte fertilization using sperm selected by MSS were significantly lower at 4× and 6×104 sperm/ml than for the DGS control. However, the rate of fertilization improved with increasing sperm

concentration in the MSS group and was comparable to DGS at the 8×104 sperm/ml concentration. Embryo development was compared for oocytes from women of different age ranges: under 34 years (A), 35–39 years (B), 40–42 years (C), and over 43 years (D). Blastulation rates did not differ between the DGS and MSS groups in A (76.9% vs. 71.7%), B (65.2% vs. 80.5%), C (70.0% vs. 53.6%), and D (35.3% vs. 62.5%). The rates of available blastocysts and the blastocyst cycle rates for MSS were comparable to DGS in A (49.1% vs. 53.8% and 81.3% vs. 83.3%, respectively), B (53.7% vs. 34.8% and 80.0% vs. 61.9%, respectively), and C (39.3% vs. 36.7% and 50.0% vs. 64.3%, respectively). These rates were significantly higher for MSS than DGS in D (33.3% vs. 5.9% and 53.8% vs. 9.1%, respectively).

**Conclusions**: The present study indicates that MSS might enable improvement in the rates of embryo development after IVF of oocytes from women with an advanced maternal age. The use of MSS for sperm selection resulted in the production of a higher frequency of good quality IVF-embryos with these older patients.