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Poster Presentations

P-91

Microfluidic sperm selection improved the sperm quality and ICSI clinical outcomes: A pilot study

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Background: An appropriate sperm preparation technique isolates and collects high quality spermatozoa for intracytoplasmic sperm injection.

Objective: The aim was to assess sperm quality parameters, DNA integrity, embryo development and clinical outcomes using a practical and accessible microfluidic sperm sorting (MSS) technique.

Materials and Methods: 95 ICSI cases performed by spermatozoa was prepared with our designed MSS (group 1) or Direct Swim Up (DSU) methods (group 2). Both sperm quality parameters and DNA fragmentation index were compared between the groups. DNA fragmentation was assessed using Sperm Chromatin dispersion test and fine morphology was assessed using Motile Sperm Organelle Morphology Examination. Also, embryo development and clinical outcomes were compared between the groups.

Results: In the MSS treatment group, progressive motility and the fraction of Class I morphology of spermatozoa were significantly higher compared to DSU control group ($p < 0.01$ and $p < 0.001$, respectively). Moreover, the rates of DNA fragmentation and immotile spermatozoa were significantly lower in MSS group compared to DSU group ($p < 0.001$). Also, higher rates of high quality embryo formation ($p < 0.001$), implantation ($p = 0.04$) and pregnancy ($p = 0.05$) were achieved in MSS compared to DSU group.

Conclusion: The designed MSS technique was a noninvasive, disposable, easy to use, and inexpensive method for the separation of high quality spermatozoa. Both laboratory parameters and clinical outcomes were improved with the application of MSS for sperm preparation in intracytoplasmic sperm injection procedure.

Key words: Intracytoplasmic sperm injection, Embryonic development, Sperm sorting.

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