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COMPARISON OF THE FERTILIZATION, BLASTOCYST FORMATION AND UTILIZATION RATE BETWEEN DOUBLE-DENSITY GRADIENT AND ZYMŌT DEVICE FOR SPERM PREPARATION

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INTRODUCTION

- Sperm preparation is an essential step in IVF/ICSI treatment, and it directly affects the outcome of the treatment.
- This study aims to compare the fertilization, blastocyst formation, and utilization rate for sperm prepared using the double-density gradient centrifugation method and ZyMōt sperm separation device.

MATERIALS AND METHODS

A prospective randomized controlled study

→ 127 sibling oocytes from nine couples were categorized into double-density gradient (n=63) and ZyMōt group (n=64)

→ (I) For double-density gradient method, 80% and 40%, and HEPES buffered medium were used for processing sperm

(II) For ZyMōt sperm separation device, 850µl raw sample was required to load into the ZyMōt device and 750µl of HEPES buffered medium needed to cover on the surface, incubated for 30 minutes, 37°C

The fertilization, blastocyst formation, and utilization rate were compared

→ Statistical analysis was performed using Fisher's exact test and Wilcoxon Signed-Rank test with a significant value p<0.05

RESULTS

Table 1: Comparison of fertilization, blastocyst formation and utilization rate between double-density gradient and ZyMōt group, Fisher's exact test was used for statistical analysis

	Double-density gradient (n=63)	ZyMōt (n=64)	P Value
Fertilization rate (%)	30/63 (47.6%)	43/64 (67.2%)	p=0.0317
Blastocyst formation rate (%)	16/30 (53.3%)	30/43 (69.8%)	p=0.2180
Blastocyst utilization rate (%)	12/30 (40.0%)	21/43 (48.8%)	p=0.4836

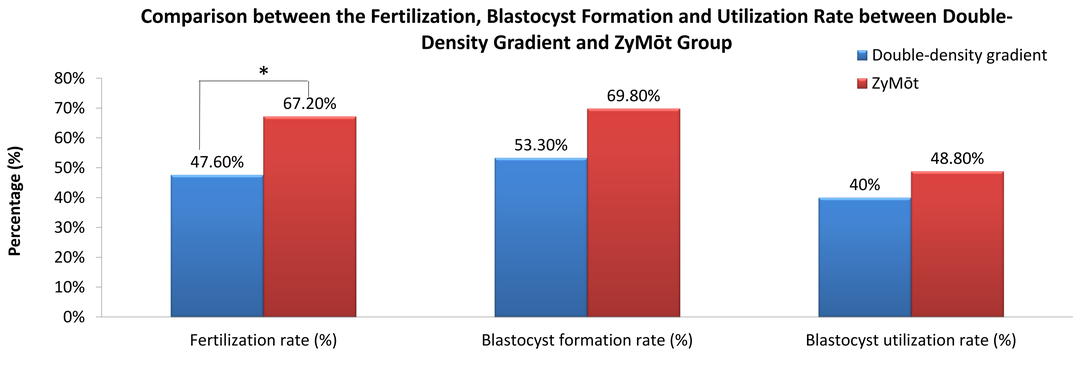

Figure 1: Comparison of fertilization, blastocyst formation and utilization rate between double-density gradient and ZyMōt group, *p<0.05.

Table 2: The mean and standard deviation of the number of fertilization, blastocyst formation and utilization between double-density gradient and ZyMōt group, Wilcoxon Signed-Rank test was used for statistical analysis

	Double-density gradient (Mean±SD)	ZyMōt (Mean±SD)	P Value
Fertilization	3.3±1.8	4.8±1.7	p<0.05
Blastocyst formation	1.8±1.2	3.3±1.3	p<0.05
Blastocyst utilization	1.3±1.2	2.3±1.5	p>0.05

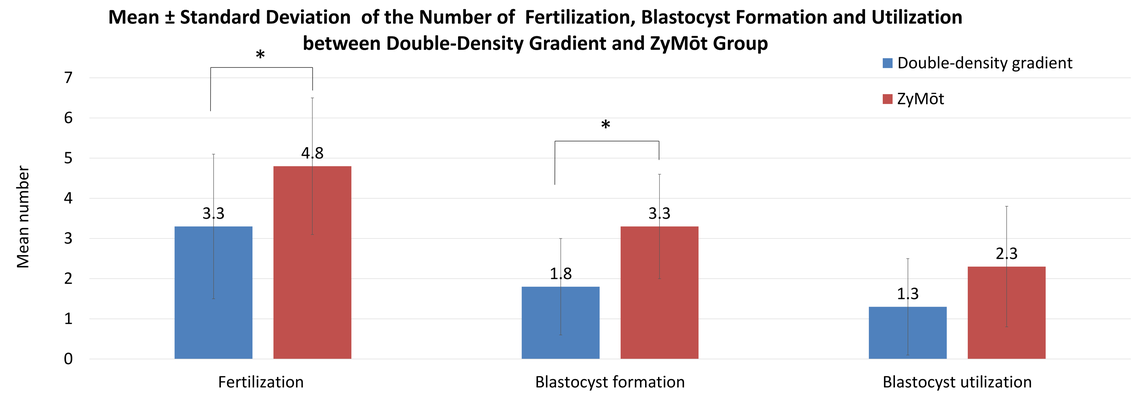

Figure 2: The mean and standard deviation of the number of fertilization, blastocyst formation and utilization rate between double-density gradient and ZyMōt group, *p<0.05.

- The fertilization rate of sperm prepared using the ZyMōt device was significantly (P<0.05) higher than double-density gradient preparation in Fisher's exact test.
- The mean number of blastocyst produced from ZyMōt group (3.3±1.3) was also significantly higher compared to double-density gradient group (1.8±1.2), P<0.05 in Wilcoxon Signed-Rank test.

CONCLUSION

Our results show that sperm preparation using ZyMōt device has significantly improved the oocyte fertilization rate. Moreover, there was also higher blastocyst formation and utilization rate. This results in significantly higher number of blastocyst available for transfer and freezing. Alternatively, ZyMōt device can be served as a sperm separation method with fewer handling steps.

REFERENCES

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