Evaluation of the Usefulness of a Sperm Preparation Device Utilizing Two Types of Membrane Structures in IUI

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Background and Objective

Sperm preparation devices utilizing membrane structures separate motile sperm with high linear velocity by allowing them to pass through a microporous membrane, effectively eliminating sperm with abnormal morphology. Compared to the conventional density gradient centrifugation (DGC) method, this approach can select sperm with higher motility and less DNA damage. However, its clinical usefulness in intrauterine insemination (IUI) has not been demonstrated. In this study, we used two types of devices for sperm preparation in IUI and performed comparative analyses of post-preparation sperm characteristics and clinical outcomes.

Conflict of Interest Disclosure

Presenter's Name: Ayane Takemura
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I have no conflicts of interest to disclose regarding the topic of this presentation.

Subjects and Methods

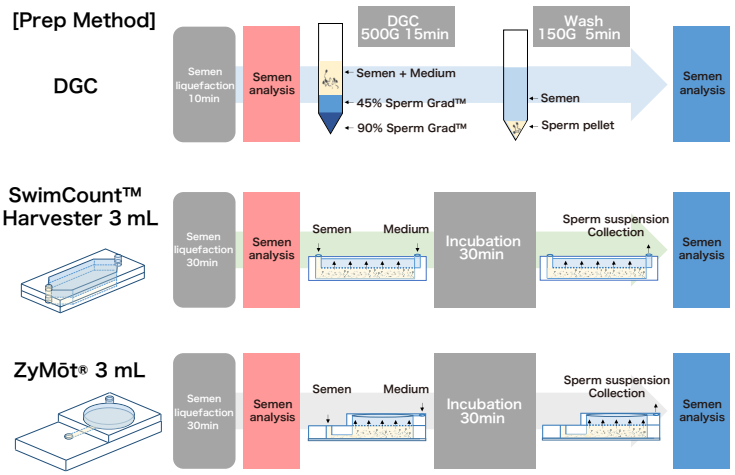
[Subjects] From January 2024 to September 2024, 90 cases meeting the following criteria were selected from patients who underwent IUI at our clinic:

Female age: under 35 years, Semen volume: ≥ 1 .4 mL
Total motile sperm count: ≥ 1 0 Million/3 mL
Patients who have not undergone ART, and this was either their first or 2nd IUI

The cases were divided into three groups:
DGC method: 30 cases
SwimCount™ Harvester 3 mL (MotilityCount): 30 cases
ZyMōt® 3 mL (DxNow): 30 cases

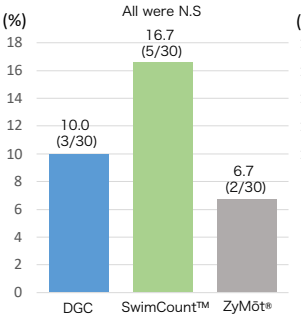
	DGC	SwimCount™	ZyMōt®	P-Value
Femal age (avg±SD)	30.0±3.0	31.1±2.0	31.1±2.0	N.S.
Volume, mL(avg±SD)	3.6±1.7	3.1±1.0	2.9±1.0	N.S.
Total motile sperm x10⁶(avg±SD)	93.4±97.8	141.1±146.7	78.4±69.1	N.S.

[Prep Method]



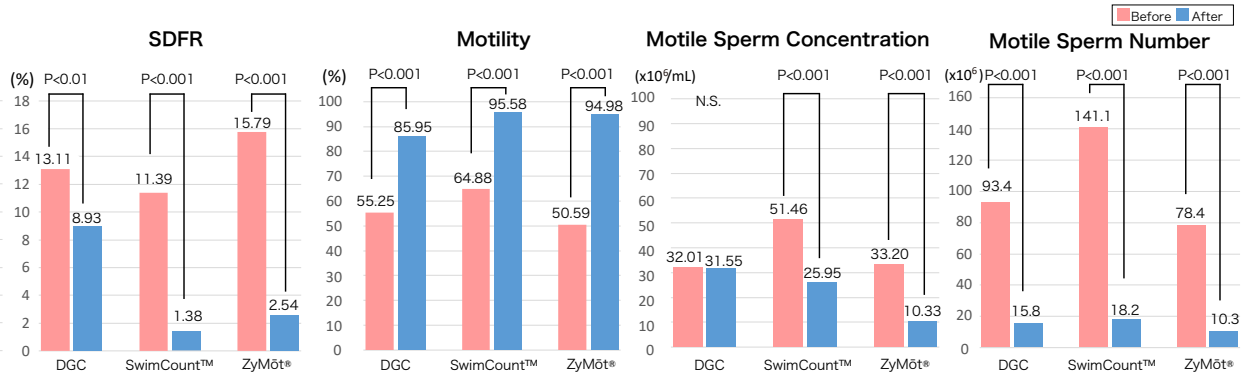
Result

[Clinical result]



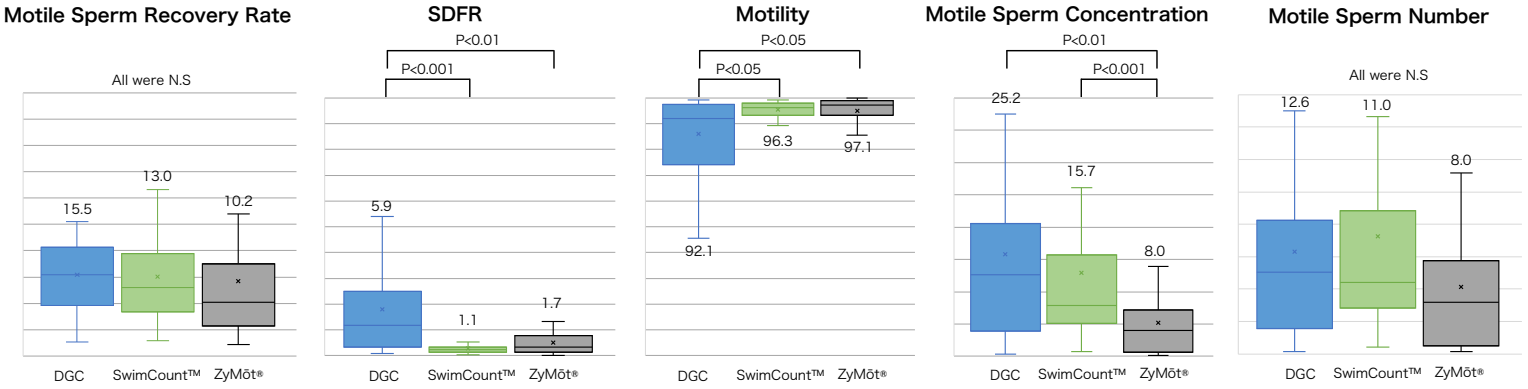
(Chi-Square Test)

[Comparison of Sperm Characteristics Before and After Preparation]



(t-test for normal distribution, Wilcoxon signed-rank test for non-normal distribution)

[Comparison of Sperm Characteristics Among Groups After Preparation]



(Kruskal-Wallis test for differences among the three groups; if significant, Steel-Dwass test)

Conclusion

The SDFR and Motility after preparation with the SwimCount™ Harvester and ZyMōt® were superior to those achieved with the DGC method. The SwimCount™ Harvester demonstrated a motile sperm recovery rate comparable to DGC and outperformed ZyMōt® in terms of motile sperm recovery rate and motile sperm concentration. Furthermore, the preparation methods of the SwimCount™ Harvester and ZyMōt® were simpler and required fewer steps compared to DGC, allowing for other laboratory tasks to be performed during the 30-minute incubation period. Given its favorable sperm characteristics after preparation and ease of use, the SwimCount™ Harvester 3 mL was considered an effective option for sperm preparation in IUI.

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The original text of this poster is in Japanese, and the English translation was provided by MedTech Partners KK, the exclusive distributor of MotilityCount in Japan.