BETTER FRESH THAN FROZEN?

Frozen-thawed surgical sperm retrieval (SSR) sperm yield similar fertilization, embryo use and pregnancy rates compared to fresh SSR sperm

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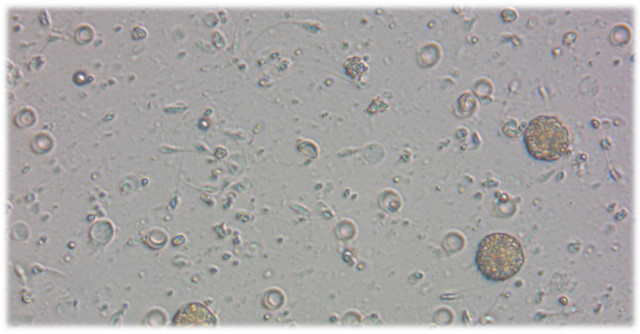
1 INTRODUCTION



ICSI has been a life-changing development that allows azoospermic men to have children. Causes contributed to azoospermia could be primary and secondary testicular failures, genetics, or gonadotoxins and medications[1]. Together with SSR techniques, sperm are retrieved directly from epididymis or testis. Cryopreservation of SSR sperm is often a strategy of patient management, where the balance can be preserved for future use, and also women can avoid unnecessary ovarian stimulation. This study aimed to evaluate the differences between ICSI cycles using fresh and frozen-thawed SSR sperm.

2 MATERIALS AND METHODS

This study included 67 patients with SSR sperm who underwent 77 ICSI cycles from January 2014 to October 2019. Testicle tissues were mechanically dispersed in GMOPS+ (Vitrolife, Sweden). Suspensions with released spermatozoa were then processed for ICSI or cryopreserved. Laboratory and clinical outcomes were evaluated.

3 RESULTS

	Fresh SSR	(%)	Frozen-thawed SSR	(%)	P-value
Patient characteristics					
Number of cycle	57/77	74.0	20/77	26.0	-
Number of oocyte	631/830	76.0	199/830	24.0	-
Oocyte age (mean±SD) [a]	31.7	±5.53	32.4	±7.42	0.144
Sperm age (median±IQR) [b,d]	37.0	±10	48.0	±11	< **0.001**
Laboratory Outcomes					
Fertilization rate [c,d]	392/631	62.1	103/199	51.8	**0.009**
Cleavage rate [c,d]	384/392	98.0	96/103	93.2	**0.021**
Embryo utilization rate [c]	284/392	72.4	73/103	70.9	0.751
Blastulation rate [c]	148/216	68.5	46/72	63.9	0.468
Blastocyst utilization rate [c]	104/216	48.1	33/72	34.3	0.733
Clinical Outcomes					
Clinical pregnancy rate [c]	30/70	42.9	8/17	47.1	0.754
Implantation rate [c]	33/126	26.2	10/27	37.0	0.255
Live birth rate [c]	17/60	28.3	6/16	37.5	0.545

Table 1 Patient characteristics, laboratory outcomes and clinical outcomes comparing cycles using fresh and frozen-thawed SSR sperm.

[a]Independent t-test
[b]Mann-Whitney test
[c]Pearson Chi-square test
[d]Statistically different with a significance level of 5%

Most laboratory and clinical outcomes were similar between the two groups. Both fertilization and cleavage rate in cycles using fresh SSR sperm were significantly higher compared to frozen-thawed SSR sperm. However, when further analysed these 2 outcomes with multivariate analysis using oocyte age, sperm age, number of oocyte injected per cycle and sperm source as independent variables, the statistical differences were lost, with p=0.797 for fertilization rate and p=0.116 for cleavage rate.

4 DISCUSSION AND CONCLUSION

It is known that semen cryopreservation can cause detrimental effects on sperm ultrastructure, genes and protein expression, epigenetics, and sperm functions [2]. In addition, embryologists often face difficulties using frozen-thawed SSR samples such as low post-thaw sperm retrieval. However, it does not appear to affect both laboratory and clinical outcomes significantly when using frozen-thawed SSR sperm, suggesting this it is a better option in term of patient management. The overall SSR sperm cryopreservation protocol should be the highlight focusing on freezing constituents and carriers. Promising results with vitrification may increase the availability of post-thaw SSR sperms.

5 REFERENCES

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