

INTRAUTERINE FOLLICULAR FLUID INJECTION: A POTENTIAL NOVEL APPROACH TO IMPROVE THE ENDOMETRIUM

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Introduction

Intracytoplasmic sperm injection (ICSI): involves the injection of a single spermatozoon into an oocyte cytoplasm using a glass micropipette in which the oocyte can be fertilized independently of the morphology and/or motility of the injected spermatozoon. To improve ICSI outcomes, one fundamental problem is the thin endometrium which has been identified as an important factor in implantation failure. Approaches to Improve Endometrial Receptivity: Endometrial Injury, Intrauterine Administration of Platelet-Rich Plasma, Growth Hormone (GH), Follicular fluid intrauterine injection. **Follicular fluid:** It is a complex dynamic biological fluid that surrounds the developing oocyte. Follicular fluid (FF) acts as an important mediator in the communication between cells in the antral follicle while bathing and carrying nutrients to the oocyte. Thus, human FF is a key element to the success of natural fertilization present in every stage of the conception process, from the communication between gametes to the development of fully viable embryos, and a vital component in the occurrence of spontaneous pregnancies.

Aim of the work

The aim of the study was to evaluate the effect of intrauterine follicular fluid injection on endometrial thickness and implantation.

Patients and Methods

A randomized control study was conducted at El-Shatby University Maternity Hospital and private Fertility Centers, 60 women needed to be randomized into two groups: **Group 1:** 30 women underwent intrauterine injection of follicular fluid. **Group 2:** 30 women as a control group. Every patient in the study was subjected to: **1-Detailed history taking: 2-Clinical examination. 3-Investigation (Basal hormonal profile - Pelvic ultrasound) 4- GnRH agonist or antagonist protocol** for control ovarian stimulation was done. **5- Serial transvaginal ultrasonography 6- After oocyte pickup, 1ml** supernatet FF was injected into the uterine cavity using an IUI catheter. **7-Endometrial assessment : Using TVUS** the endometrial thickness and pattern were assessed on the day of HCG, oocyte retrieval, and embryo transfer. **8- Compaction** was calculated **9-Embryo transfer** was done according to the center`s embryo transfer policy. **10- Measuring the level of beta HCG:** fourteen days after embryo transfer.**11-Detection of Clinical pregnancy rate:** TVUS was done 2 weeks after positive pregnancy test.

Results

As a regard of association between the pregnancy rate and Endometrium thickness there was no statistically significant difference between pregnancy rate and endometrium thickness in day of HCG, day of oocyte retrieval or day of embryo transfer at (p=0.307, p=0.379, p=0.445) respectively. However, pregnant cases had a significantly higher compaction rate (1.5 verse 0.7) respectively.

Table (1):Comparison between Pregnancy Rate according to Endometrium in all studied cases

	Negative (n=17)	Positive (n=43)	Test of significance
Endometrium thickness in day of HCG:			
Min. – Max.	8.4 – 11	8.5 – 12	Mann-Whitney test
Median (IQR)	9.0 (9.0 - 10.5)	9.8 (9.4 - 10.5)	0.307
Endometrium thickness in day of Oocyte retrieval:			
Min. – Max.	8.1 – 10.8	8.0 – 11.8	Mann-Whitney test
Median (IQR)	8.8 (8.6 - 10.3)	9.5 (9.0 - 10.1)	0.379
Endometrium thickness in day of Embryo transfer:			
Min. – Max.	7.5 – 10.5	7.4 – 11.0	Mann-Whitney test
Median (IQR)	8.8 (8.6 - 10.3)	9.5 (9.0 - 10.1)	0.445
Compaction:			
Min. – Max.	0.5 – 2	1 – 2	Mann-Whitney test
Median (IQR)	0.7 (0.5 - 1.5)	1.5 (1.3 - 1.5)	<0.0001*

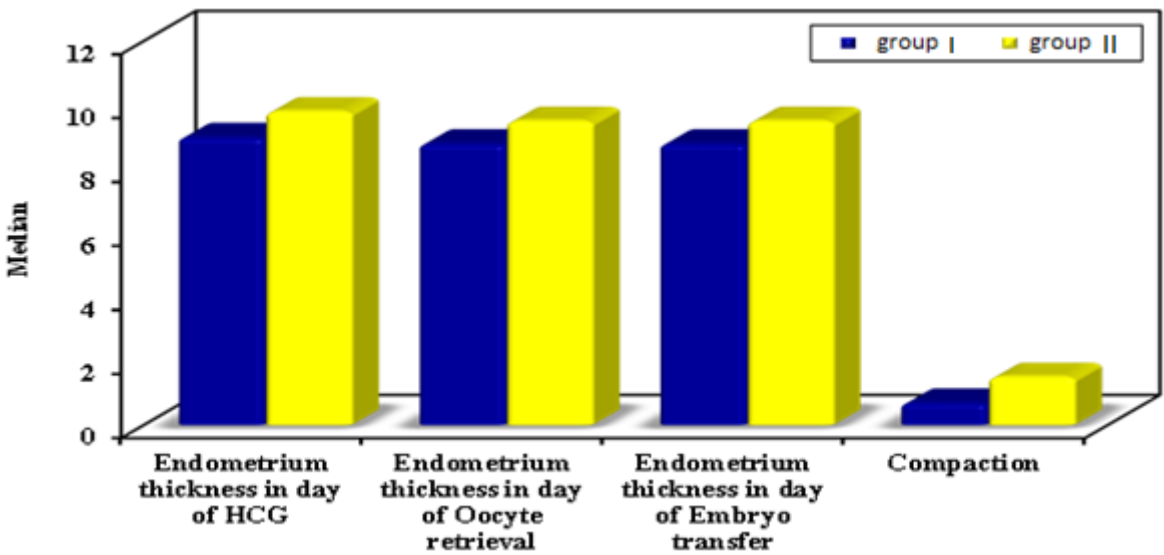


Figure (1):Comparison between Pregnancy Rate according to Endometrium in all studied cases

Previous ICSI Subgroup analysis of cases with previous ICSI failure showed a trend towards better pregnancy rates in the study group as compared to the controlled group however this difference was statistically insignificant.

Table (2):Comparison between pregnant cases in the two studied groups according to Previous ICSI

	Group I	Group II	Test of significance
Previous ICSI in Cases:			
Previous ICSI failed	8/8 (100%)	5/9 (55.6%)	Fisher Exact p=0.082

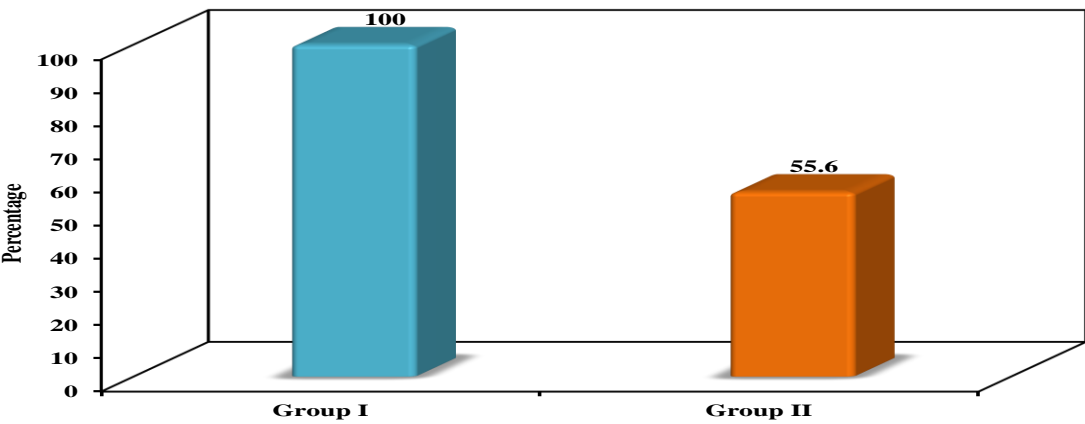


Figure (2):Comparison between pregnant cases in the two studied groups according to Previous ICSI

Conclusion

No or negligible effect of intrauterine FF injection on improving endometrial thickness. In cases with previous ICSI failure we found non-significant increase in pregnancy rate following FF injection. We found that the pregnancy rate is significantly related to endometrial compaction.

