



A SINGLE CENTRE PILOT STUDY COMPARING THE EFFECT OF ENDOMETRIAL SCRATCHING VS HYSTEROSCOPY ON PREGNANCY OUTCOME OF WOMEN UNDERGOING IVF

Gynaecology

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ABSTRACT

Objective: To compare the effect of endometrial scratching vs hysteroscopy on pregnancy outcome of women undergoing IVF with previously failed ART cycles.

Methods: 40 patients were recruited from July 2019 to August 2019. They were alternately subjected to hysteroscopy and endometrial scratching prior to controlled ovarian stimulation. The endpoint was clinical pregnancy as assessed by cardiac activity.

Result: Clinical pregnancy rate was 40% in hysteroscopy group and 35% in scratching group. There was no statistically significant difference.

Conclusion: There is no difference in outcome with both procedures and either of them can be used before IVF procedure to improve the pregnancy rate.

KEYWORDS

INTRODUCTION

Infertility is defined as the failure to conceive after 12 months or more of regular intercourse with or without contraception. In vitro fertilization (IVF) is a commonly used treatment option. The success rate of (IVF) remains modest; the probability of live birth is approximately 25 to 30% per initiated cycle. (1-3). Implantation remains the rate limiting factor for the success of IVF.

Endometrial scratch injury (ESI) is a technique that has been proposed to improve implantation in women undergoing treatment with assisted reproduction technology (ART) (4). Endometrial scratch injury consists of a voluntary endometrial trauma aimed at inducing an acute inflammatory process, prompting the local release of growth factors and proinflammatory cytokines. A recent meta-analysis published in 2019 (5) analyzed fourteen RCTs involving 2537 participants. No differences between scratch and control were found for both LBR (risk ratio (RR) 1.01 [95%CI 0.68–1.51]) and CPR (RR 1.04 [95%CI 0.74–1.45]).

Another intervention which is proposed to improve IVF outcomes is hysteroscopy. Hysteroscopy allows visual assessment of the cervical canal and uterine cavity and provides the opportunity to operate in the same setting. Comparing hysteroscopy with no hysteroscopy prior to any (first or subsequent) IVF/ICSI attempt in infertile women without intrauterine abnormalities, there was low-quality evidence that hysteroscopy increased LBR (relative risk (RR) 1.48, 95% confidence interval (CI) 1.20–1.81) and moderate quality evidence that it increased pregnancy rate (RR 1.45, 95% CI 1.26–1.67) (6)

The above mentioned studies have compared endometrial scratching or hysteroscopy with no intervention. But there is paucity of data directly comparing the effect of endometrial scratching vs hysteroscopy.

AIMS and OBJECTIVES

To compare the effect of endometrial scratching versus hysteroscopy on pregnancy outcome of women undergoing in vitro fertilization (IVF).

MATERIALS AND METHODS

STUDY SETTING:

The study was conducted at International Fertility Centre, Green park, New Delhi

STUDY DESIGN: Comparative Study (Pilot study)

PERIOD OF STUDY: July to August 2019

STUDY POPULATION:

40 women of age group 25 to 40 years who were suffering from infertility and planned for IVF. They were alternately allocated to hysteroscopy group and endometrial scratching group, thus having 20 subjects in each group.

INCLUSION CRITERIA:

1. Age group between 25 to 40 years
2. Unexplained Infertility
3. Infertility due to tubal factors
4. Mild male factor infertility
5. Anovulatory infertility/PCOS
6. Endometriosis

EXCLUSION CRITERIA:

1. Clinically significant systemic or infectious disease
2. Uncorrected uterine factors (submucosal fibroids, intramural fibroids >4cms) or uterine malformations
3. Patients with positive findings on Hysteroscopy like polyp or fibroid or septum or genital TB were excluded

All patients were evaluated in details comprehensive history and examination were done. All routine and specific blood investigations were done. Endometrial scratching was done as outpatient basis on day 2 of menstrual cycle prior to IVF cycle. Hysteroscopy was done after menses (in proliferative phase) prior to IVF cycle. Following this women in both groups underwent the standard IVF protocol with antagonist cycle. The primary outcomes assessed was clinical pregnancy rate as defined by presence of fetal heart rate on ultrasound examination.

Statistical analysis was done using SPSS trial version. For calculating p values, Chi square test/Fischer's exact test was used for categorical data and Student's t test was done for continuous variables. P value <0.05 was considered significant.

RESULTS

This was a pilot study comparing the impact of hysteroscopy vs endometrial scratching in IVF subjects. Clinical pregnancy rate was considered as the primary outcome.

Both study groups had 20 subjects each. Both the groups were comparable with respect to baseline characteristics. (Table 1)

Table 1: Baseline Characteristics of Study Population

Parameters	Endometrial Scratching group (n=20)	Hysteroscopy Group (n=20)	P value
Age in years (Mean ±SD)	31.15±4.1	31.75±3.8	0.635
Duration of infertility in years (Mean ±SD)	5.65±3.0	6.15±2.9	0.598
Type of infertility	11 (55%)	11 (55%)	1.000
Primary	9 (45%)	9 (45%)	
Secondary			

Cause of infertility	3 (15%)	3 (15%)	1.000
Ovulatory Dysfunction	5 (25%)	6 (30%)	
Tubal factor	4 (20%)	3 (15%)	
Male factor	4 (20%)	4 (20%)	
Combined	4 (20%)	4 (20%)	
Unexplained			
AMH Level ng/ml (Mean ±SD)	3.3±1.3	2.9±1.2	0.280
No of embryos transferred			0.866
1	2 (10%)	2 (10%)	
2	12 (60%)	14 (70%)	
3	6 (30%)	4 (20%)	

Implantation occurred in 11 cases in Hysteroscopy group and 10 cases in endometrial scratching group. There was no significant difference.

Clinical pregnancy was achieved in 8 subjects in Hysteroscopy group (CPR = 40%) and 10 cases in endometrial scratching group (CPR = 35%). There was no significant difference in clinical pregnancy rate either.

Table 2: Outcomes in both study groups

Outcome	Endometrial Scratching group (n=20)	Hysteroscopy Group (n=20)	P value
Implantation			0.752
Yes	10 (50%)	9 (45%)	
No	10 (50%)	11 (55%)	
Clinical Pregnancy			0.744
Yes	7 (35%)	8 (40%)	
No	13 (65%)	12 (60%)	
No of gestational sacs			0.791
0	13 (65%)	12 (60%)	
1	5 (20%)	7 (35%)	
2	2 (10%)	1 (5%)	

DISCUSSION

The present study was a pilot study carried out in forty women who had undergone in vitro fertilization cycle. The aim of the study was to compare the effect of endometrial scratching versus hysteroscopy on pregnancy outcome in in-vitro fertilization.

Endometrial scratching is simple office procedure with minor intervention, easy to perform, require minimal instrumentation, and there is no or minimal post procedure complication noted after this.

On the other hand hysteroscopy either office or operation theatre procedure. In our setup we usually perform in operation theatre under anesthesia with informed consent. Advantages of hysteroscopy prior to IVF cycle are the ability to detect and concurrently treatment of intrauterine pathologies encountered during procedure. It has minimal intraoperative and post-operative morbidity.

Table 3: Studies on effect of endometrial scratching injury on IVF outcomes

Study	Location	No of subjects	Outcome
Singh 2015 (7)	New Delhi, India	Intervention: n = 30, Control: n = 30	Significantly higher implantation rate in intervention group
Tk 2017 (8)	Vellore, India	Intervention: n = 55, Control: n = 56	No improvement in IVF success rates
Maged 2017 (9)	Giza, Egypt	Intrvention: n = 150, Control:n = 150	Implantation rate and clinical pregnancy rate significantly higher in intervention group
Sarah Lensen 2018 (10)	Auckland, New Zealand	Intrvention: n = 690, Control:n = 674	There were no significant differences in outcomes

Table 4: Studies on effect of hysteroscopy on IVF outcomes

Study	Location	No of subjects	Outcome
Rama Raju et al. (2006) (11)	Visakhapatnam, India	Intervention: n = 255, Control: n = 265	Significantly higher clinical pregnancy in intervention group

El-Toukhy et al. (2014) (12)	UK, Italy, Belgium, Czech Republic	Intervention: n = 350, Control: n = 352	No significant improvement in outcome
Shawki et al. (2012) (13)	Egypt	Intervention: n = 120, Control: n = 120	Significant improvement in implantation and clinical pregnancy rate

The various studies have evaluated the outcome of these interventions with varying results.

The present study found no significant difference in outcome with either interventions.

Being a pilot study, this study has limitation like small sample size, lack of randomization and short follow up period.

CONCLUSION

There is paucity of data comparing outcomes of endometrial scratching vs hysteroscopy on IVF outcomes. Present pilot study did not detect any significant difference. We recommend randomized trials with larger sample size for more robust data.

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