

Role of Hysteroscopy Prior to Assisted Reproductive Techniques

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ABSTRACT

Background: There have been numerous advances in the area of assisted reproduction. Among the various reasons of implantation failure, intrauterine lesions play an important role. **Objective:** The aim of the present study is to evaluate the role of hysteroscopy prior to any assisted reproductive technique. **Materials and Methods:** It is a retrospective study of 292 women who attended our infertility clinic over a period of 18 months, who had a variable number of failed IVF cycles previously. **Results:** Out of the 292 women studied, in 74 women, that is 25%, intrauterine pathology was detected, which when rectified by hysteroscopy, gave a considerable increase in pregnancy rate. **Conclusion:** According to this study it can be concluded that evaluating the uterine cavity is an important step before any assisted reproductive procedures.

Key words: Assisted reproduction, hysteroscopy, infertility, intrauterine pathology

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INTRODUCTION

In the past few decades many artificial reproductive techniques have been invented raising the hopes of infertile couples. However, still many patients have remained without success even with these procedures. It has been known that the uterine factor plays about a 15 – 20% role in contributing to female infertility. Hence, ruling out any evidence of any intrauterine pathology by hysteroscopy becomes an important step before subjecting the patient to any of the assisted reproductive techniques (ART).

With the invention of miniature hysteroscopes, it is possible to perform hysteroscopy in an office setup, with or without local anesthesia, for diagnostic and certain therapeutic interventions.^[1]

In the present study, we have evaluated intrauterine pathologies with hysteroscopy and *in vitro* fertilization-embryo transfer (IVF-ET) outcome in patients with

unexplained previous IVF cycle failures, after excluding all other possible etiological factors.

Objective

The aim of the present study is to evaluate the importance of subjecting the patient to hysteroscopy prior to ART, to study the incidence of intrauterine pathology in the selected group and to study the success of IVF post hysteroscopic procedures in women with previous IVF failures.

MATERIALS AND METHODS

The study is a retrospective study of 292 women who attended our infertility clinic over a period of 18 months (January 2007 to June 2008).

The inclusion criteria for the study were the women who had one or more previous IVF cycle/cycles failure.

Technique

All women in whom hysteroscopy was done were informed about the technique and the potential risks in the form of a written consent. The selected women underwent the procedure of hysteroscopy under general anesthesia in the lithotomy position.

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A rigid hysteroscope was put into the uterine cavity under visual control after cervical dilatation of five to nine millimeters; normal saline was used as the distension medium, keeping the uterine pressure between 100 and 150 mm of mercury.

Intrauterine lesions, such as, synechiae, polyps, submucosal myomas, septae, and so on, were treated with scissors and resectoscope. Every hysteroscopy was followed by endometrial biopsy or curettage, and the material obtained was sent for histopathological examination.

Protocol of stimulation in subsequent IVF/ICSI attempts

Depending upon the diagnosis and the procedure done, the women were either stimulated immediately or after some period for IVF/ICSI cycle. The women were downregulated with oral contraceptive pills and Gonadotropin-releasing hormone (GnRH) analogues. Injection HMG (Human Menopausal Gonadotrophin) was started from the second day of menses and simultaneous follicular monitoring was done from the sixth day. Injection HCG (Human Chorionic Gonadotrophin) was given when a minimum of three leading follicles were 16–18 mm size. Thirty-six hours later oocyte retrieval was performed followed by IVF/ICSI, and then the embryo transfer.

RESULTS

Out of 292 patients, majority were in the age group of 31 to 35 years [Table 1]. Patients were categorised into four groups on basis of period of infertility, ranging from 2 years to more than 10 years [Table 2]. Maximum patients in our study had two previous IVF failures [Table 3]. Out of the 292 women undergoing hysteroscopy, 218 (75%) had normal findings and 74 (25.3%) had intrauterine pathology [Table 4, Figures 1 and 2]. The table also gives a review about the conception rate post procedure, which varied from 19 to 72%, depending upon the pathology in the study group.

DISCUSSION

Despite advances in the field of artificial reproductive

techniques over the past 20 years, implantation rates per embryo transferred still remain low, at about 15 to 20%.^[2] The two key factors in question for this problem are the quality of the embryo and the receptivity of the uterus. Although it is possible to assess the embryo quality by microscopy, uterine receptivity cannot be fully evaluated. Some uterine factors that can be measured by transvaginal sonography are endometrial thickness, pattern, and blood flow in the uterine and subendometrial arteries.^[3]

Structural abnormalities of the uterine endometrial cavity may affect the reproductive outcome adversely, by interfering with the implantation and causing spontaneous abortion. These abnormalities can have a negative effect on pregnancy in these women. The incidence of uterine abnormalities in patients undergoing hysteroscopy has been reported to be between 19 and 50%.^[4]

Different hypotheses have been suggested to define the mechanism of infertility due to intrauterine pathologies. Polyps may cause infertility by virtue of their location, thereby causing mechanical block (e.g., tubocornual polyp) by their association with endometriosis, or by expression of the enzyme aromatase. Myomas that protrude into the cavity may decrease vascular supply to the trophoblastic tissue when

Table 1: Age distribution of the patients

Age group (years)	No. of women studied
< 30	103
31 – 35	122
> 35	67

Table 2: Duration of infertility

Years	No. of women studied
2 – 4	68
5 – 7	136
8 – 10	46
> 10	42

Table 3: Number of previous IVF attempts

No. of previous attempts	No. of women studied
One	54
Two	142
> Two	96

Table 4: Hysteroscopic findings

Hysteroscopy finding	Procedure done	No. of cases	No. of pregnancies post procedure	% of conception after procedure
Normal	Diagnostic	218	46	21.2
Polyps	Polypectomy	11	08	72.7
Submucous fibroid	Myomectomy	25	16	64
Septa	Septum resection	09	04	44.4
Blocked ostia	Fallopian tube cannulation	06	02	33.3
Synechiae	Synechiolysis	15	03	19.9
Cervical stenosis	Dilatation	01	00	-
T-shaped uterus	Lateral metroplasty	07	03	42.8



Figure 1: Endometrial polyp

implantation takes place on the overlying endometrium. Most septa are relatively avascular and hence result in implantation failure when implantation takes place over them. Other pathologies like synechiae, endometritis, cervical stenosis, and chronic cervicitis can be causes of subfertility.

The place of routine hysteroscopy in the management of infertile women without other diagnosed or doubtful intrauterine pathologies is still a matter of debate.^[5] The two main problems that argue against the case of hysteroscopy are: first, it is an invasive procedure, and second, there is still an ongoing debate about the real significance of the observed intrauterine pathology on fertility.^[6] Currently, the European Society of Human Reproduction and Embryology (ESHRE) guidelines indicate hysteroscopy to be unnecessary, unless it is for the confirmation and treatment of doubtful intrauterine pathology.^[6] Nevertheless, in a study by Shoker *et al.*, it was suggested that 26% of the patients with normal hysterosalpingography were with abnormal hysteroscopic findings.^[7]

The impact of polyps on infertility is mainly dependent on their size and location. A prospective randomized study of the impact of polyps on an IVF program, by Lass *et al.*,^[8] concluded that small endometrial polyps (less than two centimeters) do not decrease the pregnancy rate after IVF, but a trend toward increased pregnancy loss exists.

The available data on the role of submucous myomas in infertility and the impact of hysteroscopic myomectomy on pregnancy outcome shows encouraging results. Authors have reported clinical pregnancy rates ranging from 31% to 77% post myomectomy.^[9] Women who had myomectomies for myomas more than two centimeters had significantly higher pregnancy and live birth rates than women in whom myomectomy was not done.^[9] Hysteroscopic resection



Figure 2: Uterine synechiae

is said to be the gold standard for the treatment of submucous or intracavitary myomas.^[10]

The role of hysteroscopic septum resection in patients with septate uterus has also been studied extensively.^[11] A meta analysis of retrospective data comparing pregnancy outcome before and after hysteroscopic septoplasty indicated a marked improvement after surgery, in increasing the pregnancy rate and decreasing the miscarriage rate.^[12]

Several studies have also been performed to find out if hysteroscopic treatment of intrauterine pathologies increases the success of IVF-ET. Kirsop *et al.*, suggested that intrauterine abnormalities may be a cause for failure of IVF-ET or Gamete Intrafallopian Transfer (GIFT) and therefore hysteroscopy should be part of the infertility workup for all patients, prior to undergoing IVF treatment.^[13]

Faghali *et al.*, have also recommended screening the uterus by hysteroscopy before proceeding with IVF, to minimize implantation failures.^[14]

The role of hysteroscopy in patients with previously failed IVF cycles has also been studied. A recent systematic review and meta analysis of two randomized and three non-randomized control trials on 1691 patients concluded that hysteroscopy before a subsequent IVF attempt significantly increases the odds for conception in patients with at least two failed IVF attempts.^[15]

CONCLUSION

The role of hysteroscopy in patients undergoing IVF seems to be vital for patients in whom an IVF is being

contemplated, for treatment of infertility. Intrauterine pathologies and structural uterine abnormalities that may be responsible for the failure of IVF can be detected and treated, resulting in improved pregnancy rates. This would also save the patient additional costs of IVF cycles, where failures occur because the intrauterine pathology is missed on other screening investigations like hysterosalpingography. This is especially true in women with one or more prior failed IVF cycles.

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