

Pregnancy outcome after hysteroscopy in women with unexplained infertility

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Abstract

The aim of this study was to review diagnostic and operative hysteroscopy findings and treatment in women with unexplained infertility to evaluate whether hysteroscopy should be recommended to these patients who had the diagnosis of missed uterine abnormalities and to evaluate the impact of this proposed procedure on subsequent pregnancy outcome for those women. Two hundred infertile women,

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previously diagnosed as unexplained infertility, were chosen randomly for the study over three years collected from private clinic as out patients

The participants were randomized using computer software into two groups: A. study group including 100 infertile women who were shortlisted for the studied hysteroscopic procedure and B. control group including 100 women with unexplained infertility that was followed up without the proposed hysteroscopy intervention. All hysteroscopy were performed using a diagnostic and operative indication. The findings, complications, were recorded.

The results showed that 70 % of patients had a normal uterine cavity. Twenty women had endometrial polyps. Other pathology included submucous myoma in 3 cases (3 %), 3 cases had intrauterine adhesions and 3 cases had polypoid endometrium and one case had bicornuate uterus .The pathological finding were treated in all patients without complications. A year follow up of the total developing cumulative pregnancy rate (CPR) was evaluated in group A and B (control)

Group A revealed the total CPR of 28.5 % among which 25 % in women without pathology, 40% in women with endometrial polyps, 23 % in women with adhesions, 33 % in women with polypoid endometrium and 21% in those with bicornuate uterus. A year follow up of spontaneous pregnancy outcome in group B showed a total CPR of 15 %.

Women safety and feasibility of simultaneous operative correction make the proposed hysteroscopy ideal and routine procedure in order to diagnose and treat missed intrauterine abnormalities especially in cases of unexplained infertility with additional improvement of the pregnancy outcome following the hysteroscopic procedure.

Keyword: *unexplained infertility, hysteroscopy, pregnancy outcome, spontaneous pregnancy, normal uterus, HSG*

Introduction

Hysteroscopy is still considered the gold standard procedure for uterine cavity exploration. Hysteroscopy is only recommended by the World Health Organization (WHO) when clinical or complementary exams [ultrasound or hysterosalpingogram (HSG)] suggest intrauterine abnormality or after in vitro fertilization (IVF). However, many gynecologists feel that hysteroscopy is a more accurate tool because of the high false-positive and false-negative rates of intrauterine abnormality with HSG. Therefore, many specialists have used hysteroscopy as their first-line of routine exam for infertility patients regardless of guidelines (1-5).

Recently, Hystero-Salpingo-Contrast-Sonography (HyCoSy), saline infusion sonography (SIS) and gel infusion sonography (GIS) are inexpensive and non-invasive techniques, while they have been shown to be excellent diagnostic tools to detect subtle intrauterine abnormalities, but they are still so many missed diagnoses. hysteroscopy has been increasingly recommended as a routine procedure in the infertility workup. Moreover, it offers direct visualization and enables specialists to diagnose and to treat intrauterine pathology (6-11).

The objective of this study was to review diagnostic and operative hysteroscopic findings and treatment in women with unexplained infertility to evaluate whether hysteroscopy should be recommended to these patients who had the diagnosis of missed uterine abnormalities and to evaluate the impact of this proposed procedure on subsequent pregnancy outcome for those women.

Materials and Methods

Two hundred infertile women, previously diagnosed as unexplained infertility, were recruited for the study over three years collected from private clinic as out patients. The participants were randomized using computer software into two groups: A. study group including 100 infertile women who were shortlisted for the studied hysteroscopic procedure and B. control group including 100 women with unexplained infertility that was followed up without the proposed hysteroscopic intervention. .

Table 1: Demographic characters of the women included in the study

Parameter	cases (n=100)	Control(n=100)
Age (Y)	25± 5	26± 3
Menarche age (y)	12.5± 2.5	11.1 ± 3
Regular cycles	89 ± 4	90 ± 3
weight (kg)	60 ± 5	57 ± 4
Height (m)	1.57± 2.3	1.61± 1.6
BMI (kg/m)	24 ± 3.6	23 ± 1.7
Type of infertility		
Primary	70	75
Secondary	30	25
Duration of infertility	2± 2.1	2.1 ± 1.3
Previous ART:		
IUI	40 cycles	38 cycles
ICSI	12 cycles	11 cycles

BMI; Body mass index, ART; Assisted reproductive techniques ,IUI; Intra uterine insemination and ICSI; Intra cytoplasmic sperm injection

Operative procedures including hysteroscopic resection of endometrial polyps and submucous myomas, excision of intrauterine septum and postoperative management plan for bicornuate uterus were performed. Diagnostic findings, operative outcomes, complications, during the procedure were noted.

All women were discharged after the procedure,

For a 12-month follow-up period, pregnancy outcome were evaluated after the hysteroscopic procedure in A and B groups, for spontaneous pregnancy without any intervention, while each pregnancy developed after the hysteroscopic procedure was correlated to each uterine abnormality diagnosed and treated during the hysteroscopic procedure. Early pregnancy complications were evaluated for both groups, and some of the successful ongoing pregnancies were recorded as well.

Table 2: hysteroscopic findings of 100 women with unexplained infertility and the reproductive outcomes after the procedure in group A compared to the related values in group B

Finding	Cases N (%)	CPR N (%)	OPR N (%)
Normal finding	70 (70%)	35 (25%)	28 (20%)
Endometrial polyps	20 (20%)	16 (40%)	12 (30%)
Submucous fibroids	3 (3%)	2 (34%)	1(23%)
intrauterine adhesions	3 (3%)	1 (23%)	1 (22%)
Polyploid endometrium	3 (3%)	2 (33%)	1 (23%)
bicornuate uterus	1(1%)	1 (21%)	0 (0%)
Total number in group A	100	57 28.5%)	43 (21%)
Total number in group B	100	15 (15%)	10(10%)

CPR; Cumulative pregnancy rate and OPR; Ongoing pregnancy rate.

Statistical analysis

Chi-square test and students't test were used to analyze different sub-groups. Univariate and multivariate logistic regression were applied in order to identify factors that could predict the presence of unsuspected uterine cavity abnormalities. A $P < 0.05$ was considered statistically significant. All statistical analyses were performed in SPSS version 15.1 (SPSS Inc., IL, and USA).

Results

[Table 1](#), shows the different demographic characteristics of the women included, indicating there are no significant differences between the case and control subjects. [Table 2](#), lists the findings, both normal and pathologic cases, of the 100 hysteroscopies performed. All procedures were performed without complications. Treatment of adhesions and removal of polyps and submucousmyomas were undertaken and completed in all patients. Division of septi was performed in patients with a known single fundus confirmed by laparoscopy at a prior time.

Abnormalities included the followings: Atypical polypoid adenomyoma of endometrium in 3 cases (3%),. Intrauterin adhesion (IUA) synechiae in 3 cases (3% of all hysteroscopies), .A case with uterus bicornis (1% of all hysteroscopies), Submucousmyoma in 3 cases (3% of all hysteroscopies), Endometrial polyps in 20 cases (20% of all hysteroscopies) .

Also shows the cumulative pregnancy rate during the postoperative one-year follow-up, following the hysteroscopic procedure, appears to be 25% in women without pathology (spontaneous pregnancies without interventions), 40% for endometrial polyps, 35% for adhesions, 33% for polypoid endometrium, and 22% for bicornuate uterus. The average total

ongoing pregnancy rate is 25% after hysteroscopic procedure in group A versus 15% in group B. In group A, the best pregnancy rate belonged to after treated endometrial polyps and worst rate belong to the abnormal uterine configuration in uterus bicornis (0%). The total miscarriage rate is not significantly different in developing pregnancies after the different corrected abnormalities, managed after the hysteroscopic procedure.

Discussion

The basic infertility work-up has included a HSG to evaluate the uterine cavity and tubal patency. However, HSG does not allow for simultaneous correction of uterine pathology. Moreover HSG may miss 35% of uterine abnormalities. The high false-negative rate, the low-positive predictive value, and the inability to treat abnormal findings concurrently with the diagnosis have limited the use of HSG to assess the endometrial cavity ([12-13](#)).

Sonohysterography (SHG) has been proposed as a better diagnostic test of the uterine cavity. However, it also suffers from a sensitivity and specificity inferior to that of hysteroscopy in most studies. Additionally, it does not allow for correction of presumed pathology. Perhaps because hysteroscopy has traditionally required general anesthesia in an operating room setting, physicians do not consider hysteroscopy as a first-line test. Additionally, distention media are typically composed of low osmolality and electrolyte-free for operative work, and thus require careful surveillance of fluid status to minimize complications of hyponatremia and fluid overload. These requirements have made many practitioners reluctant to perform operative hysteroscopy .

It has been reported that up to 20-50% of infertile patients have uterine abnormalities (30% in this study), including myomas, polyps,

intrauterine adhesions, and uterine malformations. This is in agreement with our study that found 30% of patients undergoing hysteroscopy had uterine pathology. The high incidence of endometrial polyps in some patients may be related to prior therapy with gonadotropins due to higher levels of estrogen. Because pathology is present in 20 to 50% of infertile patients, as mentioned previously, practitioners should be more inclined to recommend hysteroscopy as part of the infertility work-up in conjunction with the routine laparoscopy and dye test, due to its simultaneous operative management .

An increase in pregnancy rates after performing hysteroscopic procedure might be attributed to the removal of endometrial polyps, polypoid endometrium, submucous myomas, or intrauterine synechiae at the time of hysteroscopy that resulted in improving implantation in this population at risk. However, those pregnancies developed after hysteroscopic confirmation of absence of any intrauterine pathology,. The explanation of the highest pregnancy rate after excisions of polyps and myomas is logic, but the least pregnancy rate that was observed with uterus bicornis or acutely arcuate uterus might be due to the abnormal uterine cavity configuration. Suspected associated non-mechanical factors with diagnosed adenomyosis may explain the relatively lower pregnancy outcome developed after the procedure.

The higher ongoing pregnancy rate after the managed polyps, polypoid endometrium, submucous myoma, and those after exclusion of any pathology might confirm the causality of those abnormalities as the main etiology for embryo implantation, either mechanically or biochemically. however, after confirmation of the integrity of the endometrium and uterine wall, it is suggested to keep pregnancy safe beyond 20 weeks gestation. Regardless of whether these adjunctive

benefits are confirmed by further study, operative microhysteroscopy is definitely hold a great value as the gold standard of diagnostic procedures for uterine cavity abnormalities with the ease, safety, and efficiency of simultaneous therapeutic correction of abnormalities.

The spontaneous pregnancy outcome during the follow-up of group B was within the reported incidence before, although it was significantly lower than those following the hysteroscopic procedure in group A. Taking into account, using any of the assisted reproductive techniques (ART) might increase this lower pregnancy outcome, but both groups were followed up without using any of those techniques, as that might interfere with the final pregnancy outcome. Still this spontaneous pregnancy outcome in group B was developed with no surgical intervention.

So our findings showed that in infertile population where hysteroscopy is performed routinely prior to the confirmation of unexplained cases of delayed conception, a significant percentage of patients are found to have uterine pathology, which had been missed to be diagnosed by the routine fertility work-up performed before. Endometrial polyps were found most frequently, with smaller numbers of myomas, adhesions, and septi. These abnormalities may impair the success of future treatment cycles, so removal of the pathology was advised. Patient tolerance and the feasibility of operative management, simultaneous with diagnosis, would make the proposed operative hysteroscopy in conjunction with/or after the routine laparoscopy as an ideal first-line procedure with minimal risk to the patient.

Conclusion

Scheduling the hysteroscopy as one of the routine steps in the fertility work-up program has become mandatory before the final diagnosis of unexplained infertility. This technique is considered not only an ideal gold test to diagnose many intrauterine abnormalities that are undiagnosed with other routine tools, but also the significant improvement in the pregnancy outcome following the hysteroscopic procedure, supports the previously mentioned recommendation. In addition, it is recommended to conduct future research works to support this recommendation.,

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