
Role of Routine Hysteroscopy in Management of Women with Unexplained Infertility

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Abstract

Background: The gold standard for diagnosing intrauterine anomalies is now hysteroscopy. 10–15% of women undergoing subfertility treatment have intrauterine lesions such adhesions, uterine septum polyps, or submucous myomas, which are significantly more accurately detected via hysteroscopy.

Objectives: Assessment of the value of hysteroscopy in cases with unexplained infertility.

Methodology: This study was conducted in early cancer detection unit, Ain Shams Maternity University Hospital where 75 women with unexplained infertility from 21-35 years were included in the study from Jan 2018 to Feb 2021. All women were subjected to hysteroscopy to diagnose and treat any uterine lesions undetected by the conventional means. Hysteroscopic examination was performed in the proliferative phase of the menstrual cycle.

Results: There was no difference between cases with and without hysteroscopic finding as regard personal and medical characteristics. There was no significant difference between cases with and without hysteroscopic finding as regard occurrence of complications. However, a highly significant difference was found between cases with and without hysteroscopic finding as regard occurrence of pregnancy, as 56% of cases with positive findings got pregnant compared to 2% only of cases without hysteroscopic finding.

Conclusion: So, hysteroscopy (diagnostic, therapeutic) should be performed in women with unexplained infertility.

Keywords: Hysteroscopy; Unexplained infertility

INTRODUCTION

There is a wide range of proposed definitions in the literature. The term "infertility" was initially defined by Duffy et al. as the inability to conceive following three years of unprotected sexual activity in the face of standard baseline investigations [1].

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When an infertility evaluation is unable to identify abnormalities, the diagnosis of unexplained infertility is one of exclusion. Regarding which tests should be run prior to reaching this diagnosis, there is no agreement. Standard diagnostic tests for the assessment of infertility have been recommended by the European Society for Human and Embryology (ESHRE). Semen analysis, hysterosalpingography (HSG) or laparoscopy-demonstrated tubal patency, and laboratory evaluation of ovulation are among these techniques [2].

Furthermore, some authors have stated that a post-coital test is a necessary prerequisite for the diagnosis of unexplained infertility, while other authors have concluded that it is not. Nevertheless, managing women with unexplained infertility, particularly in older couples, may benefit from further investigation and treatment of any abnormalities found. Transvaginal sonography (TVS) with or without the addition of saline or gel as a contrast medium is the fundamental work-up for uterine cavity evaluation. This may be followed by either HSG or hysteroscopy to directly assess the uterine cavity [3].

Treatment of minor uterine pathologies in the same setting is made possible by hysteroscopy. It is commonly referred to as the "golden standard" as a result. Although it is debatable whether these subtle lesions are the cause of infertility, many studies have concluded that whenever laparoscopy is performed, it should be combined with hysteroscopy to complete the assessment before beginning the infertility treatment [4].

Hysteroscopic assessment and treatment of any abnormalities detected has improved the clinical pregnancy rate, live birth, and considered cost effective before IVF cycles [5].

Hysteroscopy is used in the examination of infertility to identify potential intrauterine changes that may obstruct the conceptus's growth or implantation, or both, and to assess the efficacy of direct treatment techniques

in reestablishing a normal endometrial environment [6].

Hysteroscopy should be a part of every patient's infertility workup before receiving IVF treatment, according to several studies that have also shown that hysteroscopic treatment of intrauterine pathologies lowers the failure rate of VFET. These studies also suggest screening the uterus with a hysteroscopy before pursuing IVF/CS in order to reduce implantation failure [7].

Patients and methods

This prospective study was conducted on 75 patients with unexplained infertility admitted to Ain Shams University Maternity Hospital. This study was done from January 2018 to February 2021 after the permission of the hospital ethical committee and informed consent was obtained from all patients before participation.

Inclusion criteria included all women aged (20-35) years old with unexplained infertility. Exclusion criteria included presence of male factor of infertility, active pelvic infection, known uterine or tubal factor for infertility.

After counseling and explanation of all aspects of the procedure to the participants, a written consent was taken prior to the participation.

Methods

This prospective study was carried out on 75 women who met the pre-established requirements. All women were subjected to full history taking including personal history including age, Duration of marriage, address, occupation, special habits, past history including medical, surgical, blood transfusion, allergy, family history including chronic disease as diabetes mellitus or hypertension, gynecological history including galactorrhea, hirsutism, excess acne, history of previous conditions suggestive of tubal factor infertility e.g., previous salpingitis, previous appendicitis, also ovulatory disorders, breast masses, vaginal infections

or vulvitis and pelvic masses, menstrual history including age of menarche, duration and number of menses, inter menstrual signs of ovulation as ovulatory pain, ovulatory spotting and primary spasmodic dysmenorrhea, obstetric history including (in cases of 2ry infertility) previous pregnancies outcome, mode of termination, postpartum complications, previous abortions; (timing-cause), previous evacuation and curettage and pregnancy intervals, sexual history including frequency of sexual intercourse and dyspareunia, husband history including age, occupation, history of testicular trauma, history of any previous marriage and the existence of offspring in other female partner and medical disorders like diabetes mellitus, hypertension, chronic liver disease or drug intake as anti-psychotic drugs and surgical history as operations done at groin region.

In addition to a laboratory investigation that included semen analysis and a hormonal assay specific to the case (such as FSH-LH-serum prolactin level-thyroid function tests), a general, abdominal, and local examination was conducted. Additionally, an HSG and a pelvic U/S examination were carried out.

In order to identify and treat any mild uterine lesions that were missed by traditional methods, hysteroscopy was performed on each woman. Small uterine flaws that may not be easily recognized by HSG or U/S are referred to as subtle uterine abnormalities.

Hysteroscopic examination was performed in the proliferation phase of the menstrual cycle by 5mm rigid sheath hysteroscope (Karl Storz Endoscopy) without anesthesia (continuous flow, 30 degree forward oblique view)

Illumination: High intensity cold light source and fiberoptic cable D stent on medium: solution of 0.9% normal saline with pressure at 100-120 mmHg.

All procedures were performed with a vaginoscopic approach without utilizing a speculum and applying tract on to the cervix with a tenaculum.

During hysteroscopy, the routine evaluation included assessment of cervical canal, intrauterine lesions, the endometrium, and the uterotubal junction.

When hysteroscopy revealed a lesion, its type, site, size, location was determined. Also, any morbidity was recorded including failure of procedure.

Any detected uterine abnormality was treated under general anesthesia using operative hysteroscopy. Biopsy was taken when there was any doubt about the pathology of these lesions.

Every finding and outcome, including any intraoperative or postoperative problems like bleeding, infection, or even uterine perforation, was documented.

Every woman underwent a 6-month follow-up period in order to determine whether clinical pregnancy was detected through ultrasound (6 weeks) and to identify any issues related to hysteroscopic interference or lesion recurrence.

Ethical considerations:

The investigator kept a list of sub-investigators and other suitably competent individuals to whom substantial trial-related activities were assigned, and made sure that everyone helping with the trial was properly informed about the protocol and the trial-related duties were explained.

Patient information and informed consent:

Before being admitted to the clinical trial the patients had informed about the nature, scope, and possible consequences of the clinical trial in a form understandable to her.

Confidentiality:

In the case report form, the patients' numbers and initials were the only information entered. The investigators maintained patient privacy whenever the patient's name appeared on any other document (such as a pathology report or reservation note). In order to identify

records and facilitate communication with patients, the investigator initially retained the patients' identifying information, including their numbers, names, and contact details.

Protocol approval:

Before beginning of the trial and in accordance with the local regulations followed, the protocol and all related documents were declared for ethical and research approval by the Council of Obstetrics and Gynecology Department, Ain Shams university.

Statistical analysis:

Using the Statistical Package for Social Science ((BM Corp. Released 2011), the gathered data was updated, coded, tabulated, and brought onto a PC. Armonk, NY: BM Corp., BM SPSS Statistics for Windows, Version 20.0. Data were shown, and appropriate analysis was carried out based on the kind of data found for each parameter.

Results

The study was carried out on 75 patients with unexplained infertility between January 2018 till February 2021. The age ranged from 20 to 35 years with a mean of 28 years (Table I).

There was no significant difference between cases with and without hysteroscopic finding as regard personal and medical characteristics (Table II).

There was no significant difference between cases with and without hysteroscopic finding as regard occurrence of complication in the form of infection the 1st case was vaginitis (vaginal discharge and itching) and the 2nd case was presented by dysuria (UTI). The two cases presented by these manifestations within the 2 weeks after hysteroscopy. Clinical evaluation was done and the 1st case was treated by metronidazole and the 2nd case was treated by 3rd generation cephalosporins. And however, a highly significant difference was found between cases with and without hysteroscopic finding as regard occurrence

of pregnancy, as 56 of cases with Positive findings got pregnant compared to 12 only of cases without hysteroscopic finding (Table III).

There was no significant difference between cases with different types of hysteroscopic finding as regard personal and medical characteristics (Table IV).

There was no significant difference between cases with different types of hysteroscopic finding as regard rate of complication or pregnancy (Table V).

Discussion

Because these women have a higher incidence of hysteroscopic pathological findings, published studies assessing the impact of hysteroscopy on reproductive outcome in IVF patients have suggested that hysteroscopy should be performed as a routine infertility examination in all cases. However, this trial found no evidence that hysteroscopy performed prior to IVF-embryo transfer improved pregnancy outcomes [8].

In a prospectively enrolled IVF group, Knylnin et al. reported on a total of 2500 consecutive office-based diagnostic hysteroscopies conducted before treatment. In 22.9% of cases, endometrial pathology on hysteroscopy was found, which may have compromised the success of IVF [9].

Knylnin et al. attempted to determine the effect of scheduling office hysteroscopy prior to embryo transfer on pregnancy rate by enrolling 1258 individuals attending an IVF clinic within normal hysteroscopic findings. Significant rates of implantation, pregnancy, and clinical pregnancy were observed [10].

Numerous recent studies have demonstrated that utilizing assisted reproductive techniques prior to treating patients with infertility that cannot be explained by other means significantly increases the likelihood of becoming pregnant [11].

Three theories serve as the foundation for

the use of endometrial scraping in infertile women. The first, based on research on animals, is that endometrial damage could encourage endometrial decidualization, which would increase the endometrium's receptivity to the embryo [12].

Diagnostic office hysteroscopy revealed that in 33.3% of cases with infertility that could not be explained, abnormal uterine findings were found, while the uterine cavity was normal in 66.7% of cases. Intrauterine adhesions accounted for 17.3% of all hysteroscopic findings, followed by endometrial polyps (9.3%), small submucous myomas (4%), and endocervical polyps (2.7%).

Our findings corroborated those of Elbareg et al., who examined infertile women in whom routine infertility examinations found no anomalies; their findings showed that 33% of patients had aberrant uterine findings, the majority of which were minor adhesions, tiny submucous myomas, and polyps [13].

Transvaginal sonography (TVS) and hysterosalpingography (HSG) were used by Bakas et al. to evaluate infertile women first. If no aberrant intrauterine findings were seen, a diagnostic hysteroscopy was also carried out. Hysteroscopy results were normal in 68.2% of cases, while intrauterine lesions (polyps, septa, submucosal leiomyomas, or synechiae) were found in 31.8% of cases [14].

According to the results of studies published by Sahu et al and El-Sheikh et al [15, 16], there was no statistically significant difference between cases with and without hysteroscopic findings in the current study with regard to personal and medical characteristics, such as age P value = 0.122, duration of infertility P value = 0.54, and type of infertility P value = 0.72.

Additionally, the current study showed that there was no significant difference in the occurrence of a complication (P value = 0.1) between cases with and without hysteroscopic findings, which was in line with study [17].

However, research by Shokeir et al. concluded that local endometrial injury for the natural cycle concept in women with Us was not justified and that there were no statistically significant differences in cumulative pregnancy rates between women with and without local endometrial injury (16.7% and 11.7%, respectively; OR, 2.83; 95%CI: 1.07-7.48; P = 0.4) [18].

The following is a definition of intrauterine adhesion severity: Moderate: 25-75% of the uterine cavity has adhesions that partially obstruct the ostium and upper fundus; severe: more than 75% of the cavity has thick bands or wall agglutination. Mild: Less than 25% of the cavity has thin or filmy adhesions [19].

Conclusion

Finally, the present study concluded that as a cause of unexplained infertility, subtle uterine abnormalities is diagnosed during hysteroscopy; the r correct on seems to be necessary to get pregnant.

Conflict of interest

None

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Table I: Description of personal and medical characteristics of study participants

		Mean	±SD	No.	%	Mini.	Maxi.
Age		27.95	3.74			20.00	35.00
Duration of infertility		4.06	2.01			2.00	9.00
Age group	20-24			13	17.3		
	25-29			39	52.0		
	30-35			23	30.7		
Parity	P0			50	66.7		
	P1			13	17.3		
	P2			10	13.3		
	P3			2	2.7		
Abortion	No			72	96.0		
	Yes			3	4.0		
Type of infertility	Primary			50	66.7		
	Secondary			25	33.3		
Procedure	Diagnostic hysteroscopy			50	66.7		
	Diagnostic & therapeutic hysteroscopy			25	33.3		
Hysteroscopy Findings	Negative			50	66.7		
	Positive			25	33.3		
Hysteroscopic Findings	None			50	66.7		
	intra uterine adhesion			13	17.3		
	Endometrial polyp			7	9.3		
	Small submucous myoma			3	4.0		
	Endocervical polyp			2	2.7		
Type of Finding (n=25)	intra uterine adhesion			13	52.0		
	Endometrial polyp			7	28.0		
	Small submucous myoma			3	12.0		
	Endocervical polyp			2	8.0		
Complications	No			73	97.3		
	Yes			2	2.7		
Pregnancy	No			55	73.3		
	Yes			20	26.7		

Table II: Comparisons between cases with and without hysteroscopic finding as regard personal and medical characteristics

		Hysteroscopic Finding								P	Sig.
		Negative (n=50)				Positive (n=25)					
		Mean	±SD	No.	%	Mean	±SD	No.	%		
Age		28.42	3.60			27.00	3.89			0.122§	NS
Duration of infertility		3.96	1.92			4.26	2.20			0.545§	NS
Age group	20-24			6	12.0			7	28.0	0.21*	NS
	25-29			27	54.0			12	48.0		
	30-35			17	34.0			6	24.0		
Parity	P0			37	68.0			16	64.0	0.507**	NS
	PI			7	14.0			6	24.0		
	P2-3			9	18.0			3	12.0		
Abortion	No			47	94.0			25	100.0	0.546**	NS
	Yes			3	6.0			0	0.0		
Type of infertility	Primary			34	68.0			16	64.0	0.729*	NS
	Secondary			16	32.0			9	36.0		

§JANOVA test *Ch -Square test **Fisher exact test

Table III: Comparison between cases with and without hysteroscopic finding as regard procedure outcome (complication)

		Hysteroscopic Finding				P	Sig.
		Negative (n=50)		Positive (n=25)			
		No.	%	No.	%		
Complications	No	50	100.0	23	92.0%	0.108*	NS
	Yes	0	0.0	2	8.0%		
Pregnancy	No	44	88.0	11	44.0%	0.001**	HS
	Yes	6	12.0	14	56.0%		

*Fisher exact test

**Ch -Square test

Table IV: Relation between type of hysteroscopic Finding and personal and medical characteristics

	Type of Finding														P	Sg
	U adhesion (n=13)			Endometrial p. (N=7)			Submucousmyoma (N=3)			Endocervical p. <N=2)			P	Sg		
	Mean	±SD	No.	Mean	±SD	No.	Mean	±SD	No.	Mean	±SD	No.				
Age	27.38	3.01		25.29	4.72		31.00	3.61		24.50	3.54		0.13*	NS		
Duration of infertility	4.35	1.84		3.43	2.15		6.67	3.21		3.00	1.41		0.15*	NS		
Age group																
20-24			3			3			0			1	50.0			
25-29			8			2			1			1	50.0	NS		
30-35			2			2			2			0	0.0			
Party																
P0			7			6			1			2	100.0			
PI			5			0			1			0	0.0	NS		
P2-3			1			1			1			0	0.0			
Type of infertility																
Primary			7			6			1			2	100.0			
Secondary			6			1			2			0	0.0	0.273**		

§JANOVA test *Ch -Square test **Fisher exact test

Table V: Relation between type of hysteroscopic finding and procedure outcome (complication and pregnancy)

	Type of findings										P	Sig.			
	U adhesion (n=13)			Endometrial P. (N=7)			Submucousmyoma (N=3)			Endocervical			P	Sig.	
	No	Yes		No	Yes		No	Yes		No					Yes
Complications	No	11	84.6	7	100.0	3	100.0	2	100.0						
	Yes	2	15.4	0	0.0	0	0.0	0	0.0			0.69**	NS		
Complications	No	5	38.5	4	57.1	2	66.7	0	0.0						
	Yes	8	61.5	3	42.9	1	33.3	2	100.0			0.54**	NS		