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Value of hysteroscopy in management of unexplained infertility

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ABSTRACT

Objective: To assess the value of hysteroscopy in unexplained infertility. **Methods:** 200 infertile women in whom standard infertility investigations revealed no abnormalities were included in the study between January 2009 and December 2013. All women underwent hysteroscopy for diagnosis and treatment of any uterine lesion which was previously undetected by hysterosalpingography (HSG). Treated women were followed up for one year during which pregnancy rate was determined. As all other causes that contribute to infertility (other than the subtle uterine lesions) were excluded. No other infertility treatment was performed during this period. **Results:** Of the 200 women studied, hysteroscopy revealed abnormalities in 65 (33%) women. Most uterine abnormalities were mild adhesions, small submucous myomas and polyps and their incidence was greater in women aged ≥ 30 years and women with secondary infertility. The overall pregnancy rate in the treated women within one year of follow up was 46%. **Conclusion:** As a cause of unexplained infertility, subtle uterine abnormalities are diagnosed only during hysteroscopy and they are relatively common in infertility women. Although the presence of these abnormalities is not detected by the basic investigations for infertility, their correction seems to be necessary when infertility is desired and other infertility causes are excluded.

1. Introduction

The diagnosis of unexplained infertility is one of exclusion and is made only after an infertility evaluation has failed to reveal abnormalities. There is no consensus on which tests should be performed before making this diagnosis. The European Society for Human Reproduction and Embryology (ESHRE) suggested standard diagnostic tests for infertility evaluation. These tests include semen analysis, demonstration of tubal patency by hysterosalpingography (HSG) or laparoscopy and laboratory assessment of ovulation[1]. Moreover post-coital test has been included by some authors as a fundamental requirement before the diagnosis of unexplained infertility[2] while other authors found it unnecessary[3]. However, conducting additional investigation and treating any abnormalities detected

may be effective in establishing or hastening pregnancy in women with unexplained infertility especially in older couples[4].

For evaluation of the uterine cavity, the basic work-up consists of transvaginal sonography (TVS) with or without the use of saline or gel as contrast media, possibly followed by either HSG or hysteroscopy to directly assess the uterine cavity. Both TVS, as well as saline infusion sonography (SIS) and gel instillation sonography (GIS) are inexpensive, non-invasive and have been shown to be excellent diagnostic tools to detect subtle intrauterine abnormalities[5]. However, hysteroscopy allows direct visualization of the endometrial lining and detects multiple lesions and subtle uterine abnormalities that cannot be identified by the previous techniques. Moreover, hysteroscopy enables treatment of small uterine pathology in the same setting. Therefore, it is frequently referred to as the golden standard[6–8]. Many studies have concluded that whenever laparoscopy is performed, it should be combined with hysteroscopy in order to complete the assessment before starting the

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infertility treatment[9,10].

In the assisted reproductive technique (ART) setting, a number of studies was conducted on women before in vitro fertilization (IVF) cycle revealed that the prevalence of unsuspected intrauterine abnormalities, diagnosed by hysteroscopy prior to IVF cycles was 11%–45%[11,12]. Although the role of these subtle lesions as a cause of infertility is debatable, hysteroscopic assessment and treatment of any abnormalities detected has improved the clinical pregnancy rate, live birth rate, and cost-effective before IVF cycles[4,13,14].

This study aimed to assess the value of hysteroscopy in evaluating a women with unexplained infertility in whom standard infertility investigation have failed to reveal any abnormalities. Also to assess the effect of treating subtle uterine abnormalities on pregnancy rate.

2. Materials and methods

The study was carried out at Fertility Care Unit and OB&GYN Departments/Misurata Central Hospital, Iben-Sina Teaching Hospital, Sirt and Gyn Department/Misurata Cancer Centre during the period from January 2009 through December 2013. The study comprised 200 infertility women in whom no abnormalities were detected by the standard infertility investigation; namely semen analysis, serum mid-luteal phase progesterone, HSG, Postcoital test and laparoscopy. All women were subjected to hysteroscopy to diagnose and treat any subtle uterine lesion undetected by the conventional means. As reported by Fayed *et al*[15], subtle uterine abnormalities mean small uterine defects that might not be readily diagnosed by HSG.

Hysteroscopic examination was performed in the proliferation phase of the menstrual cycle using a 30 °C oblique hysteroscope (Karl Storz, Germany). 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, size, location were determined. Any detected uterine abnormality was treated under general anesthesia using operative hysteroscopy and Glycine 1.5% for uterine distension. Biopsy was taken when there is any doubt about the pathology of these lesions.

All findings and results were recorded. Variables were compared using χ^2 test. A value of > 0.05 is considered insignificant. Women who had subtle lesions that had been treated were followed up for one year to detect the occurrence of pregnancy. In these women, no other cause for infertility was found, thus no treatment other than for the subtle intrauterine lesions, was performed during this period.

3. Results

A total of 200 infertile women in whom standard infertility investigations revealed no abnormalities were recruited in the study; the mean age was (28.2 ± 2.2) years (range 20–35), the duration of infertility was more than 3 years in all patients. Primary infertility was reported in 130 (65%) women and secondary infertility was reported in 70 (35%) women.

Uterine abnormalities (Figure 1) were found at hysteroscopy in 65 women (33%) and the remaining 135 were normal. The type of uterine abnormalities seen during hysteroscopy was shown in Table 1. The most common abnormality was mild endometrial adhesion (28/65, 14%) followed by small endometrial polyps (20/65, 10%). Abnormal hysteroscopic findings according to the age of women and the type of infertility respectively were also presented in Table 1.

No complications were noted with any of the operative procedures performed. Hysteroscopy misdiagnosed 2 cases of normal endometrium as endometritis when hysteroscopic and histological findings were compared in 25 patients. Patients with chronic non-specific endometritis were given Doxycycline 100 mg twice daily for 10 days.

Table 1

Hysteroscopic findings in the study sample (n=200).

Abnormalities	Number n(%)	Age			Type of infertility		Pregnancy rate(%)
		20–24 (n=38)	25–29 (n=104)	30–35 (n=58)	Primary infertility (n=130)	Secondary infertility (n=70)	
Mild intrauterine adhesion	28(14)	2	16	10	11	17	42.9(12/28)
Small endometrial polyps	20(10)	3	11	6	14	5	40.0(8/20)
Small submucous myomas	8(4)	1	4	3	5	4	62.5(5/8)
Cornual polyps	2(1)	0	1	1	1	1	50.0(1/2)
Chronic non-specific endometritis	2(1)	1	0	1	1	1	50.0(1/2)
Endocervical lesions (polyps–adhesions)	5(3)	1	2	2	2	3	60.0(3/5)
Total	65(100)	8(21.3)	34(32.7)	23(40.0)	34(26.2)	31(44.3)	46.2(30/65)

Pregnancy rate:No. of patients who got pregnant/No. of patients treated.

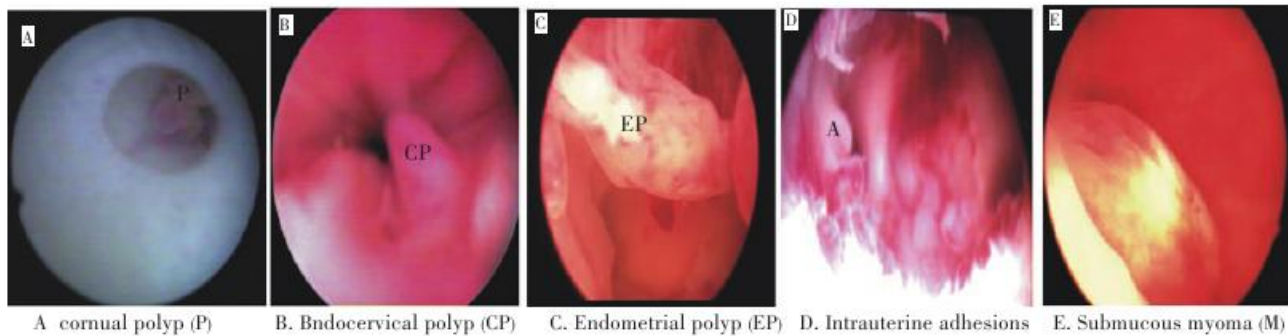


Figure 1. Uterine abnormalities found at hysteroscopy.

All treated women were followed up for one year during which no other infertility therapy was performed. The overall pregnancy rate recorded during this period was 46%. Pregnancy rate was shown in Table 1 among different pathological conditions detected during hysteroscopy.

4. Discussion

The incidence of unexplained infertility has decreased as diagnostic techniques have improved and investigations became more intensive. In 1950s, the incidence of unexplained infertility was more than 20%, whereas review of the literature since 1980s reported to be 10%–15%[16].

Evaluation of the uterine cavity is a basic step in the investigation of infertile women[17, 18]. Both the condition of the endometrium as well as the uterine cavity are thought to be important factors in determining receptivity for embryo implantation[19, 20]. It has been suggested that intrauterine abnormalities such as fibroid, synechia, or polyps, may have a negative impact on uterine receptivity and thereby the likelihood of achieving an ongoing pregnancy[21, 22]. Hence, it is recommended to diagnose and treat these abnormalities, in order to optimize the uterine conditions and subsequent in vitro fertilization (IVF) success rates. Hysteroscopy can diagnose small uterine lesions that might not be readily diagnosed by conventional means mentioned earlier. Furthermore, it allows evaluation of the potential implantation site which is an important step in the management of women with infertility[22, 23].

In our study, the incidence of uterine abnormalities was 33% which was similar to the incidence reported by previous studies[23, 24]. Also, the incidence of uterine abnormalities was greater in women aged ≥ 30 years (40%) and women with secondary infertility (44.3%). It has been reported that, 34% of women with primary infertility and 40% of women with secondary infertility had tubal obstruction and endometrial pathology detected by hysteroscopy[25]. In addition, the rates of abnormal findings ranged from 30% at 30 years to more than 60% after 42 years[26]. Therefore, our study and others

have additional argument toward the use of hysteroscopy as part of first-line infertility work up regardless of the age.

In our study, all women were infertile for more than 3 years and all other factors that might contribute to infertility (other than the subtle uterine defects) had been excluded. Despite the debate concerning the relationship between such defects and infertility following correction of these defects. The overall pregnancy rate was 46 % within one year of treatment. Several studies have reported the success of treatment of subtle uterine abnormalities on the chance of natural conception as well as after IVF cycles. It has been established that submucosal myoma negatively impact fertility and pregnancy rate as the endometrial receptivity is globally impaired throughout the uterine cavity[22, 27], and surgical removal of submucosal myoma leads to improved pregnancy rate[28].

Also it has been demonstrated that small endometrial polyps are common findings on hysteroscopic assessment of infertility women with increase in pregnancy rate after removal of such lesions[29–31]. In an infertile population, the prevalence of adhesions lies between 0.3% – 14%[12]. It has been reported that mild intrauterine adhesions can cause infertility due to changes in the functional aspects of the endometrium and hysteroscopic adhesiolysis a safe and effective method of choice for restoring menstrual function and fertility[32]. Moreover, there is accumulated evidence that hysteroscopy is beneficial for women experiencing implantation failures after IVF cycles. Not only the correction of hysteroscopic findings improves the pregnancy rate, at least when compared to controls not having a hysteroscopy, but also the procedure itself may have a positive prognostic value for achieving a subsequent pregnancy[14].

In conclusion, our findings suggest that correction of any uterine abnormalities even if small and minor improves the chance of conception in infertile women who have no other causes for infertility. In addition, women who do not conceive will get the benefit of improved results of assisted reproductive techniques.

Conflict of interest statement

No actual or potential conflict of interest in relation to this article exists.

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