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Full Length Research Paper

Office Hysteroscopy: A new Modality for Diagnosis of Intrauterine Abnormalities in Infertile Women

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Abstract

Background: *Infertility means failure to conceive after 1 year of continuous marital life without use of contraception. About 15% of married couples experience infertility. For patients undergoing in vitro fertilization lower pregnancy rates are observed in the presence of uterine cavity anomalies and correction of these anomalies has been associated with improved pregnancy rates Therefore, endometrial cavity assessment should be included in the evaluation of infertile couples. Most endometrial pathologies implicated in infertility result in both structural and functional impairments* ***(Hajishaiha et al., 2011).***

Patients and methods: *This is a cohort study that was conducted at Obstetrics and Gynecology department of Al-Azhar University hospital (New Damietta). It included 100 infertile women involved in this study and underwent office hysteroscopy in the outpatient clinic as part of their infertility workup. Office hysteroscopy done in the proliferative phase of the cycle, it was done for the participants in the 5th day to the 12th day.*

Results: *In infertile patient, the goal of uterine cavity evaluation is either to identify structural abnormalities such as polyps, myomas, or uterine septum or to obtain a sample of the endometrium (hyperplasia or neoplasia). As regard to detected abnormalities; the most common was endometrial polyp represented 41.75% of all detected abnormalities; followed by intrauterine adhesions 34.10%; then subseptate cavity 8.79%; submucous fibroid 6.59%; endometrial hyperplasia in 5.49% and arcuate uterus 3.29%.*

Conclusions: *Office hysteroscopy has been proven to have high sensitivity and specificity in evaluating the endometrial cavity.*

Keywords: *Office hysteroscopy- infertility- intrauterine abnormalities*

Introduction

Hysteroscopy is the process of viewing and operating in the endometrial cavity from a trans-cervical approach. It involves the passage of a small diameter telescope either flexible or rigid, through the cervix to directly inspect the uterine cavity (Bradley, 2004). Today, diagnostic hysteroscopy can be considered the optimal method of assessing all cases where visualizing the cervical canal, uterine cavity and tubal ostea will improve diagnostic accuracy and guide therapeutic management through an outpatient setting with minimum discomfort to women. The main indications for this procedure are abnormal uterine bleeding, infertility, repeated abortions, diagnosis and follow-up of endometrial hyperplasia, diagnosis and staging of endometrial cancer, identification of foreign bodies, investigation of intrauterine pathologies suspected in other exams, pre and postoperative control of hysteroscopic surgeries and tubal catheterization sterilization (Crispi et al., 2006).

Due to the high incidence of uterine cavity pathologies and improvement of reproductive outcome after surgical correction, it is significant to evaluate the uterine cavity accurately in infertile patients. Among the diagnostic tools used to evaluate the uterine cavity, hysterosalpingography (HSG) has been used for many years to screen for anatomic abnormalities, recently it has been found that HSG will not precisely evaluate the cavity and also the rate of false-positive findings may be as high as 30 to 38%, hysteroscopy is a route for direct visualization of the cavity, it was suggested that 26% of the patients with normal hysterosalpingography were with abnormal hysteroscopic findings (Nouri K et al., 2010).

Patients and methods

This is a cohort study that was conducted at Obstetrics and Gynecology department of Al-Azhar University hospital (New Damietta). It included100 infertile women involved in this study and underwent office hysteroscopy in the outpatient clinic as part of their infertility workup. Office hysteroscopy done in the proliferative phase of the cycle, it was done for the participants in the 5th day to the 12th day.

Inclusion criteria:

- Female patient with infertility documented by failure to conceive after 12 months of regular marital life or after 2 years of previous pregnancy.
- Normal husband semen analysis according to WHO criteria.

- Demographic data:
  1. Age group ranged from 18 to 35 years with only 2 cases above 35 years cases.
  2. Studied cases body mass index ranged from 22.5 to 27.

Exclusion criteria:

- Any contraindication to hysteroscopy such as PID or heavy uterine bleeding.
- Symptoms suggestive of endometriosis such as sever dysmenorrhea, dyspareunia and dyschezia.
- Any uterine abnormality such as pinhole cervix that would obviate passage of Office hysteroscopy through the cervix.

The following will be done to every participant in this study:

- History taking
- General and local examination
- U/S
- Office hysteroscopy

Diagnostic video-assisted hysteroscopy was performed as an office procedure without use of general or local anesthesia or cervical preparation or dilatation in an office gynecology setting. Hysteroscopy was performed to look for and evaluate the presence of intrauterine abnormalities. The uterine cavity was expanded under manual hydrostatic pressure (saline solution). Hysteroscopy was performed with a standard sequence, inspecting the endocervical canal, uterine cavity, endometrium and tubal ostia.

Technique:

Office hysteroscopy done in the proliferative phase of the cycle, it was done for the participants in the 5th day to the 12th day with a mean 8±2.017 SD using atraumatic insertion technique

Statistical analysis of data:

Data were statistically described in terms of range, mean, standard deviation (SD), median, frequencies (number of cases) and percentages when appropriate. Comparison of quantitive variables between the study groups was done using Mann Whitney U test for independent samples when comparing 2 groups and Kruskal Wallis analysis of variance (ANOVA) test when comparing more than 2 groups. For comparing categorical data, Chi square test was performed. All statistical calculations were done using computer programs Microsoft Excel 2007 (Microsoft Corporation, NY-USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

Results

Table (1): Results of hysteroscopy examination in studied cases

	N	%
Normal	9	9.0%
Abnormal	91	91.0%
Total	100	100.0%

As regard to results of hysteroscopy examination; it was normal in 9 cases (9%); and abnormal in 91% of cases. As all cases were diagnosed by HSG and US to have abnormality, these methods had a false positive rate of 9.0%; and as all cases were positive (had abnormalities); the false negative rate cannot be determined in this situation.

Table (2): Type of detected hysteroscopy abnormality in studied cases

	N	% of all cases	% of abnormal cases
Normal	9	9.0%	-
Endometrial polyp	38	38.0%	41.75%
IU adhesion	31	31.0%	34.10%
Subseptate cavity	8	8.0%	8.79%
Submucous fibroid	6	6.0%	6.59%
Endometrial hyperplasia	5	5.0%	5.49%
Arcuate uterus	3	3.0%	3.29%

As regard to detected abnormalities; the most common was endometrial polyp detected in 38 cases, represented 41.75% of all detected abnormalities; followed by intrauterine adhesions in 31 cases (34.10%); then subseptate cavity in 8 cases (8.79%); submucous fibroid in 6 cases (6.59%); endometrial hyperplasia in 5 cases (5.49%) and arcuate uterus in 3 cases (3.29%).

Table (3): Uterine abnormalities in relation to type of infertility

	Primary		Secondary		statistics	
	N	%	N	%	X^2	P
Normal	6	9.2%	3	8.6%	5.91	0.43(NS)
Endoetrial polyp	21	32.3%	17	48.6%		
IU adhesion	23	35.4%	8	22.9%		

Subseptate cavity	7	10.8%	1	2.9%
Submucous fibroid	4	6.2%	2	5.7%
Endometerial hyperplasia	3	4.6%	2	5.7%
Arcuate uterus	1	1.5%	2	5.7%

Considering the type of infertility; the most common uterine abnormality in primary infertility was intrauterine adhesions (23 cases; 35.4%) followed by endometrial poly (21 cases; 32.3%) and the lowest abnormality was arcuate uterus in 1 case (1.5%); while in secondary infertility; the most common uterine abnormality was endometrial polyp (17 cases; 46.8%) followed by intrauterine adhesions (8 cases; 22.0%) and the lowest abnormality was subseptate cavity (1 case; 2.9%). However, the difference between primary and secondary infertility as regard uterine abnormalities was statistically non-significant. In addition, it must be noted that, uterine abnormalities were more common in secondary than primary infertility.

Table (4): Uterine abnormalities in relation to age group

	18-25		26-30		31-35		> 35		Statistics	
	n	%	N	%	N	%	n	%	X2	P
Normal	2	12.5%	5	7.8%	2	11.1%	0	0.0%	11.18	0.75 (NS)
Endometrial polyp	3	18.8%	27	42.2%	7	38.9%	1	50.0%		
IU adhesion	7	43.8%	18	28.1%	5	27.8%	1	50.0%		
Subseptate cavity	2	12.5%	5	7.8%	1	5.6%	0	0.0%		
Submucous fibroid	2	12.5%	2	3.1%	2	11.1%	0	0.0%		
Endometrial hyperplasia	0	0.0%	5	7.8%	0	0.0%	0	0.0%		
Arcuate uterus	0	0.0%	2	3.1%	1	5.6%	0	0.0%		

As regard, uterine abnormalities in relation to age group; the most common abnormality in 18-25 years was intrauterine adhesion (7 cases; 43.8%); while in the age group (26-30 years); the most common abnormality was endometrial polyp (27 cases; 42.2%). Endometrial polyp was also the most common abnormality in the age group 31 – 35 years (7 cases; 38.9%). Finally, in age group > 35 years (2 cases); one case had endometrial polyp and the other had intrauterine adhesion. Endometrial hyperplasia was only reported in the age group (26-30 years). The difference between different age groups was statistically non-significant.

- As regard to detected abnormalities; the most common was endometrial polyp detected in 38 cases, represented 41.75% of all detected abnormalities; followed by intrauterine adhesions in 31 cases (34.10%); then subseptate cavity in 8 cases (8.79%); submucous fibroid in 6 cases (6.59%); endometrial hyperplasia in 5 cases (5.49%) and arcuate uterus in 3 cases (3.29%).
- Considering the type of infertility; the most common uterine abnormality in primary infertility was intrauterine adhesions (23 cases; 35.4%) followed by endometrial poly (21 cases; 32.3%) and the lowest abnormality was arcuate uterus in 1 case (1.5%); while in secondary infertility; the most common uterine abnormality was endometrial polyp (17 cases; 46.8%) followed by intrauterine adhesions (8 cases; 22.0%) and the lowest abnormality was subseptate cavity (1 case; 2.9%). However, the difference between primary and secondary infertility as regard uterine abnormalities was statistically non-significant. In addition, it must be noted that, uterine abnormalities as a whole were more common in secondary than primary infertility.
- Uterine abnormalities in relation to age group; the most common abnormality in 18-25 years was intrauterine adhesion (7 cases; 43.8%); while in the age group (26-30 years); the most common abnormality was endometrial polyp (27 cases; 42.2%). Endometrial polyp was also the most common abnormality in the age group 31 – 35 years (7 cases; 38.9%). Finally, in age group > 35 years (2 cases); one case had endometrial polyp and the other had intrauterine adhesion. Endometrial hyperplasia was only reported in the age group (26-30 years). The difference between different age groups was statistically non-significant.
- Cervical abnormalities in relation to type of infertility; the abnormalities were more common in secondary infertility when compared to primary infertility. The most common abnormality in primary infertility was cervical adhesion and stenotic internal os (each reported in 7 cases; 10.8%); while in secondary infertility; the most common abnormality was cervical polyp and cervical adhesions (each reported in 4 cases; 11.4%)

- As regard to cervical abnormalities in relation to age group; cervical polyp, adhesions and stenotic internal os were equally reported in age group 18 – 25 years (each was reported in 1 case; 6.3%); while in age group 26- 30, the most common cervical abnormality was cervical adhesion (9 cases; 14.1%) followed by stenotic internal os (7 cases; 10.9%)> cervical poly and stenotic internal os were the most common abnormalities in age group 31 – 35 years (2 cases; 11.1%). Finally, the only abnormality reported in age group > 35years was cervical poly (1 case).

Discussion

Infertility remains a major clinical and social problem, affecting perhaps one couple in six (Kamel, 2010). Worldwide more than 70 million couples suffer from infertility, the majority being residents of developing countries. Negative consequences of childlessness are experienced to a greater degree in developing countries when compared with Western societies. The exact prevalence of infertility in developing countries is unknown due to a lack of registration and well-performed studies. On the other hand, the implementation of appropriate infertility treatment is currently not a main goal for most international non-profit organizations. Keystones in the successful implementation of infertility care in low-resource settings include simplification of diagnostic and assisted reproductive technologies (ART) minimizing the complication rate of interventions, providing training-courses for health-care workers and incorporating infertility treatment into sexual and reproductive health-care programs (Ombelet, 2008). About 7.5% of married couples experience infertility (Chandra et al., 2005). It has been reported that an abnormal uterine finding occurs in approximately 50% of infertile women. Most endometrial pathologies implicated in infertility result in both structural and functional impairments. Therefore, endometrial cavity assessment should be included in the evaluation of infertile couples. This can be done through transvaginal sonography, hystero-salpinography, sonohysterography and hysteroscopy (Oliveira et al., 2003).

The goal of uterine cavity evaluation is either to identify structural abnormalities such as polyps, myomas, or uterine septum or to obtain a sample of the endometrium (hyperplasia or neoplasia). Hysteroscopic examination is probably superior to hysterography in evaluating the endometrial cavity. Furthermore; abnormal hysteroscopic findings have been reported in patients with normal hysterography or transvaginal ultrasonography (Koskas et al., 2010). Office hysteroscopy has been proven to have superior sensitivity and specificity in evaluating the endometrial cavity. Mini-hysteroscopies allow for the performance of uterine cavity evaluation in an office setup, with or without local anesthetics, for diagnostic and certain therapeutic interventions (Bettochi et al., 2004). However, the World Health Organization (WHO) recommends hystero-salpinography (HSG), alone, for management of infertile women probably because of its ability to provide information regarding tubal patency (Rowe et al., 1993).

Hysteroscopy (HSC) has been demonstrated to have a favorable impact on the pregnancy rates in ART (Karayalcin et al., 2012), although strong evidence may still be lacking (Bosteels et al., 2013). HSC helps to identify endometrial pathology such as polyps, previously shown to interfere with embryo implantation (Perez-Medina et al., 2005). The embryo transfer may also be facilitated by the preceding cervical dilation (Mansour and Aboulghar, 2002). An increasing proportion of infertile women will now be subjected to cervical dilation and HSC for assessment of the uterine cavity. Hysteroscopy, especially diagnostic hysteroscopy, is a safe procedure. However, uterine perforation is the most frequent complication, and approximately half of the perforations are entry related. If the mechanical and antibacterial properties of the cervix are anatomically or functionally impaired by surgery or trauma, the cervix may become incompetent during pregnancy (Moffat et al., 2014).

The aim of the present study was to evaluate the role of office hysteroscopy in diagnosis the abnormalities of the uterine cavity among females having infertility with intrauterine abnormalities. It included 100 infertile women. As regard to age; it ranged from 20 to 40 years with a mean of 28.39±3.0 years; the most common age group is to 26-30 years (64% of cases were in this age group); followed by the age group 31 to 35 (18.0%). These results are comparable to those reported by El Huseiny and Soliman (2013), who reported that, of 432 infertile patients, the mean age at hysteroscopy was 27.6 years (18–41 years). In addition, Siam (2014) reported that, the mean age of women included in the study was (25.2± 3.9). Furthermore, Elbareg et al. (2014) reported that, the mean age was 28.2±2.2 years (range 20- 35 years). On the other hand, the age of the patients is older in another study than in this one which ranged from 21 to 44 years with the mean age was 35.3 years (Koskas et al., 2010). As regard type of infertility in the studied cases; 65% of cases had primary infertility and 35 cases had secondary infertility. The duration of infertility in studied cases ranged from 1 to 12 years with a mean of 3.50±2.02 years; the majority of cases (61.0%) had a duration ≤ 3 year; 31% had duration of 4-6 years and 8% had duration > 6 years. These results are comparable to those reported by Elbareg et al. (2014) who reported that, primary infertility was reported in 130 cases (65%) women and secondary infertility was reported in 70 (35%) women. Furthmreo, El Huseiny and Soliman (2013), who reported that, there were 274 (63.43%) women with primary infertility and 158 (36.57%) with secondary infertility. In addition, Siam (2014) reported that, 108 patients (76.5%) presented with primary infertility and 33 (23.4%) with secondary infertility. They added, duration of infertility was (5.1± 3.4).

As regard to indication for hysteroscopy; it was a part of infertility work up in the majority of cases (71.0%); and done before IVF in 29 % of cases. These results are comparable to those reported by Pansky et al. (2006) who reported that, the most common indication for diagnostic hysteroscopy was as a part of an early infertility workup. Other indications included cases being part of a continuous workup either before IVF treatment or after a number of failed IVF cycles. In addition, it had been reported that, hysteroscopy, is constantly done for two main indications: to verify suspected intrauterine lesion and to assess the cavity after recurrent IVF failures (Karayalcin et al., 2010). Previous randomized controlled trials afforded the evidence that performing hysteroscopy will result in a more encouraging outcome for patients with repeated implantation failure (Wang et al., 2007;

Makrakis and Pantos, 2010; Bosteels et al., 2010). However, optimizing even the first cycle of IVF-ICSI is of striking importance given the high cost of the procedure (Karayalcin et al., 2010).

Hysteroscopy has been proved to be the definite method for evaluation of the uterine cavity and diagnosis of associated abnormalities. Several studies have demonstrated that once the uterine cavity has to be investigated as part of the infertility workup; hysteroscopy is much more accurate than other diagnostic methods, mainly HSG (Shushan and Rojansky, 1999). The fertility-enhancing effect of OH could be related not only to treating uterine cavity lesions but also attributed to a number of other aspects such as cervical canal dilatation, evaluation of the direction of the cervical canal, assessment of the interior of the uterine cavity, and any suspected shape distortion. Moreover, the uterine instrumentation during hysteroscopy causes a degree of endometrial injury and stimulates posttraumatic reactions that engross release of cytokines and growth factors (El-Toukhy, 2008).

As regard to results of hysteroscopy examination; it was normal in 9 cases (9%); and abnormal in 91% of cases. As all cases were diagnosed by HSG and US to have abnormality, these methods had a false positive rate of 9.0%; and as all cases were positive (had abnormalities); the false negative rate cannot be determined in this situation. The most common detected uterine abnormality was endometrial polyp detected in 38 cases, represented 41.75% of all detected abnormalities; followed by intrauterine adhesions in 31 cases (34.10%); then subseptate cavity in 8 cases (8.79%); submucous fibroid in 6 cases (6.59%); endometrial hyperplasia in 5 cases (5.49%) and arcuate uterus in 3 cases (3.29%). Hystero-salpinography of the cervix was normal in 66 cases (66.0%) and had abnormalities in 34 cases (34%). From those who had cervical abnormalities; 9 cases (26.47%) had cervical polyp; 11 cases (32.35%) had cervical adhesions; 4 cases (11.76%) had incompetent internal os and 10 cases (29.41%) had stenotic internal os.

The previously published data show large ranges of abnormal finding rates from one study to another (7.2% to 64%) (Preutthipan et al., 2003; Pansky et al., 2006; Magos et al., 2005; Shokeir et al., 2004). These differences could be explained by the type of hysteroscopic distension medium and/or hysteroscopic technique used, modifying the surgeon's perception of intrauterine filling defects. Results could also be influenced by the characteristics of the population: age of the population, hormonal status, ethnic factor, type of infertility (primary or secondary) and indications for hysteroscopy (infertility alone, association with clinical, echographic or hysterosalpingographic abnormalities, prior to IVF etc.).

Results of the present study are comparable to those reported by Siam (2014) who reported that, the pathologic varieties which were diagnosed on OH examination included; intrauterine adhesions (IUA) (9 cases) followed by endometrial polyps (7 cases), submucous myoma (6 cases), endometrial hyperplasia (3 cases) and arcuate uterus (one case). In the study of Hourvitz et al. (2002), 91 infertile women with normal HSG underwent diagnostic hysteroscopy which showed a normal cavity in 80 cases (88%) giving a false positive rate of 12% for HSG. The most common lesion found on OH was four cases of endometrial hyperplasia (4.3%), three cases of endometrial polyps (3.2%), two cases of IUA (2.1%) and two cases of arcuate uterus (2.1%).

EL Mazny et al. (2011) studied the effect of OH before ART. Among 145 infertile women for whom OH was performed, abnormal findings were detected in 48(33.1%) in which endometrial polyp, sub mucous myoma and IUA were the most common. Patients with previous ART failure(s) have significantly higher percentage of abnormal hysteroscopy findings. They concluded that OH should be part of the investigations of infertile women before ART, even in cases with normal HSG and/or TVS. In addition, El Huseiny and Soliman (2013) reported that, hysteroscopy was normal in 344 women (79.63%). The other 88 (20.37%) women had abnormal hysteroscopic findings. The overall commonest reported hysteroscopic finding was intra-uterine adhesions (IUA) 31.81% (28/88) followed by endometrial polyp 26.13% (23/88). Furthermore, Souza et al. (2011) reported that, twenty-two (33.3%) patients in the sample were found to have uterine cavity changes, with 9 of them being congenital and 13 acquired anomalies. By evaluating the congenital changes in the uterine cavity, the following diagnoses were found: arcuate uterus (n = 4), bicornuate uterus (n = 3) and septate uterus (n = 2). By considering the acquired anomalies, the most frequent diagnoses were: intrauterine adhesion (n = 7), polyp (n = 4), leiomyomas; these results are comparable to those reported by the present study.

Preutthipan, and Linasmita (2003) made a prospective comparative study between hysterosalpingography and hysteroscopy in the detection of intrauterine pathology in patients with infertility, included 336 patients undergoing both HSG and diagnostic hysteroscopy. Intrauterine lesions were detected by hysteroscopy in 200 patients (59.5%) and normal findings proved in 136 patients (40.5%) of the whole sample. The most common intrauterine finding of 336 patients on hysteroscopy were intrauterine adhesions (IUA) (74), followed by endometrial polyps (56), and submucous myoma, 26 patients. In current study the most common finding were endometrial polyp followed by intrauterine adhesions, and submucous myoma ((table 8.4, figure 8.4). Another larger study done on One thousand consecutive infertile patients scheduled for in vitro fertilization underwent office hysteroscopy, (38%) of patients had abnormal intrauterine hysteroscopic findings the commonest finding was endometrial polyps (32%), the second common finding was intrauterine adhesions (3%), and submucous fibroids (3%), then other findings was; intrauterine septum (0.5%) polypoid endometrium (0.9%), septum (0.5%) retained products of conception (0.3%), and bicornuate uterus (0.3%) (Hinckley et al., 2004). One study reported that two thirds of hysteroscopic findings were not correlated with those found on hysterography. It was shown that 54.3% of intrauterine adhesions diagnosed on hysterography were not found on direct hysteroscopic examination (Kessler and Lancet, 1986). In another study, a false negative rate of 35.4% was reported for diagnostic value of hysterography when compared to hysteroscopy in female infertility (Golan et al., 1996). HSG may be associated with both false-positive and false negative results due to difficult distention of the uterine cavity, blood, debris, mucus, or air bubbles.
In spite of this, the place of routine hysteroscopy in management of infertile women with or without diagnosis of intrauterine pathology is debatable. This is because of invasive nature of hysteroscopy and the controversy about the real impacts of these

disorders on fertility (De Placido et al., 2007). Donnez and Jadoul (2002) tried to address the issue of whether myomas influence fertility, by reviewing 106 relevant articles. They concluded that they do influence fertility, mainly based on the favorable pregnancy rates obtained after myomectomy. Furthermore, they concluded that submucous and intramural myomas distort the cavity, impairing implantation and pregnancy rates in women undergoing IVF. Several theories have been proposed regarding this issue, including alteration of uterine contractility or induction of inflammatory and vascular changes leading to a less receptive implantation site (Oliveira et al., 2003). Hysteroscopy cannot only diagnose these pathologies accurately, but also enables optimal assessment for possible myomectomy (Nagele et al., 1996). Endometrial polyps were diagnosed in both primary and secondary infertility groups with no statistically significant difference (7.6% vs 4.3%, NS). The true incidence of endometrial polyps in the general population is difficult to determine, because many of them are clinically asymptomatic. Nevertheless, Shokeir et al. (2004) found such lesions to be more frequent in the unexplained infertility population compared with fertile women. The possible role of these polyps in infertility is yet unclear, although follow-up on these women revealed improved reproductive outcomes after polypectomy. He concluded, in view of his results, that it seems logical to propose surgical treatment of all endometrial polyps among eumenorrheic infertile women, since even if small, they are likely to impair fertility. Removal of these polyps may enhance reproductive outcome.

Saravelos et al. (2008) made a critical analysis of studies from 1950-2007, this analysis suggests that the prevalence of congenital uterine anomalies is approximately 6.7% [confidence interval (CI) 95%, 6.0 – 7.4] in the general population, approximately 7.3% (CI 95%, 6.7 – 7.9) in the infertile population and approximately 16.7% (CI 95%, 14.8 – 18.6) in the recurrent miscarriage (RM) population. The arcuate uterus is the commonest anomaly in the general and RM population. In contrast, the septate uterus is the commonest anomaly in the infertile population, suggesting a possible association. Hysterosalpingo-graphy (HSG) and/or (2D US) can be used as an initial screening tool. Combined hysteroscopy and laparoscopy, sonohysterography (SHG) and three-dimensional ultrasound (3D US) can be used for a definitive diagnosis. The accuracy and practicality of magnetic resonance imaging (MRI) remains unclear.

In 300 patients scheduled to undergo IVF with no history of recurrent implantation failure, the frequency of unsuspected intrauterine pathology has been reported to be 40% by routine hysteroscopy (Doldi et al., 2005); all 300 patients had had normal HSG within the previous 12 months and normal ultrasonography within the previous 2 months. The types and frequencies of the subtle pathologies were as follows: endometrial polyps = 78 (65%), endometrial hyperplasia = 20 (17%), endometrial hypotrophia = 16 (13%), and other (endometritis, adhesions) = six (5%). In another study, despite normal HSG, an abnormality was noted in 12/28 (43%) of the patients at hysteroscopy before IVF including small uterine septa, small submucous fibroids, uterine hypoplasia and cervical ridges. In addition, the frequency of unrecognized intrauterine pathologies in patients with recurrent implantation failure (RIF) varies between 18 and 50% (Oliveira et al., 2003; Demirol and Gürgan, 2004). The definition of RIF in all these studies was implantation failure in two IVF cycles (Oliveira et al., 2003; Demirol and Gürgan, 2004) or gamete intra-Fallopian transfer (GIFT) cycles (Kirsop et al., 1991) with more than two good quality embryos transferred per attempt. These results are very low when compared to the present study and this may be attributed to the fact that, they included only cases before IVF.

As regard to complications of hysteroscopy in studied cases; 89% of cases had no complications and 11% of cases had a complication; from those had a complication infection was the most common, reported in 5 cases (45.45% of all complications); then bleeding and perforation (each reported in 3 cases; 27.27% of all complications. Previously, five studies reported no procedure-related complications (Doldi et al., 2005; El-Nashar and Nasr, 2011;). Only one study (Kilic et al., 2013) reported on the completeness of office hysteroscopy in their population. Three out of 41 intrauterine pathologies encountered (7%) could not be treated with office hysteroscopy.

Considering the type of infertility; the overall abnormalities were more common in secondary infertility; the most common uterine abnormality in primary infertility was intrauterine adhesions (23 cases; 35.4%) followed by endometrial poly (21 cases; 32.3%) and the lowest abnormality was arcuate uterus in 1 case (1.5%); while in secondary infertility; the most common uterine abnormality was endometrial polyp (17 cases; 46.8%) followed by intrauterine adhesions (8 cases; 22.0%) and the lowest abnormality was subseptate cavity (1 case; 2.9%). However, the difference between primary and secondary infertility as regard uterine abnormalities was statistically non-significant. In addition, it must be noted that, uterine abnormalities were more common in secondary than primary infertility. These results are comparable to those reported by El Huseiny and Soliman (2013), who reported that, abnormal hysteroscopic findings were more in women with secondary infertility 24.68% (39/158), compared to those with primary infertility 17.88% (49/ 274). This may be due to interferences related to previous pregnancies such as dilatation and curettage or previous cesarean sections. Supporting to this is the high prevalence of intrauterine adhesions, in this group, than other lesions. On the other hand, endometrial polypi were the commonest abnormal hysteroscopic findings in those with primary infertility, constituting 36.73% of abnormalities in this group.

In addition, results of the present study showed no significant relation between detected abnormality and age, type of infertility or indication for hysteroscopy. These results are comparable to those reported by Pansky et al. (2006) who reported that, no significant difference in the rate of uterine pathology was found between women with primary and secondary infertility (26% and 31%, respectively). Yet, more cases of arcuate uterus and submucous fibroid occurred in the group of women with secondary infertility. They added, no significant difference was found in the rate of intrauterine adhesions comparing the patients with primary versus secondary infertility, in spite of the known relationship between secondary infertility and the existence of

adhesions, being mostly the result of uterine curettage for postpartum or post-abortion residua. Oliveira et al. (2003) also found intrauterine adhesions in 10% of patients with repeated failed IVF cycles of whom none had undergone previous abortions or other uterine manipulation. He suggested that other causes of intrauterine adhesions must be ruled out.

Feghali. (2003) also found that the patients aged more than 38 years did not show a higher rate of pathology, this is similar to our study. However, Dicker et al. (1990) founded higher rates of abnormal findings in elderly women (above 40 years old). Abnormalities such as submucous myomas, endometrial hyperplasia, and polyps were more frequent in this population, while in younger patients other uterine lesions such as adhesions and tubal ostia occlusion were more common (Dicker et al., 1990).

The need for hysteroscopy examination, upon normal HSG results, was questioned. HSG is considered to have sensitivity (60–98%) but with low specificity (15–80%) accompanied by high false-positive and false-negative rates (Hourvitz et al., 2002). Air bubbles, debris and mucus may form irregular shadows, which may be detected as filling defects. Excessive amount of the contrast medium in the uterus can wipe out shadows caused by IUA and small lesions. Therefore, observation of the shadows or the filling defects can lead to confusing results (Preutthipan and Linasmita, 2003). Roma et al., stated that when HSG shows no abnormality, the indication of hysteroscopy must not be neglected because it adds important and exclusive information about hormonal, inflammatory, infectious and atrophic abnormalities that may be responsible for poor reproductive outcome in nearly 25% of cases (Roma et al., 2004).

In the study of Prevedourakis et al. (1994), 323 infertile women aged 19–40 years, were studied by both HSG and OH. The overall correlation of 74.8% was found between HSG and OH in the evaluation of uterine cavity. They concluded that HSG is an important screening method but the combined use of these techniques in infertility work-up gives more complete and precise information about the uterine cavity.

References

Bettochi S, Cecio Nappi L and Pansini MV (2004). Operative office hysteroscopy without anaesthesia: a study of 4863 cases performed with mechanical instruments. J Am Assoc Gynecol Laparosc ; 11:59–61.
Bosteels J, Kasius J, Weyers S and D'Hooghe TM (2013). Hysteroscopy for treating subfertility associated with suspected major uterine cavity abnormalities. Cochrane Database Syst Rev ; 3 (2): 90-93.
Bradley LD (2004) . Cutting the risk of hysteroscopic complications and management ;16(1):1-12.
Chandra A, Martinez GM, Abma JC and Jones J (2005). Fertility, family planning, and reproductive health of US women: data from the 2002 national survey of family growth. Vital Health Stat; 23(25):1-160.
Crispi CP, Damian Jr JC and Rainho AFR (2006). Indicações. In: Crispi PC, editor. Tratado de videoendoscopia e cirurgia minimamente invasiva em ginecologia. 2a ed. São Paulo: Revinter;758-769.
De Placido G, Clarizia R and Cadente C (2007). Ongoing debate the real significance of the observed uterine pathology on fertility. Eur J Reprod Biol ;135:83-87.
Demirol A and Gürgan T (2004). Effect of treatment of intrauterine pathologies with office hysteroscopy in patients with recurrent IVF failure. Reproductive BioMedicine;(8) 590-594.
Dicker D, Goldman J. A, Ashkenazi J, Feldberg D and Dekel A (1990). "The value of hysteroscopy in elderly women prior to in vitro fertilization-embryo transfer (IVF-ET): a comparative study," Journal of In Vitro Fertilization and Embryo Transfer;7(5):267-270.
Doldi N, Persico P, Di Sebastiano F et al. (2005). Pathologic findings in hysteroscopy before in-vitro fertilization-embryo transfer (IVF-ET). Gynecol.Endo.;21:235-237.
El Huseiny AM and Soliman BS (2013). Hysteroscopic findings in infertile women: A retrospective study. Middle East Fertility Society Journal; 18:154-158.
Elbareg AM, Essadi FM, Anwar KI and Elmehashi MO (2014). Value of hysteroscopy in management of unexplained infertility. Asian pacific Journal of Reproduction; 3(4): 295-298.
El-Mazny A, Abou-Salem N, El-Sherbiny W, and Saber W (2011). Outpatient hysteroscopy: a routine investigation before assisted reproductive techniques. Fertil.Steril.;33:256-273.
El-Nashar IH and Nasr A.(2011). The role of hysteroscopy before intracytoplasmic sperm injection (ICSI): a randomized controlled trial. Fertil.Steril.;96:15-282.
El-Toukhy T(2008). Outpatient hysteroscopy and subsequent IVF cycle outcome: a systematic review and meta-analysis. Reprod. Bio. Med.;16(5):712–809.
Feghali (2003). Environmental anti-androgens and male reproductive health: focus on Phthalates and testicular dysgenesis syndrome. Reproduction; 12:305-315.
Golan, E. Eilat, R. Ron-El, A. Herman, Y. Soffer, and I. Bukovsky (1996). "Hysteroscopy is superior to hysterosalpingography in infertility investigation," Acta Obstetricia et Gynecologica Scandinavica; 75(7) 654-656.
Hajishaiha M, Ghasemi-Rad M, Karimpour N, Mladkova N and Boromand F (2011). Int J Womens Health;3:353-357.
Hinckley, Mary D and Amin A (2004). Milki, 1000 Office-Based Hysteroscopies Prior to In Vitro Fertilization: Feasibility and Findings, JSLS; 8(2):103-107.
Hourvitz A, Ledee H and Olivennes F(2002).Should diagnostichysteroscopy be a routine procedure during diagnostic laparoscopy in women with normal hysterosalpingography Reprod. Biomed.;4:256-260.
Kamel (2010). Management of the infertile couple: an evidence-based protocol.Feril.Steril.;6:8-21.

Karayalcin R, Ozcan S, Moraloglu O, Ozyer S and Batioglu S (2010). Results of 2500 office-based diagnostic hysteroscopies before IVF. Reprod.Bio.Med.;20(5):689-693.
Karayalcin R, Ozyer S and Ozcan S, et al (2012). Office hysteroscopy improves pregnancy rates following IVF. Reprod.Biomed.;25: 261-266.
Kessler I and Lancet M. (1986). Hysterography and hysteroscopy. A comparison. Fertil.Steril.; 46(4):709–710.
Kilic, Y, Bastu, E and Ergun, B. (2013). Validity and efficacy of office hysteroscopy before in vitro fertilization treatment. Arch. Gynecol.Obstet.;287:577–581.
Koskas M, Mergui JL, Yazbeck C, Uzan S and Nizard J (2010). Office hysteroscopy for infertility: a series of 557 consecutive cases;19(7)123-139.
Magos A, Al-Khouri A and Scott P. (2005).“One stop fertility clinic,” Alanís Fuentes J, Amoroso Hernández MA Obstet.Gynaecol. ;25(2)153-159.
Makrakis E and Pantos K (2010). The outcomes of hysteroscopy in women with implantation failures after in vitro fertilization: findings and effect on subsequent pregnancy rates. Curr.Opin.Obstet. Gynecol. ; 22(4):339-343.
Mansour RT and Aboulghar MA(2002). Optimizing the embryo transfer technique. Hum .Reprod. ;17:1149-1153.
Moffat R, Bergsma N, Sartorius G and Raggi A(2014). Does prior hysteroscopy affect pregnancy outcome in primigravid infertile women? Am J Obstet.Gynecol.;211:130.
Nagele, F., O’Connor, H., Davies, A., Badawy, A., Mohamed, H and Magos, A (1996). 2500 outpatient diagnostic hysteroscopies. Obstet.Gynecol.; 88:87-92.
Nouri K, Ott J, Huber JC, Fischer EM and Tempfer CB (2010) . Reproductive outcome after hysteroscopic septoplasty in patients with septate uterus aretrospective cohort study and systematic review of the literature. Reprod. Biol. Endocrinol.;11:8-52.
Oliveira FG, Abdelmassih VG and Diamond MP. (2003) .Uterine cavity findings and hysteroscopic interventions in patients undergoing in-vitro fertilization-embryo transfer who repeatedly cannot conceive. Fertil.Steril.;80:1371–1375.
Ombelet W, Cooke I and Dyer S (2008): Infertility and the provision of infertility medical services in developing countries. Hum.Reprod. Update; 14(6):605-621.
Pansky M, Feingold M, Sagi R and Herman A (2006). Diagnostic Hysteroscopy as a Primary Tool in a Basic Infertility Workup. Journal of the Society of Laparoendoscopic Surgeons; 10: 231-235.
Perez-Medina T, Bajo J and Salazar F(2005): Endometrial polyps and their implication in the pregnancy rates of patients undergoing intrauterine insemination: a prospective, randomized study. Hum .Reprod.;20:1632-1635.
Preutthipan S and Linasmita V(2003). A prospective comparative study between hystero-salpingography and hysteroscopy in the detection of intrauterine pathology in patients with infertility. J Obstet. Gynaecol. Res.; 29(1):33-37.
PrevedourakisC, LoutradiD and Aravantinos D(1994). Hysterosalpingography and hysteroscopy in female infertility. Hum.Reprod.;9(12):2353-2355.
Roma (2004): J Am Assoc. Office flexible minihysteroscopy Gynecol. Laparosc.; 7:221-226.
Rowe PC, Hargreave T and Mellows H (1993). Manual for the standardized investigation and diagnosis of the infertile couple.
Saravelos H and Karen A(2008). Cocksedge and Tin-Chiu Li. Prevalence and diagnosis of congenital uterine anomalies in women with reproductive failure: A critical appraisal. Hum.Reprod.Update; 14(5):415-429.
Shokeir T. A., Shalan H. M., and El-Shafei MM (2004): Combined diagnostic approach of laparoscopy and hysteroscopy in the evaluation of female infertility: results of 612 patients. Obstet.Gynaecol.;30 (1)9-14.
Shushan A and Rojansky N (1999). Should hysteroscopy be a part of the basic infertility workup? Hum.Reprod.; 14(8):1923–1924.
Siam S. (2014). Role of office hysteroscopy in the evaluation of infertile women after controlled ovarian stimulation/intra uterine insemination failure;19: 239–242.
SOUZA CA, CARLA S, ANA M and MARIA LO (2011). Office hysteroscopy study in consecutive miscarriage patients. Rev. Assoc.Med.Bras. ; 57(4):397-401.
Wang CJ, Mu WC, Yuen LT and Lee CL (2007). Flexible outpatient hysterofibroscopy without anesthesia: a feasible and valid procedure. Chang Gung Med J ; 30(3): 256-262.