

Hysteroscopy In Infertile Patients With Suspected Intrauterine Lesions : A Results Of 143 Patients At Ramathibodi Hospital

Sangchai Preutthipan MD,
Vasant Linasmita MD, FACOG,
Urusa Theppisai MD.

*Department of Obstetrics and Gynecology, Faculty of medicine Ramathibodi Hospital, Mahidol University, Bangkok, Thailand
10400*

ABSTRACT

Objective To report our initial experience and results of hysteroscopic examinations in infertile patients with suspected intrauterine lesions.

Design A prospective descriptive study.

Setting Department of Obstetrics and Gynecology, Faculty of Medicine, Ramathibodi Hospital.

Patients A total of 143 infertile patients under investigation for infertility undergoing a diagnostic hysteroscopy between September 1994 and June 1997.

Main outcome measures Number and percentage of hysteroscopic findings.

Results Hysteroscopic examination was satisfactory in all 143 patients. The indications for diagnostic hysteroscopy and hysteroscopic findings in the 143 patients were abnormal hysterosalpingographies (HSGs) with suspected Intrauterine adhesions (IUA) in 39, secondary amenorrhea with suspected IUAs in 12, abnormal HSGs with suspected endometrial polyps in 21, abnormal HSGs with suspected submucous myomas in 20, suspected endometrial polyps by transvaginal U/S in 11, suspected submucous myomas transvaginal U/S in 5, infertility with abnormal uterine bleeding (AUB) in 12, failed many attempts with IVF in 12, abnormal HSGs with suspected mullerian defects in 6, and unexplained infertility in 5 patients. Of the 143 patients, 113 (79.02%) showed some abnormalities of the uterine cavity on hysteroscopy. In thirty patients (20.98%) the hysteroscopy demonstrated normal uterine cavities. The detected abnormalities were 41 (28.67%) intrauterine adhesions, 9 (6.29%) cervical stenoses, 41 (28.67%) endometrial polyps, 14 (9.79%) submucous myomas, 6 (4.20%) mullerian defects, 2 (1.40%) endometrial hyperplasia. Intrauterine abnormalities were shown on HSG in 86 patients and confirmed in 51 patients at hysteroscopy giving an accuracy rate of 59.30% and a false positive rate of 40.70%. There was no complication attributable to this procedure in this study.

Conclusion Hysteroscopy is a safe, accurate and useful diagnostic method in the evaluation of the uterine cavity in an infertile woman. HSG is a simple, noninvasive and important screening procedure for the study of the uterine cavity and whenever it is combined with hysteroscopy the two techniques are complementary in their application to female infertility.

Key words : hysteroscopy, intrauterine lesions, female infertility

The diagnosis of intrauterine conditions that may cause infertility is generally made by hysterosalpingography (HSG). HSG is a simple, noninvasive procedure that enables visualization of the uterine cavity contour and lesions, revealing or ruling out anomalies that include different types of intrauterine defects. Several disadvantages are inherent in the technique, however, including exposure to ionizing radiation, exposure to iodinated contrast material and often a great deal of discomfort for the patient. In addition, looking at the shadows or the filling defects can lead to misleading results, as shown by a false positive and false negative results.^(1,2) Hysterosalpingography is also inaccurate in diagnosing submucous myoma and endometrial polyps especially those with small lesions.⁽³⁾ As a result of technological advances in endoscopic instrumentation in recent years, techniques for both intrauterine visualization and/or surgery through hysteroscope have progressed rapidly. Hysteroscopy permits panoramic visualization of the uterine cavity and direct biopsy of lesions, thus increasing precision and accuracy in the diagnosing intrauterine conditions. Hysteroscopy is recommended in the investigation of all patients complaining of infertility,^(4,5) and should be part of the work-up of all patients before undergoing IVF treatment.⁽⁶⁾ Golan et al⁽⁷⁾ reported that hysteroscopy was superior to HSG in the identification of intrauterine pathology and suggested that HSG should be replaced by the diagnostic hysteroscopy as a first line infertility

investigation. As an operative technique, hysteroscopy increases the precision of surgery and minimizes trauma to the endometrial lining, and on many occasions, preclude major surgical intervention. The objective of this study was to report our initial experience and results of hysteroscopic examinations in infertile patients with suspected intrauterine lesions.

Materials and methods

A total of 143 infertile patients under investigation for infertility undergoing a diagnostic hysteroscopy were included in this study at the infertility clinic, Ramathibodi Hospital. The age of the patients ranged from 17-39 years and the mean age was 28.5 years. Hysteroscopy was performed between September 1994 and June 1997. Our investigations of infertility included : basal body temperature charts, serum progesterone assays and/or endometrial biopsies to assess ovulation ; analysis of semen, post-coital test to assess male factor and sperm-mucus interaction ; hysterosalpingography to evaluate uterine and tubal factor ; hysteroscopy and laparoscopy. The indications for hysteroscopy in the 143 patients were abnormal HSGs with suspected intrauterine adhesions (IUAs) in 39, secondary amenorrhea with suspected IUAs in 12, abnormal HSGs with suspected endometrial polyps in 21, abnormal HSGs with suspected submucous myomas in 20, suspected endometrial polyps by transvaginal U/S in 11, suspected

submucous myomas transvaginal U/S in 5, infertility with abnormal uterine bleeding (AUB) in 12, failed many attempts with IVF in 12, abnormal HSGs with suspected mullerian defects in 6 and unexplained infertility in 5 patients (Table 1).

Hysteroscopy was timed mostly in the proliferative phase of the menstrual cycles using a standard rigid 5 mm hysteroscope (Karl Storz GmbH, Tuttlingen, Germany) under Propofol

anesthesia. In the majority of cases the uterine cavity was distended with carbon dioxide via an electronic Hamou hysteroflator (Karl Storz GmbH, Tuttlingen, Germany) providing a flow rate of up to 50 ml/min at a pressure of 100 mmHg. When visualization was not adequate because of excessive bleeding or when an operative procedure was to be performed, the distension medium was changed to 1.5% glycine solution at an insufflation pressure of 100 mm Hg with the

Table 1. Indications for diagnostic hysteroscopy in 143 infertile patients with suspected intrauterine lesions

Indications	No. of patients
Abnormal HSGs with suspected IUAs	39
Secondary amenorrhea with suspected IUAs	12
Abnormal HSGs with suspected endometrial polyps	21
Abnormal HSGs with suspected submucous myomas	20
Suspected endometrial polyps by transvaginal U/S	11
Suspected submucous myomas by transvaginal U/S	5
Infertility with AUB	12
Failed many attempts with IVF	12
Abnormal HSGs with suspected mullerian defects	6
Unexplained infertility	5

Table 2. Hysteroscopic findings in 143 infertile patients with suspected intrauterine lesions

Findings	No. of patients	Percent
Normal uterine cavity	30	20.98
Intrauterine abnormalities	113	79.02
Intrauterine adhesions	41	28.67
Cervical stenosis	9	6.29
Endometrial polyps	41	28.67
Submucous myomas	14	9.79
Mullerian defects	6	4.20
Endometrial hyperplasia	2	1.40

Table 3. Hysteroscopic findings in 80 patients with hysterosalpingographic findings suspected IUAs, endometrial polyps, submucous myomas

Findings	HSGs suspected		
	IUAs n = 39 (%)	Polyps n = 21 (%)	Submucous myomas n = 20 (%)
Normal uterine cavity	3 (7.69)	3 (14.29)	4 (20.00)
Intrauterine abnormalities	36 (92.31)	18 (85.71)	16 (80.00)
Intrauterine adhesions	30 (76.92)	1 (4.76)	
Cervical stenosis	5 (12.82)		
Endometrial polyps		13 (61.90)	13 (65.00)
Submucous myomas		3 (14.29)	3 (15.00)
Mullerian defects	1 (2.56)		
Endometrial hyperplasia		1 (4.76)	

Table 4. Hysteroscopic findings in 12 patients presenting secondary amenorrhea with suspected IUAs

Findings	No. of patients	Percent
Normal uterine cavity	1	8.33
Intrauterine abnormalities	11	91.67
Intrauterine adhesions	7	58.34
Cervical stenosis	4	33.33

Table 5. Hysteroscopic findings in 11 patients with suspected endometrial polyps by transvaginal U/S

Findings	No. of patients	Percent
Normal uterine cavity	2	18.18
Intrauterine abnormalities	9	81.82
Endometrial polyps	8	72.73
Submucous myomas	1	9.09

Table 6. Hysteroscopic findings in 12 infertile patients with AUB

Findings	No. of patients	Percent
Normal uterine cavity	3	25.00
Intrauterine abnormalities	9	75.00
Intrauterine adhesions	1	8.33
Endometrial polyps	5	41.67
Submucous myomas	2	16.67
Endometrial hyperplasia	1	8.33

Table 7. Hysteroscopic findings in 12 infertile patients with failed many attempts with IVF

Findings	No. of patients	Percent
Normal uterine cavity	8	66.67
Intrauterine abnormalities	4	33.33
Intrauterine adhesions	2	16.67
Endometrial polyps	2	16.67

fluid balance being carefully monitored. The technique of hysteroscopy was described elsewhere.⁽⁸⁾

Results

Hysteroscopic examination was satisfactory in all 143 patients. The indications for diagnostic hysteroscopy and hysteroscopic findings in the 143 patients are outlined in Table 1 and 2 respectively. Of the 143 patients, 113 (79.02%) showed some abnormalities of the uterine cavity on hysteroscopy. In thirty patients (20.98%) the hysteroscopy demonstrated normal uterine cavities. The abnormalities detected were 41 (28.67%) intrauterine adhesions, 9 (6.29%) cervical stenoses, 41 (28.67%) endometrial polyps, 14 (9.79%) submucous myomas, 6 (4.20%)

mullerian defects, 2 (1.40%) endometrial hyperplasia. Intrauterine abnormalities were shown on HSG in 86 patients and confirmed in 51 patients at hysteroscopy giving an accuracy rate of 59.30% and a false positive rate of 40.70%. Of the 39 hysterosalpingographic findings of IUAs, hysteroscopic examination revealed IUAs in 30, cervical stenosis in 5, mullerian defect in 1 and normal uterine cavities in 3 patients (Table 3). Of the 12 patients presenting secondary amenorrhea with suspected IUAs, hysteroscopic examination revealed IUA in 7, cervical stenosis in 4 and normal uterine cavity in 1 patient (Table 4). Of the 21 patients with suspected endometrial polyps by HSGs, hysteroscopic examination revealed endometrial polyps in 13, submucous myoma in 3, IUA in 1, endometrial hyperplasia in 1 and

normal uterine cavity in 3 patients (Table 3). Of the 20 patients with suspected submucous myomas by HSGs, hysteroscopic examination revealed submucous myoma in 3, endometrial polyps in 13 and normal uterine cavity in 4 patients (Table 3). Of the 11 patients with suspected endometrial polyps by transvaginal U/S, hysteroscopic examination revealed endometrial polyps in 8, submucous myoma in 1 and normal uterine cavity in 2 patients (Table 5). Of the 5 patients with suspected submucous myomas by transvaginal U/S all of them had submucous myomas confirmed by hysteroscopy. Of the 12 infertile patients with AUB, hysteroscopic examination revealed endometrial polyps in 5, submucous myoma in 2, IUA in 1, endometrial hyperplasia in 1 and normal uterine cavity in 3 patients (Table 6). Of the 12 patients with failed many attempts with IVF, hysteroscopic examination revealed endometrial polyps in 2, IUA in 2 and normal uterine cavity in 8 patients (Table 7). Of the 6 patients with mullerian defects diagnosed by HSGs 5 had diagnosis confirmed by hysteroscopy 1 had normal uterine cavity. All of the 5 patients with unexplained infertility had normal uterine cavities confirmed by hysteroscopy. There was no complication attributable to this procedure in this study.

Discussion

One of the major applications of hysteroscopy has been in the evaluation of female infertility. Although there are many tests that effectively evaluate factors determining the origin of infertility, there are only a few ways to study the uterine cavity itself besides hysterosalpingography, ultrasonography and sonohysterography.⁽⁹⁾ These techniques are useful but when we suspect an endometrial pathology, direct visualization of the uterine cavity, provide much more specific

information to clarify uncertain aspects of indirect techniques. Particularly hysteroscopy is strongly indicated with regard to the diagnosis and treatment of intrauterine adhesions, to assess anatomical and functional features of the uterinetubal ostium, to guide and establish the post surgical management for metroplasties, to evaluate unexpected intrauterine pathology such as submucous myomas, endometrial polyps, endometrial hyperplasia and to assess the condition of the uterine cavity in cases of repeated pregnancy loss.

Some have reported evidence at hysteroscopy of intrauterine abnormality in 62% of patients undergoing routine investigation of infertility.^(4,10) In this study the rate of detection of abnormality by hysteroscopy in infertile patients with suspected intrauterine lesions was 79.02%. The most three common abnormalities found were IUAs (28.67%), endometrial polyps (28.67%) and submucous myomas (9.79%).

In patients with abnormal hysterosalpingograms, hysteroscope not only helps to confirm the presence of a lesion but also helps to determine the location and nature of it. Various studies have demonstrated the advantage of hysteroscopy over HSG in the accuracy of the diagnosis of uterine cavity abnormalities that may cause or contribute to infertility.⁽¹⁰⁻¹²⁾ As shown in this study, HSG in the detection of intrauterine pathology had a false positive rate of 40.70%. The high false positive rate in our series was similar to those reported by others.^(13,14) The differences between HSG and hysteroscopy were observed mainly in the cases of IUAs, endometrial polyps and submucous myomas in which hysteroscopy presented more accurate diagnosis. Hysteroscopy can rule out a condition of cervical stenosis from HSG diagnosed intrauterine adhesion and distinguish between endometrial polyps and submucous myoma.

In this study intrauterine adhesions were present in 28.67% of patients with infertility whereas others have reported rates of up to 40%.⁽¹⁵⁾ Of the 39 hysterosalpingographic findings of IUAs, hysteroscopic examination revealed IUAs in 30, cervical stenosis in 5, mullerian defect in 1 and normal uterine cavities in 3 patients. Hysteroscopy not only can confirm the existence and location of such lesions, but also can lyse them under direct vision. In order to achieve a lasting cure for traumatic intrauterine adhesions, it is necessary to eliminate them completely without causing further trauma. Of the 143 patients examined by hysteroscope, 41 demonstrated intrauterine adhesions, these were divided successfully under hysteroscopic view.

The inaccuracy of HSG in the diagnosis of submucous myomas and endometrial polyps is also well-established. It is generally agreed that hysteroscope is the method of choice for the diagnosis of such lesions. Hysteroscopy can definitely distinguish between submucous myomas and endometrial polyps. In this study the group of patients diagnosed to have submucous myomas by HSG only 3 had submucous myomas the other 13 patients had endometrial polyps confirmed by hysteroscopy. On the other hand the group of patients diagnosed to have endometrial polyps by HSGs 13 patients had endometrial polyps and the other 3 patients had submucous myomas confirmed by hysteroscopy.

In this study 16 patients with intrauterine lesions detected by transvaginal U/S, 13 had diagnosis confirmed by hysteroscopy which demonstrated a false positive rate of transvaginal U/S 18.75%.

In this series we have shown that the most common abnormal hysteroscopic finding in infertile patients with AUB was endometrial polyps

(41.67%), and most of the infertile patients with failed many attempts with IVF (66.67%) had normal uterine cavities.

Potential complications from diagnostic hysteroscopy include failure to complete the procedure, cervical laceration, uterine perforation, infection, bleeding, anesthesia and a very rare condition of CO₂ embolism.⁽¹⁶⁾ In this series there was no failure of the procedure or serious complication among our patients.

In conclusion hysteroscopy is a safe, accurate and useful diagnostic method in the evaluation of the uterine cavity in an infertile woman. Hysteroscopy not only gives an accurate diagnosis but also can localize the intrauterine lesions and determine the extent of the diseases. HSG is a simple, noninvasive and important screening procedure for the study of the uterine cavity and whenever it is combined with hysteroscopy the two techniques are complementary in their application to female infertility.

Acknowledgments

The authors wish to thank Professor Winit Phuapradit, Chairman of Department of Obstetrics and Gynecology Ramathibodi Hospital for his encouragement and support to this study.

References

1. Seigler AM. Hysterosalpingography. *Fertil Steril* 1983 ; 40 : 139-45.
2. Prevedourakis C, Loutradis D, Kallianidis C, Markris N, Aravantinos D. Hysterosalpingography and hysteroscopy in female infertility. *Hum Reprod* 1994 ; 9 : 2353-5.
3. Pellicer A. Hysteroscopy in the infertile women. *Obstet Gynecol Clin North Am* 1988 ; 1 : 99-105.
4. Taylor PJ. Correlations between laparoscopic and hysteroscopic findings in 497 women with otherwise unexplained infertility. *J Reprod Med* 1984 ; 29 : 137-40.

5. Mencaglia L, Colafranceschi M, Gordon AG, Lindemann H, Van Herendael B, Perino A, et al. Is hysteroscopy of value in the investigation of female infertility ?. *Acta Eur Fertil* 1988 ; 19 : 239-41.
6. Dicker D, Goldman JA, Ashkenazi J, Feldberg D, Dekel A. The value of hysteroscopy in elderly women prior to in vitro fertilization embryo transfer (IVF-ET) : a comparative study. *J In Vitro Fert Embryo Transf* 1990 ; 7 : 267-70.
7. Golan A, Eilat E, Ron-El R, Herman A, Soffer A, Bukovsky I. Hysteroscopy is superior to hysterosalpingography in infertility investigation. *Acta Obstet Gynecol Scand* 1996 ; 75 : 654-6.
8. Preutthipan S, Linasmita V, Theppisai U. Diagnostic hysteroscopy : A result of 125 patients at Ramathibodi Hospital. *J Med Assoc Thai* 1997 ; 80 : 575-9.
9. Goldberg JM, Falcone T, Attaran M. Sonohysterographic evaluation of uterine abnormalities noted on hysterosalpingography. *Hum Reprod* 1997 ; 12 : 2151-3.
10. Valle RF : Hysteroscopy in the evaluation of female infertility. *Am J Obstet Gynecol* 1980 ; 137 : 425-31.
11. Hamou J, Taylor PJ. Panoramic, contact and microcolpohysteroscopy in gynecologic practice. *Curr Probl Obstet Gynecol* 1982 ; 6 : 32-6.
12. Kessler I, Lancet M. Hystero-graphy and hysteroscopy, a comparison. *Fertil Steril* 1986 ; 46 : 709-10.
13. Ragni G, Lombroso GC, Bestetti O, De Lauretis L, Agosti S. Hysteroscopy versus hysterosalpingography in infertile patients. *Int J Fertil* 1984 ; 29 : 141-2.
14. Raziel A, Arieli S, Bukovsky I, Caspi E, Golan A. Investigation of the uterine cavity in recurrent aborters. *Fertil Steril* 1994 ; 62 : 1080-2.
15. Golan A, Ron-El R, Herman A, Soffer Y, Bukovsky I, Caspi E. Diagnostic hysteroscopy : its value in an in-vitro fertilization/embryo transfer unit. *Hum Reprod* 1992 ; 7 : 1433-4.
16. Apgar BS. Diagnostic hysteroscopy. *Am Fam Physician* 1992 ; 46 : 19-36.