Evaluation of Cases of Secondary Infertility by Hysterosalpingography and Hysteroscopy

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Abstract

Hysterosalpingography (HSG) and hysteroscopy, two investigative modalities were performed on a group of 50 patients of secondary infertility and the results analysed. In this study, the infertile women were evaluated with HSG followed by hysteroscopy to evaluate the causes of secondary infertility and attempt a correlation between these investigative modalities. The complete agreement between HSG and hysteroscopy was established in 43 (86%) cases. HSG showed a false positive rate of 23% and false negative rate of 6%. The sensitivity of HSG was 77% and specificity 93% in diagnosing uterine conditions. The conditions missed were likely due to the overfilling of the uterus. HSG showed a good correlation with hysteroscopy and being a safe and simple procedure, it should be the preliminary investigation in infertile patients. Thus, the two investigative modalities were found to be complementary to each other rather than being mutually exclusive.

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Key Words : Hysterosalpingography; Hysteroscopy

Introduction

Since its advent in the early 1920s, HSG has proven to be an important diagnostic tool in gynaecology. HSG is a safe, simple, inexpensive and rapid diagnostic test that can reveal the shape of the uterine cavity revealing an uterine abnormality in almost 25% of cases [1,2]. A large number of workers have reported a therapeutic role of HSG more evident with oil soluble than water soluble media [3-7]. Before the advent of hysteroscopy, HSG was the only method of visualisation of the uterine cavity. It could detect the characteristic defects or luminal distortions caused by uterine malformations, myomas, polyps and synechiae [8]. Hysteroqram represents a projection of the uterine cavity on a flat surface, the radiograph; this helps to perceive the general configuration of the uterine cavity, because the fluid nature of the contrast media can reach and delineate small recesses and compartments which could be difficult for the hysteroscope to negotiate [9]. So, HSG is the choice investigation modality even in this era of hysteroscopy; for congenital and acquired conditions which cause partitions within the uterine lumen.

As per Barbot Jacques, hysteroscopy is a direct approach to the uterine cavity enabling the analysis of the shape, size, contour, colour, vascular pattern of any abnormality. It helps to examine the consistency and mobility of structures. So much so, that the functional aspect of the endometrium can also be studied [10] as also the infections of the fallopian tube can be detected by sampling with cytobrush during hys-

teroscopy [11]. These visual and tactile perceptions are integrated to make a presumptive diagnosis short of pathologic examination [9]. Hysteroscopy does not supplant other diagnostic procedures, rather it complements them and in practice hysteroqram remains a valuable screening procedure and hysteroscopy can be performed in case of abnormal hysteroqram [12], though of late hysteroscopy has emerged as a primary screening procedure.

Material and Methods

This study was undertaken between January 1998 to November 1999 at a large teaching institution along with its affiliated hospital. 50 patients of secondary infertility, namely those with a previous abortion or childbirth (irrespective of its outcome), attending gynaecology out patient department (OPD) and inpatients admitted for infertility work-up were studied.

Criteria for inclusion in the study :

All patients with secondary infertility except,

Couples with male factor infertility

History of surgical sterilisation

Patients with very high (> 40IU/l) or very low (< 5IU/l) follicular stimulating hormone (FSH) and lutenising hormone (LH) levels

Patients with abnormal thyroid function

Patients with hyperprolactinaemia

A written informed consent was taken after explaining the procedure to the patients.

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Hysterosalpingography:

HSG was performed between the 7th and 10th days of the menstrual cycle. A preliminary film of the pelvis was taken. A 10 cc contrast (Conray 240) filled syringe was attached to the Leech Wilkinson cannula and the contrast was slowly injected under fluoroscopic control. Three films were taken, one as the contrast filled the uterine cavity, the second as it passed through the tube and spillage observed and a third delayed one, taken about 10 minutes later. A lateral film was taken when indicated.

Hysteroscopy equipment :

Hysteroscope Karl Storz : 4 mm scope, 30° foreoblique

5 mm sheath

7 mm outer

10 mm resectoscope

Light source : Xenon 300 Watt / Halogen 250 Watt

Irrigation system : Fluids - Ringer's lactate for diagnostic scopes

Glycine for operative work

Endovision camera

Endomat for controlling fluid pressure and rate of infusion

Ancillary Equipment :

Operation theatre trolley for hysteroscopy, full dilatation and curettage set

Video cassette recorder

Technique :

Timing of the procedure -

It was done postmenstrually usually between days 5-10. The internal os was dilated upto 6 mm for diagnostic scopes and more if operative work was being contemplated. The hysteroscope was introduced gradually under guidance of the endovision camera and constant irrigation with Ringers lactate. The scope was negotiated with the bevel of the scope facing downwards till the fundus was visualised and resistance felt. The fundus was scanned for any obvious abnormality, then the scope turned in either direction to visualise the tubal ostia which were examined for their patency as evidenced by the water bubbles rushing in with irrigation and the cornual ends scanned for evidence of a septum, fibroid or intraluminal polyp. The state of the endometrium was noted and as the scope was withdrawn, a panoramic view was taken to visualise the entire cavity, walls, fundus, both ostia, shape of the cavity and the internal os. The presence or absence of the following was noted :-

Intra uterine contraceptive devices or retained products of conception

Adhesions

Polyps- endometrial or fibroid

Uterine wall defects

A dilatation and curettage was performed.

erase chain reaction (PCR) for tuberculosis (TB).

The patient was discharged after an overnight stay extendable in case operative work was done. Antibiotic cover was only given intraoperatively. Post operative antibiotic cover was dictated by the intraoperative findings.

Results

The patients included in this study were aged between 26-38 years with period of infertility of 3.5 years to 17 years duration as shown in Table 1. The HSG findings of the cases is depicted in Table 2. The findings on hysteroscopy are depicted in Table 3. HSG abnormalities were detected in 31 (62%) patients. Normal HSG was found in 19 (38%) patients. Hysteroscopy was found normal in 32 (64%) cases and abnormalities in 18 (36%) cases. Uterine abnormalities were detected in 13 (26%) cases. Among these, 2 patients had congenital uterine anomalies, which included a case of unicornuate uterus and 1 case of subarcuate uterus. Intrauterine adhesions were seen in 5 patients. Fibroids were detected in 5 and in 1 case intrauterine polyp was suspected. The findings are summarised in Table 2.

Table 1

Cases with relevant history and clinical findings

History/cinical findings	No of cases
Nulliparous with history of abortion	35
Parous	15
Ectopic pregnancy	3
Dysmenorrhoea	4
Dyspareunia	2
Tuberculosis	4
Menstrual abnormalities	8
D and E / D and C done	2
Pelvic mass	1

Table 2

Uterine abnormalities on HSG

Uterine abnormalities	No of cases	Percent
Congenital anomalies	2	4
Bicornuate uterus	1	2
Unicornuate uterus	1	2
Adhesions/Asherman's syndrome	5	10
Filling defects	6	12
Intrauterine polyps	1	2
Submucous fibroids	5	10

A total of 18 (36%) cases were found to have uterine abnormalities on hysteroscopy. 2 cases had small intrauterine polyps. Intrauterine adhesions were present in 4 cases. Sub-mucous fibroids were seen in 6 cases. 3 cases were found to be having endometrial abnormalities which were diagnosed on basis of presence of bald cavity, dense fibrotic growth and patchy endometrium. Later, PCR positivity for TB was found in 2 cases.

Table 3

Abnormalities seen on hysteroscopy

Abnormalities	No of cases	Percent
Polyps	2	4
Adhesions/Asherman's syndrome	4	8
Fibroids	6	12
Endometrial abnormalities	3	6
Subarcuate uterus	1	2
Septum	1	2
Intrauterine fetal bones	1	2

remnants of fetal bones. The data is depicted in Table 3. Out of 37 normal findings on HSG, 34 were confirmed on hysteroscopy. Out of 50 cases, uterine abnormalities were found in 13 (26%) cases on HSG. In 2 cases, congenital uterine anomalies were found, and diagnosis in both cases was confirmed on hysteroscopy. The data is summarized in Table 4.

Intrauterine adhesions were seen as multiple filling defects in a distorted irregularly outlined uterus which was not enlarged. 5 cases of intrauterine adhesions were reported on HSG in the present study, out of these, 1 case was found normal on hysteroscopy. In 3 cases, diagnoses were confirmed and in 1 case intrauterine adhesions were seen on hysteroscopy, in otherwise normal reported HSG. In this case, intrauterine adhesions were of milder variety and these were totally obliterated because of overfilled uterus. 1 case of intrauterine polyp was found on hysteroscopy which was missed on HSG. 1 case of polyp was suspected on HSG but was found normal on hysteroscopy. 5 cases of submucous fibroid were found on HSG and 4 cases were confirmed and one found normal on hysteroscopy. One more case of submucous fibroid was identified on hysteroscopy which was not reported on HSG.

A total of 13 cases were found abnormal on HSG for uterine factors. Out of these 13, three cases were found normal on hysteroscopy.

False +ve for HSG = 23%

In 3 patients pathologies were detected on hysteroscopy in normal reported HSG.

False -ve for HSG = 6%

Sensitivity = 77%

Specificity = 93%

Predictive value of a positive test = 77%

Predictive value of a negative test = 93%

Overall agreement was seen in between HSG and hysteroscopy in 43 (86%) cases and conflicting results were seen in remaining 7 cases.

Agreement rate = 86%

Discussion

Among the 50 cases investigated, HSG abnormalities were found in 31(62%) cases, this has been reported by some workers to be much lower, 42% by Snowden et al [13] and 31% by Lasella et al [14], whereas others reported a compatible figure of 67% by Philipsen and Hansen [15] and 65% by Otubu et al [14]. Congenital uterine abnormalities were seen in 2(4%) cases in the present study. In a review of about 2000 cases by Tulandi, the incidence of uterine abnormalities was 1.03% [16]. A figure of 2.5% was reported by Sanfilippo et al [17] and 3.2% by Simon et al [18]. In a study by Japanese women by Makino, the incidence of uterine anomalies was 14.7% [5].

The incidence of intrauterine adhesions are usually secondary to post partum trauma, MTP, D & C and infections, especially TB. The incidence of intrauterine adhesions in the present study was 8% or a total of 4 cases. All but one was confirmed on hysteroscopy giving a good agreement rate between the two modalities. The varieties of intrauterine adhesions especially on a overfilled uterus can easily be missed on HSG [1].

The most frequent solid uterine tumour diagnosed during reproductive years are leiomyomas. On HSG, these are seen to cause distortion, obliteration or enlargement of the uterine cavity or simply seen as filling defects. In the present study, 5 (10%) cases had fibroid suspected on HSG. 4 were confirmed and 1 diagnosed freshly on hysteroscopy which was missed on HSG. A study by Hoetzinger showed HSG to have a sensitivity of 31% in diagnosing sub mucus fibroid. But in the present study the sensitivity was 80%. False positive rate of HSG in diagnosing uterine ab-

Table 4

Correlation between HSG and hysteroscopy

HSG	No of cases	Hysteroscopy				
		Normal	Congenital anomalies	Adhesions/Asherman's syndrome	Polyps	Fibroids
Normal	37	34	-	1	1	1
Congenital anomalies	2	-	2	-	-	-
Adhesions/Asherman's syndrome	5	1	-	3	-	-
Polyps	1	-	-	-	1	-
Fibroids	5	1	-	-	-	4

Table 5
Comparison of data

Rates	Present study	Snowden <i>et al</i>	Golan A
Sensitivity	86%	92%	98%
Specificity	90.7%	92%	15%
Positive predictive rate	65%	70%	45%
Negative predictive rate	97%	98%	95%

normalities was 23% in the present study. This figure reported by other authors is 31.7% by Valle [19], 31% by Snowden *et al* [13] and 25% by Otubu *et al* [14]. Sensitivity, specificity and predictive values of positive and negative tests of HSG in detection of uterine lesions have been given and compared with earlier studies as shown in Table 5.

The complete agreement between HSG and hysteroscopy was established in 43 (86%) cases. HSG showed a false positive rate of 23% and false negative rate of 6%. The sensitivity of HSG was 77% and specificity 93% in diagnosing uterine conditions. The other conditions which were missed, were likely due to the overfilling of the uterus. HSG is a simple, safe, rapidly diagnostic and minimally invasive procedure that provides valuable information about the uterine and tubal architecture. It has been proven by many studies, present study included, that a good correlation exists between HSG and hysteroscopy. HSG should be the screening procedure in the initial work-up of every infertile patient.

Hysteroscopy has added a new dimension to the management of infertile patients. It has increased diagnostic accuracy and has served as an adjunct in treating intrauterine conditions. Again since it is an invasive procedure it should be employed with caution weighing advantages against possible risks involved. HSG and hysteroscopy approach the infertile patient in different ways and each has its own advantages and limitations. Thus, these two investigation modalities should be considered complementary to each other in the complete work-up of an infertile patient rather than being mutually exclusive.

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