



HYSTEROSALPHINGOGRAPHY IN THE EVALUATION OF PRIMARY AND SECONDARY INFERTILITY

Obstetrics & Gynaecology

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ABSTRACT

Aim and Objectives: Hysterosalpingography is a gold standard and cost effective method of assessing the integrity of the female genital tract. Two important indications for obtaining HSG are evaluation of tubal patency and congenital uterine anomalies. Hysterosalpingography is a safe, relatively inexpensive, simple and rapid diagnostic test, when performed properly provides valuable information about the uterine cavity and tubal architecture. **Material and Method:** A prospective study of 100 consenting women coming to GCS Hospital having primary or secondary infertility and fulfilling the inclusion criterias were identified and explained about the procedure and after obtaining basic investigations hysterosalpingography was performed. **Results:** the most common age group in primary infertility was 21-25 yrs about 46% and in secondary age group was 26-30 about 42%, 18% of primary infertility and 34% of secondary infertility had menstrual irregularities. 6% of primary infertility and 10% of secondary infertility had tubal factors, as compared uterine factors which were 6% in both primary and secondary infertility. **Conclusion:** HSG is an effective tool with high specificity in diagnosing tubal factor. It is also highly sensitive for congenital anomalies. It is cost effective, and helps in demarcating patients who require further evaluation with laparoscopy.

KEYWORDS

INTRODUCTION

Infertility is a condition with unique and profound psychological and emotional impacts. Infertility is defined as one year of unprotected coitus without conception. It affects approximately 10–15% of couples in the reproductive age group. ⁽¹⁾ it is divided into primary and secondary infertility. Primary infertility refers to those who have never conceived in their lifetime whereas secondary infertility refers to those who have conceived at some time in the past regardless of whether the pregnancy ended in abortion. So the evaluation of female genital tract anatomy is an essential part of an investigation of infertility ⁽²⁾

Hysterosalpingography is a radiologic procedure where radiographs are taken of a female reproductive tract after injection of a suitable contrast media via cannula inserted in the cervical canal. The resulting radiographs obtained after the injection of contrast media depicts the uterine cavity, fallopian tubes and possible free spillage of contrast media into the peritoneal cavity if the tubes are patent.

HSG gives better idea of anatomy of uterus and fallopian tubes, which is important for assessing the case of infertility and to decide plan of further management.

Hysterosalpingography (HSG) is one of the most commonly used imaging modalities in infertility workup. ⁽⁸⁾ Uterine cavity abnormalities are present in 10% of infertility patients ⁽³⁾. Sensitivity and specificity of HSG in the detection of intrauterine abnormalities including (polypoid lesions, uterine malformations, and intrauterine adhesions) ranged from 44.4 to 75%, and from 82.5 to 96.4%, respectively

Tubal factors are present in 25-35%, The sensitivity and specificity of HSG in diagnosing tubal abnormalities was 65% and 83% respectively ⁽⁹⁾. Tubal damage or uterine cavity abnormality detected by HSG as the cause of infertility will help the gynecologist to decide which operational techniques the patients will undergo (laparoscopy, hysteroscopy, or surgery) ⁽¹¹⁾ Our study is to establish the factors that cause primary and secondary infertility by OPD procedures such as hysterosalpingography

AIMS AND OBJECTIVES

- 1) To evaluate cases of primary and secondary infertility.
- 2) To study procedural aspects of HSG and difficulty in performing HSG

- 3) To compare the findings in primary and secondary infertility

Inclusion criteria

- 1) Married women from the age of 18 to 40 years with primary/secondary infertility willing for infertility workup.
- 2) Normal semen analysis of the husband.

Exclusion criteria

- 1) Lower genital tract infection
- 2) Pelvic inflammatory disease
- 3) Allergy to contrast material
- 4) Genital malignancy

Methodology

A prospective observational study was conducted at GCS Medical College & Hospital, Department of Obstetrics and Gynaecology, Ahmedabad from December 1st, 2020 to June 1st, 2022. Ethical requirements of informed consent and confidentiality were ensured. A total of 100 women coming to OPD for treatment of Infertility were recruited for this study with consent.

After the enrollment, demographic data such as age, religion, education, socio economic status, husband's details like age, occupation, education, socio economic status, any addiction, occupation were obtained through an interview. Detailed history including complaints, married life, obstetric, sexual, menstrual, medical and pharmacological history was documented and clinical examination was performed. These findings were recorded on a predesigned and pretested proforma

Procedure:

Routine investigations such as haemoglobin percentage, blood group and Rh type, VDRL, RBS, HIV, HbsAg, Urine routine examination and microscopy. Specific investigations like Semen analysis were done to rule out the male factors of infertility, Pelvic ultrasound in some specific cases.

Proper previous detailed obstetric history, any complications during previous pregnancy or abortions were noted, proper bimanual pelvic examination was done and patient was prepared for HSG between 6th to 10th day of cycle (after cessation of menses and before ovulation). Every patient was given injection atropine and buscopan for pain relief and to prevent cornual spasm due to pain.

Patient was taken on X-ray table after explaining her the whole procedure briefly, firstly plain view taken and then under all aseptic precautions painting and draping was done and pelvic examination was performed, cervix was caught with vulsellum and was dilated with serial number Heggar's dilators. After sufficient dilatation, Leech-Wilkinson cannula or Rubin's cannula was introduced and its position was confirmed by fluoroscopy. Pre-filled 20cc syringe of 60% urograffin contrast was attached to cannula. The speculum was then removed and the patient carefully moved up the table so that she lies in supine position. The position of the cannula was again confirmed by fluoroscopy. Syringe was fixed to the connected end of cannula. The contrast was injected slowly using low, steady pressure with constant fluoroscopic monitoring of uterine and tubal filling. The x-ray equipment is placed above the abdomen and the central beam centred at the mid-point of the line drawn from the anterior-superior iliac spine and the pubic symphysis in the mid-line or mid-point between the pubic symphysis and the umbilicus. Traction on the vulsellum was applied for better anatomic depiction of the uterus.

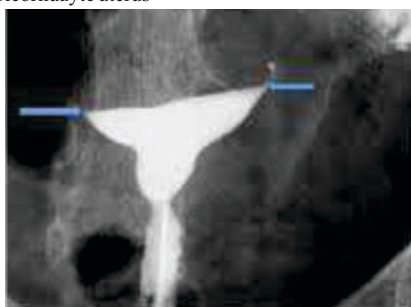


Normal uterine cavity immediately after injection of dye
1. after inject of another 4- 5 ml to demonstrate tubal spillage into the peritoneal cavity.



Second exposure showing bilateral tubal spillage into the peritoneum cavity

HSG of a bicornuate uterus



HSG of bilateral tubal block

RESULTS

Total 50 patients were having primary infertility and 50 patients were having secondary infertility.

1) Age wise distribution of patients

Age		Primary	Secondary	Total
<20yrs	Count	1	1	3
	%	2%	2%	3%
21 to 25	Count	23	15	38
	%	46%	30%	38%
26 to 30	Count	19	21	40
	%	38%	42%	40%

>30yrs	Count	7	13	20
	%	14%	26%	20%
Total	Count	50	50	100
	%	100%	100%	100%

Majority of the patients with primary infertility were between age group of 21 to 25, that was 46%, while that of secondary infertility were between 26 to 30 years, which was 42%

2) Education

Education	Primary	Secondary	Total
Post graduate	9	7	16
	18%	14%	16%
Graduate	6	21	27
	12%	42%	27%
Secondary School	20	20	40
	40%	40%	40%
Primary school	15	2	17
	30%	4%	17%
Total	50	50	100
	100%	100%	100%

Majority of the patients coming to our hospital for treatment of infertility had taken education till secondary school. In both primary and secondary infertility it was 40%

3) Menstrual cycle

Cycle	Primary	%	Secondary	%	Total
Regular	41	82%	38	76	79
Irregular	9	18%	12	24	21
Total	50	100%	50	100	100

82% patients of primary infertility and 76% women having secondary infertility were having regular menstrual cycle.

Menstrual abnormalities were more common among women with secondary infertility

4) Duration of infertility

Duration	Primary	%	Secondary	%
2 to 6 years	42	84	32	64
7 to 11	8	16	17	34
12 to 16	0	00	1	2
Total	50	100	50	100

About 84% females with primary infertility had infertile duration of 2 to 6 years while for secondary infertility it was 64%.

5) Based on menstrual history

Cycle	Primary	%	Secondary	%	Total
Normal	41	82	45	90	86
Oligomenorrhoea	5	10	2	4	7
Menorrhagia	4	8	3	6	7
Total	50	100	50	100	100

86% of total women coming for infertility work up had normal menstrual cycle while 10% women with primary infertility had oligomenorrhoea and 8% had menorrhagia.

6) Peritubal spillage

Spillage	Primary	Secondary	Total
Bilateral spillage	47 94%	45 90%	92
Left sided spillage	0 0%	3 6%	3
Right sided spillage	2 4%	0	2
No spillage	1 2%	2 4%	3

In primary infertility 94% had bilateral spillage with 4% having left sided tubal block and 2% having bilateral tubal block. While in secondary infertility 90% had bilateral spillage in which 6% had right sided block and 4% had bilateral tubal block.⁽⁹⁾

7) Congenital anomaly

Shape	Primary	Secondary	Total
Normal	48 96%	48 96%	96
Bicornuate uterus	1 2%	1 2%	2
Unicornuate uterus	1 2%	1 2%	2
Total	50	50	100

One patient of primary infertility had bicornuate uterus and one had unicornuate and same was seen in secondary infertility.

8) Impression of the study

	Primary	Secondary	Total
Normal Uterus with bilateral spillage	47	44	91
Normal uterus with no spillage	0	2	2
Normal uterus with right sided spillage	1	0	1
Normal uterus with left sided spillage	0	2	2
Unicornuate Uterus with Left sided Spillage	0	1	1
Unicornuate Uterus with Right side Spillage	1	0	1
Unicornuate uterus with no spillage	0	0	0
Bicornuate uterus with left sided spillage	0	0	0
Bicornuate uterus with right sided spillage	0	0	0
Bicornuate uterus with bilateral spillage	1	1	2
Bicornuate uterus with no spillage	0	0	0
TOTAL	50	50	100

In our study 91% women had normal uterus with bilateral spillage while 2% had normal uterus and no spillage which was more in women with secondary infertility and 1% had normal uterus and right sided spillage thus left sided tubal blockage and 2% had normal uterus with no spillage more common in secondary infertility, 2% patients with primary infertility had unicornuate uterus with right sided blockage and 2% women with secondary infertility had unicornuate uterus with left sided spillage.⁽¹⁴⁾

DISCUSSION

Hysterosalpingography is a radiological procedure where radiographs of female reproductive tract are taken after injection of a suitable contrast media via cannula inserted in the cervical canal. Which is cost effective method of assessing the integrity of the female genital tract.

Two important indications for obtaining HSG are evaluation of tubal patency and congenital uterine anomalies. Hysterosalpingography is a safe relatively inexpensive, simple and rapid diagnostic test, when performed properly provides valuable information about tubes, uterus and the cervix.

In the present study the commonest age groups was 26 to 30 years (38%). Primary infertility was mainly seen in the age group of 21-25 years and secondary infertility in 26-30 years. Mean age of the study population was (27.27 ± 3.59) years. That is because that majority of women complete their child bearing by 30 yrs of age and come for treatment of primary infertility by age of 25 and for secondary by age of 30. Kore S et al, in their study reported similar observation where most of the women in the study were between 25-30 years of age. In another study by Elsie Kiguli-Malwade* and Rosemary K. Byanyima, the commonest age group seen was 26-30 yrs.⁽⁷⁾

Majority of the women 79% (82% in primary infertility and 76% in secondary infertility) had regular menstrual cycle while 21% women had irregular menstrual cycles. 86% of total women had normal menstrual flow (82% in primary and 90% secondary) while 7% had oligomenorrhoea among which 5% cases were of primary infertility and rest 7% cases were of menorrhagia (4% and 3% of primary and secondary infertility respectively).

It can be attributed to the fact that patients with primary infertility present to us very young before the menstrual irregularities usually set in, and secondary are late presenters.

Almost half of the study population (64%) had duration of infertility between 2 to 6 years followed by 34% women with 7 to 11 years. It shows that the median of 4 yrs had gone in both primary and secondary infertility before patient came to seek treatment. In secondary infertility mean duration of infertile period was higher in our study as the advanced age of couples and long duration of marriage reduce their ability to reproduce and have a child. This is comparable with results from a recent study (Benksim et al., 2018)⁽¹²⁾

In our study Shape of the uterus was normal in 96% of cases, congenital anomaly i.e. unicornuate and one bicornuate uterus was seen in both primary and secondary each.

Tubal patency was present in 94% of primary and 90% of secondary infertility. Tubal blockage is found in 8% of total case. Tubal block was seen more in secondary infertility. 4% women of primary infertility had left sided blockage and 6% women with secondary infertility had right sided tubal block.

Bilateral tubal block is found in 4% of secondary infertility cases. The overall low percentage of tubal factor in our setup can be attributed to increased awareness regarding vaginal infections and pelvic inflammatory diseases, syndromic management of STI recommended by WHO and made available free of cost in large numbers of government setups.⁽⁴⁾

Broad spectrum antibiotics given in post abortal and postpartum cases, can be one of the reasons. Similar study in Kenya⁽³⁾ and Tanzania⁽⁵⁾ showed different results as incidence of STI and reproductive tract infection is very high.

In a study by Okafor,⁽⁸⁾ Tubal pathologies were seen in 100 with bilateral tubal occlusion in 43 and bilateral hydrosalpinx in 6 patients. Tubal factors are more common in African and sub-Saharan countries.⁽⁶⁾

According to an Egyptian study the overall accuracy of HSG in diagnosing tubal, uterine cavity and peritoneal abnormalities was 95.5%, 95% and 89% respectively.⁽¹²⁾

CONCLUSION:

Hysterosalpingography has very low false positives, so the patients with normal tubal patency do not require further workup for tubal factors by diagnostic hysterosalpingoscopy. It is cost effective, cheap and non-invasive⁽¹³⁾⁽¹⁵⁾. Patients are readily able to undertake this test. It helps to screen out which patients other invasive modalities.

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