

Hysterosalpingography: Role in Diagnosis of Female Infertility in Eastern Part of Uttar Pradesh, India

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ABSTRACT

Background: Infertility is a major health problem and cost of treatment is very high. In female infertility, tubal pathology is very common cause of infertility because of high prevalence of pelvic inflammatory disease. Hysterosalpingography is very old, cost effective and basic investigation for diagnosis of tubal and uterine pathology. The HSG findings for infertility vary from one place to another place depending on the incidence of Tuberculosis and PID. The aim of this study was to correlate the clinical and HSG finding to know the cause of infertility.

Purpose: The purpose of study is that HSG still an important baseline investigation in diagnosis of female infertility

Material and Method: This prospective study was done in Department of Obstetrics and Gynaecology in collaboration with Department of Radiology. It was a prospective study from Jan 2020 to Dec 2022.

Total 300 cases of female infertility registered in which HSG was done between day 7 to day 10 of the menstrual cycle. After explaining the details of procedure and its complications, informed written consent was taken. All patients were given a course

of antibiotics after the procedure of HSG. HSG was done after ruling out acute pelvic inflammatory disease and abnormal uterine bleeding. Both cases of primary and secondary infertility cases were taken. All the observations of clinical data and HSG findings were entered in excel sheet and analysis was done using SPSS

Results: The most common finding was tubal block. Very few patients had uterine anomalies also. Other patients have hydrosalpinx and partial tubal blockage. Irregular outline of endometrium seen. Filling defects were also seen in few patients because of space occupying lesions like fibroids.

CONCLUSION: The detailed study of HSG shows that there is high cause of female infertility due to tubal pathology. This is because of pelvic inflammatory disease. Hysterosalpingography still plays an important role in the diagnosis of female infertility. It is very simple, safe and cost-effective procedure.

KEY WORDS: Female Infertility, HSG, Fallopian tube, Uterine cavity

INTRODUCTION

Infertility is defined as inability to conceive even after one year of regular unprotected intercourse. It can be primary infertility

when the women have never had pregnancy or secondary infertility if the women have earlier pregnancy (Schankath A C et al)¹. The infertility prevalence varies between 9 and 18% of general population and it affects 15% of reproductive age couples (Pundir and ELToukhy 2010)². Hysterosalpingography (HSG) is one of first line and gold-standard investigation and less invasive as compared to laparoscopy (Pannti AA)³ (Phaylim C)⁴ in female infertility to know about the status of uterine cavity and patency of tubes.

The main cause of infertility in this part of India is because of pelvic inflammatory disease, which can cause tubal pathology. Fallopian tubes are very prone to infections, which can cause damage of function of tubes. Tubes play an important role in transport of sperms, picking up the egg, fertilization and transport of embryo.

The investigations, which are available for anatomical study of uterine and tubal causes are HSG, Sonosalpingography (SSG), MRI, Hysteroscopy and laparoscopy.

Out of these, HSG is very safe, cost effective and available at very small centres. HSG shows the tubal pathology in depth. We can see which part of tube is blocked, is there any hydro-salpinx and peritubal adhesions. HSG also detects the uterine and cervical pathologies.

Laparoscopy is invasive and expensive and require general anaesthesia.

Uterine cavity lesions are also cause of female infertility. The main uterine causes are fibroid, polyps, adhesions, septum and uterine anomalies.

Hysterosalpingography also help in diagnosis of intra-uterine space occupying lesions and cervical incompetence.

The aim of the study is finding the role of HSG in diagnosis of female infertility

MATERIAL AND METHOD

Structure of the study and eligibility criteria

This study was done in the Department of Obstetrics and Gynaecology in collaboration with department of Radiology from Jan

2020 to Dec 2022. The ethical clearance was taken from the institute ethical committee. This was a prospective and descriptive study done over a period of 3 years.

Total 300 patients were included in this study in which hysterosalpingography was performed. But 15 patients the HSG could not be done in these patients because of small stenosedcervix, very acute anteverted uterus and cervical incompetence.

So, we had 285 patients in which HSG was done and in 15 patients the procedure failed because of problems already mentioned. The detail history and examination of all the patient done by filling a questionnaire.

Inclusion criteria: all Primary and secondary infertility patient of age group 18 to 45 years

Exclusion criteria: Pregnancy, Active Pelvic inflammatory disease, allergy to contrast (dye) and active uterine and vaginal bleeding.

PROCEDURE

Hysterosalpingography was done by Gynaecologist with radiologist in the department of radiology. Written consent was taken from the patient. All the complications explained. Pregnancy and Pelvic Inflammatory disease were ruled out before doing this procedure. History of any drug allergy was asked. The HSG was done in the infertile women between day 7 to day 10 of menstrual cycle.

The patient who doesn't have regular cycle pregnancy should be excluded before HSG. Patient was asked to empty bladder and then patient lie down in lithotomy position. Per speculum and per vaginal examination done after cleaning the area with betadine. Uterine sound was used to know the size of uterus and weather it is anteverted or retroverted. Water based media was used instead of oil based. Then urograffin dye was filled in 20 ml syringe and HSG cannula was attached with syringe and it was made air free. Cervix was holded with vulsellem and then HSG cannula was put

inside cervical canal and patient's position was adjusted and dye was pushed slowly and X-ray film taken to see the uterine cavity. Then again 2nd time dye was pushed and delay film taken to see spillage of dye. Patient after completion of procedure observed for one hour to see any allergic reaction and also given a course of antibiotics. Emergency drugs should be available because sometime anaphylactic shock can occur. The dye used was water based.

In the HSG film were visualized and the uterine cavity and tubes were seen. In tube

the patency of tube, any kinking noted. Uterine cavity showing any space-occupying lesion is notes. Any honey-comb appearance which is suggestive of adhesions is also recorded. Any cervical incompetence was recorded.

STATISTICAL ANALYSIS:

A detailed questionnaire was filled by asking detail history, examination and investigations performed.

Pictures of HSG showing tubal block, beading, hydrosalpinx and space occupying lesion are shown. Fig 1 to 4.

FIG 1 Septate uterus



FIG 2 unilateral cornual block and hydrosalpinx



FIG 3 Fimbrial block and space occupying lesion

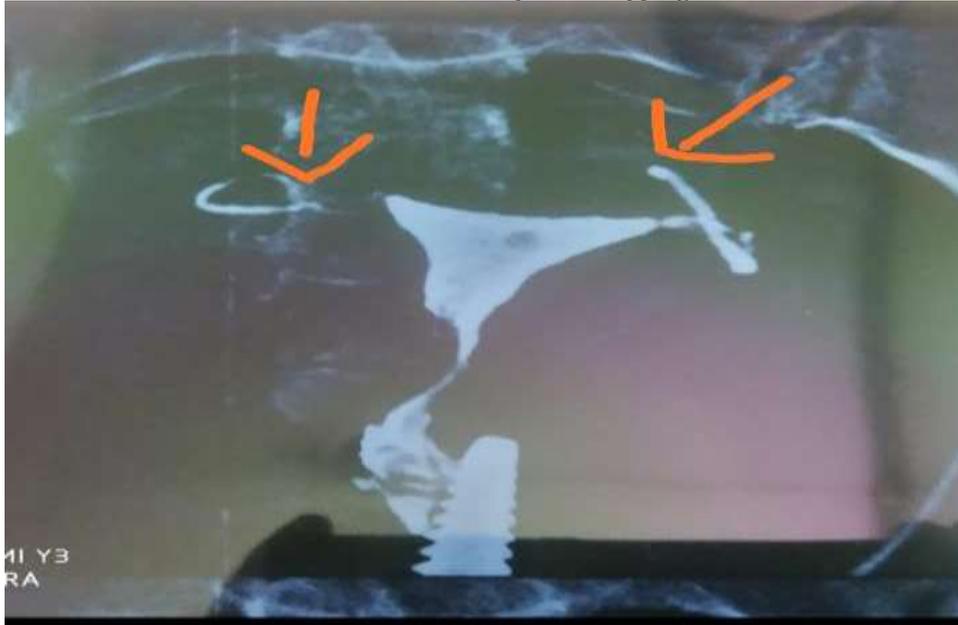
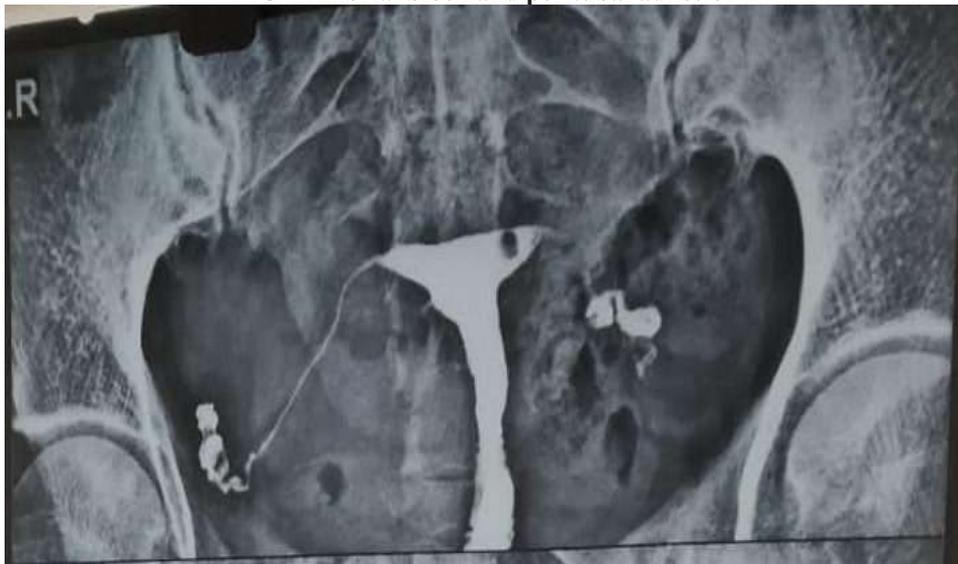


FIG 4 fimbrial block and peritubal adhesion



Note: all HSG were not from our radiology department and some are also patient brought from outside hospitals. If their quality was good so we did not repeat HSG in these patients.

A detail history and examination were recorded. All data entered in excel sheet and analysis was done using SPSS 16 and analysis done.

RESULTS

In this study total 300 patients were recruited. 285 patients HSG was done successfully whereas in 15 patients it could not be done because of cervical stenosis and acutely anteverted.

Table 1. Type of Infertility and age distribution. n=300

Age group	Primary infertility	Percentage	Secondary infertility	Percentage
15 - 24	72	70.58%	3	1.51%
25-34	21	20.58%	49	24.74%
35- 45	9	8.28%	146	73.73%
Total	102	34%	198	66%

Table 1 shows that there were 34% cases of primary infertility and 66% cases of secondary infertility.

In primary infertility group 70.58% patient were between 15 to 24 years age. In secondary infertility 73.33% patient were found in 35 to 45 years age group.

Table 2. Sociodemographic factors

Characteristics	Number	Percentage
RESIDENCE		
Urban	135	45%
Rural	165	55%
EDUCATION		
Illiterate	6	2%
Matriculation	90	30%
till 12 th	102	34%
Graduation	84	28%
Postgraduation	18	6%
SOCIOECONOMIC STATUS		
Low	60	20%
Middle	134	38%
High	126	42%

Table 3. Distribution according to years since marriage & Regularity of menstrual cycle. n= 300

Parameter	Primary infertility (102)	Percentage	Secondary infertility (198)	Percentage
Years since Marriage				
< 5 Years	68	66.66%	48	24.24%
5- 10 Years	22	21.56%	73	37.86%
>10 Years	12	11.76%	75	37.87%
Menstrual cycle				
Regular	63	61.76%	83	41.91%
Irregular	46	45.09%	115	58.08%

Table 4: Risk Factors For infertility. N = 300

Risk factors for infertility	Number	Percentage	HSG Pathology seen
Pelvic inflammatory disease	40	13.33%	Tubal blockage Peritubal adhesions
Past history of ectopic pregnancy	5	1.66%	Tubal blockage
Past h/o Tuberculosis	20	6.66%	HYDROSALPINX AND BEADING
Past h/o pelvic surgery	10	3.33%	Peritubal adhesions
h/o abortion and infection	14	4.66%	Tubal blockage
More than one risk factors	19	6.33%	Tubal block, beading
History of Endometriosis	24	8%	Peritubal adhesions

Table 5. Abnormal HSG. n=285

HSG	Number	Percentage
NORMAL	120	42.10%
ABNORMAL	165	57.89%

In our study 42.10 % patient shows normal HSG whereas 57.89% shows abnormal findings in HSG.

Table 6. Tubal Abnormalities in HSG. N= 285

Tubal abnormality	Number of patients	Percentage
Cornual block	20	7.07%
Block at fimbrial end	18	6.31%
Unilateral tube block	15	5.26%
B/L Tubal block	25	8.77%
Beading in tubes	13	4.56%
Peritubal Adhesions	17	5.96%
Hydrosalpinx	10	3.50%

The tubal pathologies seen are tubal blockage (unilateral 5.67% bilateral 8.77 %) and there is hydrosalpinx in 3.50% cases.

TABLE 7. Uterine cavity abnormality in HSG. n =285

Uterine cavity Abnormality	Number of patients	Percentage
Irregular line of uterine cavity	16	5.61%
Space occupying lesion in uterine cavity	7	2.45%
Uterine adhesions	9	3.15%
Uterine anomalies	4	1.40%
intravasation	11	3.85%

DISCUSSION

Infertility burden has increased in developing countries and diagnosis and treatment is not affordable for many couples. Hysterosalpingography is very basic, first line (Phaylim C, Omidiji et al)^{4,5} cost effective investigations to know the uterine cavity and tubal pathology. It is easily available at maximum centres and cost-effective investigation for tubal pathology (Onwuchekwa et al)⁶.

The incidence of secondary infertility (66%) is more in our study than primary infertility (34%). This result is similar to the study done by (Ugwu EO)⁷ in which incidence of primary infertility was 28.45 and secondary infertility was 71.6%. (Larsen U¹⁶) also found similar results. Similar studies were done by other (Kiguli et al)¹³ and (Kitila et al)¹⁴.

The mean age of marriage in our study as 30 Years. The age of marriage has increased because of education and jobs.

Our study shows 57.89 % abnormal finding in hysterosalpingography. Study done by (Onwuchekwa)⁶ et al shows 70.8 % abnormal HSG findings. A study done by (Okafor CO et al)⁸ shows 29.1% case has normal HSG.

In our study 41.4% tubal pathologies were found in HSG. According to (Hind T et al)⁹ tubal pathologies were seen in 42.7% cases and uterine abnormalities in 24%.

Present study shows incidence of hydrosalpinx is 3.5% and uterine space occupying lesions 2.45 %. A study by (Mgbor et al)¹⁰ and shows the incidence of hydrosalpinx ranged from 7.2 to 11%.

According to (Olubukola AT Omidiji)⁵ tubal pathologies (tubal block and

hydrosalinges) were seen in 35.1% cases and uterine masses were seen in 22.9% cases

In our study uterine anomaly was recorded in 1.40% cases. A study done by (Bukar et al)¹¹ found 3.6 % cases of uterine anomaly on HSG. The study done by (Danfulanni et al)¹² shows 0.9 % patient had uterine anomalies.

In our study peritubal adhesions were detected in 5.96% cases. A study by ChritianChogozieMalwe shows 12.4% peritubal adhesions.

The present study shoes intravasation in 3.85% cases. A study by (Onwuchekwa et al)⁶ found intravasation in 6.40% cases. Chang and Sim¹⁵ found that intravasation was associated with tubal blockage which is similar to our findings.

CONCLUSION

Tubal factors are most important cause of female infertility. In spite of so much advancement in treatment and diagnostic techniques, HSG still plays an important role in diagnosis of female infertility. Before planning Intrauterine insemination, the tubal patency must be confirmed. HSG gives information about uterine space occupying lesions and tubal pathology.

Declaration by Authors

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Conflict of Interest: There is no conflict of interest

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