



**ORIGINAL RESEARCH PAPER**

**Radiodiagnosis**

**COMPARATIVE STUDY OF STEROSALPINGOGRAPHY AND DIAGNOSTIC HYSTEROLAPAROSCOPY IN TUBAL FACTOR INFERTILITY**

**KEY WORDS:**

(HSG)hysterosalpingography, (DHL)diagnostic hysterosalpingography, infertility.

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**ABSTRACT**

**Background:** Infertility is a condition which has both medical as well as social impact on the state of couple. HSG is widely used as first line approach to visualize uterine cavity & tubes after contrast administration. It shows the exact site of tubal blockage. Hysterosalpingography plays a major role by visualizing uterus, fallopian tubes, ovaries & peritoneal structures.  
**Aims&Objectives:**To study the role, assess reliability and compare the findings of HSG & DHL in infertile women.  
**Methods :**60 females of primary infertility aged between 20-40 years were included. HSG & DHL was performed in all patients & findings were analysed.  
**Results:** Sensitivity of HSG was 73%, specificity was 88%, with positive predictive value 57%, negative predictive value 94% when tubal pathology was defined as any form of tubal occlusion detected at laparoscopy, either unilateral or bilateral.  
**Conclusion:** HSG has a reasonably good sensitivity and specificity in diagnosing tubal pathology while hysterosalpingography has diagnostic as well as therapeutic approach. Hence, HSG they are complimentary to each other in infertility work up.

**INTRODUCTION:**

Infertility is defined by "the failure to achieve pregnancy after 12 months or more of regular unprotected sexual intercourse." This morbidity includes social, economic, relationship and psychological aspects.

The investigation should provide the clinician with useful prognostic information regarding possible future treatment. In addition, a wide arena of tests are available for the diagnosis of infertility. It is more important to perform the relevant investigation in a logical order at a correct time rather than performing routine tests in a series. Infertility affects about 10-15% of reproductive age couples<sup>2</sup>. WHO estimates that 60 to 80 million couples worldwide currently suffer from infertility<sup>3</sup>. Incidence of female infertility is 45.67%. Infertility varies across regions of the world and is estimated to affect 8 to 12 per cent of couples worldwide<sup>3,4</sup>. Among Indian women reporting primary infertility and PID, prevalence of sexually transmitted infections was high<sup>2</sup>. WHO estimates the overall prevalence of primary infertility in India to be between 3.9 and 16.8 per cent. Leading cause of infertility includes tuboperitoneal disease (40 -50%), ovulatory disorders (30-40%), uterine factor (15-20%), and male factor infertility (30-40%)<sup>5</sup>. The degree of tubal pathology determines the possibility for fertility. The evaluation of fallopian tube is necessary to determine the management plan of infertility.

HSG shows the exact site of tubal blockage. In some cases, where blockage is due to mucus plug, contrast dislodges it and maintains the tubal patency. The ability to see and treat uterine, fallopian tubes, and ovarian causes during laparoscopy increases infertility evaluation and hysteroscopy also equally play major role by visualizing the pelvic organs and diagnosing the possible pathology.

**MATERIALS & METHODS:**

60 Patients of infertility were evaluated prospectively in the Department Of Radiodiagnosis in MGM medical college &

M.Y.hospital, Indore from April 2018 to April 2019 after ethical & scientific committee clearance. HSG was performed between 8<sup>th</sup> to 11<sup>th</sup> day of menstrual cycle in which approximately 10 ml of contrast was pushed through internal os. Contour of uterine cavity were noted and spill from either end of tubes noted. Spot films were taken: one film to visualize the spill and another taken 5 minutes later to visualize the free dispersion of contrast in the pelvic peritoneal cavity. The site of block was ascertained. In consecutive menstrual cycle, the patient underwent hysterosalpingography under general anaesthesia after written consent in the department of Obstetrics and Gynaecology. The findings of HSG and laparoscopy were compared. Data was depicted in the form of tables and charts. Statistical analysis was done using chi square test. P value < 0.05 was considered significant.

**RESULTS:**

Out of 60 patients, 35 patients (58%) belonged to age group of 26-30 years. Only 3 patients (5%) above 36 years of age sought medical advice. About 45 patients (75%) had 4-6 years of duration of infertility. On HSG, 50 patients (83%) were found to have blocked tubes (21 unilateral-35% & 29 bilateral block - 48%) & 10 had patent tubes. On hysterosalpingography, 37 patients (62%) had tubal block (16 unilateral -27% & 21 bilateral- 35%) & 23 had patent tubes (38%). HSG could detect about 21 cases of tuberculosis & pelvic inflammatory disease, 10 cases of adhesion & 8 cases of endometriosis. DHL could identify 22 cases, 18 cases, 11 cases & 9 cases respectively. Sensitivity of HSG was 73%, specificity was 88%, with positive predictive value 57%, negative predictive value 94% when tubal pathology was defined as any form of tubal occlusion detected at laparoscopy, either unilateral or bilateral.

**DISCUSSION :**

One of the most common and under appreciated reproductive health problems in developing countries is the high rate of infertility and childlessness. The diagnostic investigation for infertility should provide the clinician with useful prognostic information regarding possible future treatment.

Hysterosalpingography (HSG) plays an important diagnostic role in finding the cause of infertility and in deciding the line of management. The ability of laparoscopy to see and treat uterine, fallopian tubes, and ovarian causes of infertility in laparoscopy increases infertility evaluation. With this background, we have attempted to evaluate infertility cases initially by H.S.G. and later on by diagnostic hysterolaparoscopy.

Majority (58%) of the patients in our study belonged to age group of 26 to 30 years. This is in accordance with a study by Antaratani RC et al<sup>6</sup> in 2017.

The analysis of duration of infertility in our study shows that 75% sought medical advice within 6 yrs of marriage. Patients with duration of infertility more than 7yrs contributed to 10%. This was similar to the study of Begum J et al<sup>7</sup> (2015).

In our study, 50 (83%) out of 60 patients were found to have blocked tubes on HSG of which 21 cases (35%) had unilateral block and 29 cases (48%) had bilateral block. 10 patients (17%) had patent tubes, out of 60 patients. On D.H.L., 23 patients (38%) had patent tubes and 37 patients (62%) had blocked tubes. Among them, 16 cases (27%) had unilateral block while 21 cases (35%) had bilateral block. This was statistically significant (p < 0.05). All the patent tubes on HSG were confirmed by laparoscopic chromopertubation. 13 cases (22%) additionally were found to have patent tubes on laparoscopy when compared to H.S.G. This was in accordance with the study conducted by Gichunuku JG<sup>8</sup>. The increase in number of patent tubes on laparoscopy may be due following reasons:

- a) The fact that it was only a spasm that was mimicking a block in HSG.
- b) Release of peritubal adhesion during laparoscopy facilitates the free flow of contrast through fimbria.
- c) A small fimbrial phimosis could easily be overcome by anaesthesia and forcible injection of contrast.

The superiority of laparoscopy over HSG in assessing extratubal pathology has been shown in our study & has been demonstrated in other studies.<sup>9</sup>



Figure 1 : HSG showing bilateral cornual block.

Table 1 : Comparison Of Tubal Patency By H.s.g. And Laparoscopic Chromopertubation

	H.S.G.		Laparoscopic chromopertubation		
	Number of cases	%	Number of cases	%	
Patent	10	17	23	38	
Blocked	U/L	21	35	16	27
	B/L	29	48	21	35
		50	83	37	62
Total	60	100	60	100	

P value < 0.05

Table 2 Statistical Analysis Of Hsg In Tubal Pathology

Sensitivity	73%
Specificity	88%
Positive predictive value	57%
Negative predictive value	94%

**CONCLUSION :**

HSG should be used as the primary imaging modality in assessment of female infertility as it is simple, inexpensive, safe, widely available and rapid diagnostic modality for tubal patency. Being non invasive, HSG has a reasonably good sensitivity and specificity in diagnosing tubal pathology of infertile women. Diagnostic laparoscopy is the standard means of diagnosing the tubal pathology, peritoneal factors, ovarian factors and uterine factors as cause of infertility. It has both diagnostic and therapeutic approach. It is effective, superior & safe tool in evaluation of all infertile patients, particularly for detecting peritoneal endometriosis, adnexal adhesions, and septate uterus. These are correctable abnormalities that are missed by routine pelvic examination and usual imaging techniques. Laparoscopy helps to reveal false tubal obstructions observed with HSG. Hence it can be concluded that HSG and hysterolaparoscopy are not alternative, but are complementary to each other in work up of female infertility.

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