

## Comparative Study of Sonosalpingography and Diagnostic Laparoscopy for Evaluation of Tubal Patency in Infertile Women

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### ABSTRACT

**Background:** Various tubal pathologies accounts for 10% aetiological factors in infertility couples. sonosalpingography (SSG) helps in eliminating the risks associated with the use of dye and radiation required for hysterosalpingography. Most frequently used procedure to evaluate tubal patency are Sonosalpingography & diagnostic laparoscopy. The aim of this study to find out sensitivity & specificity of various methods of assessing tubal patency.

**Materials & Methods:** The study was conducted in 50 infertile female between age of 18-40 year who were attending at Gynae OPD at Mahila Chikitsalya Jaipur between Nov. 2016 to April 2017 were included in this study after excluding cases of infertility due to male factors. At first visit history, general physical examination & pelvic examination was done patient who had no obvious abnormality in either history or examination were subjected to preliminary investigation before comparative study was undertaken. Sonosalpingography was done in postmenopausal phase between 7th to 9th day of menstrual cycle & diagnostic laparoscopy was done premenstrually on 21st day of cycle.

**Results:** The maximum numbers of patients were between 20-24 year (40%) of age group followed by 34% in 25-29 years of age group. The incidence of primary infertility was 78% & secondary infertility was 22%. Majority of patients was residing

to urban areas (58%). Hydrosalpinx pelvic was more common pathology in both type of test (4 cases & 5 cases respectively). Severe pain (4 cases) was occurred in Sonosalpingography and vomiting (6 cases) in Diagnostic Laparoscopy.

**Conclusion:** The sonosalpingography should be used initially to assess tubal patency in case of infertility, if any abnormality is detected on sonosalpingography, a hysterosalpingography or laparoscopy can be done for the confirmation.

**Keywords:** Sonosalpingography, Infertility, Diagnostic Laparoscopy, Tubal Patency.

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### INTRODUCTION

Infertility is described as the ability to conceive after unsafe intercourse for a interval of one year for couple in which the women is below 35 years or six months of trying for couples in which the women is above 35year of age. The prevalence of tubal diseases estimated to be about 40% in India & causes of infertility due to tubal factors is very high.<sup>1</sup>

The fallopian tubes play an important part in reproduction. After ovulation, oocyte picked up from the peritoneal fluid by fimbria and epithelial cilia in the tube than transfer the oocyte up to the ampulla. Fallopian tube irregularity or tubal blockage may either sequel infertility or unusual implantation may be cause of ectopic pregnancy. Tubal blockage can occurred due to formation of scar tissue and adhesions due to infections, pelvic tuberculosis, endometriosis, and salpingitis isthmic nodosa or abdominal or gynaecological surgeries.<sup>1</sup>

Sonosalingography (SSG) helps in abolish the risks related with the use of dye and radiation required for hysterosalpingography. The infusion of saline in sonography technique employs the use of sterile solution as a negative contrast in coincidence with traditional transvaginal sonography. Thus alongside the imaging the uterine cavity, this technique also supports in assessing the patency of fallopian tubes. Most commonly used procedure to assess the tubal patency are Sonosalpingography & diagnostic laparoscopy.<sup>2</sup> Diagnostic laparoscopy is another modality in which dye is pushed intracervically through cannula and flow is directly discern under vision through laparoscopic peritoneally called as chromopertubation for patency. In the present context it is proposed to do comparative study between Sonosalpingography & diagnostic laparoscopy in infertility work up with an open mind, keeping advantages & disadvantages of these procedures in view.

**MATERIALS & METHODS**

The study was conducted in 50 infertile female between age of 18-40 year who were attending at Gynae OPD at Mahila Chikitsalya Jaipur between Nov. 2016 to April 2017. All patients with primary infertility who fit in the inclusion criteria were selected in the study.

**Inclusion Criteria**

- All cases of infertility between 18-40years.
- All patients willing to participate in study.
- Not suffering from other Medical illness.
- Normal seminal and other parameters of the partner.

**Exclusion Criteria**

- Age less than 18 years and above 40 year.
- Active PID.
- Patients with cervical pathology.
- Hypersensitivity to contrast.
- Patients unfit for anesthesia.
- Patients having history of tubal surgery

At first visit history, general physical examination & pelvic examination was done patient who had no obvious abnormality in

either history or examination were subjected to preliminary investigation before comparative study was undertaken.

Sonosalpingography was done in postmenopausal phase between 7th to 9th day of menstrual cycle & diagnostic laparoscopy was done premenstrually on 21st day of cycle.

**Procedure**

The procedure involves instillation of normal saline into the endometrial cavity during vaginal sonography and inspection of the tubes for spillage. The vulva and vagina was cleaned with antiseptic solution, a sterile speculum introduced into the vagina and ant. Lip of cervix was held with vassellum. A foley catheter of no 10 size introduced beyond the internal os and balloon distended with 3ml of normal saline to prevent retrograde leakage of saline into the vagina. The speculum was then removed and the transvaginal introducer inserted into the vagina. The catheter position in the endometrial cavity identified and repositioned if necessary. Sterile saline 20ml then injected slowly through the catheter under continuous sonography control.

**Table 1: Age wise distribution of primary & secondary cases**

S.No.	Age Group (Years)	Cases	Percentage
1.	20-24	20	40
2.	25-29	17	34
3.	30-34	6	17
4.	35-40	7	14

**Table 2: Distribution of patients according to types of infertility**

Type of infertility	No. of cases	Percentage
Primary	39	78
Secondary	11	22
Total	50	100

**Table 3: Distribution of patients according to Residential Area**

Residential area	No.	Percentage
Rural	21	42
Urban	29	58
Total	50	100

**Table 4: Assessment & Correlation amongst two tests for tubal patency**

Procedure	Both type patent	Bilateral tubal block age	Left tube patent	Right tube patent
Sonosalpingography	38	4	4	4
Diagnostic Laparoscopy with chromoperturbation test	39	4	2	5

**Table 5: Comparison of Sonosalpingography and diagnostic laparoscopic finding**

Finding	SSG		DL with chromo perturbation	
	No. of cases	%	No. of cases	%
Bilater tubal patency	38	76%	39	78%
Bilateral Cornual block	2	4%	2	4%
Bilateral fimbrial block	2	4%	2	4%
Unilaterel Cornual block	4	8%	3	6%
Unilateral fimbrial block	4	8%	4	8%
Total	50	100%	50	100%

**Table 6: Associated pelvic pathological finding in SSG & diagnostic laparoscopy**

Pelvic pathology	SSG	DL
Hydrosalpinx	4	5
Ovagian cysts	3	4
Endometriosis	1	2
Peritubal adhesions	3	4
Fibroid uterus	2	3
Beaded tubes	-	1
<b>Total</b>	<b>13</b>	<b>19</b>

**Table No. 7: Complications during SSG and DL**

Pelvic pathology	SSG	DL
Severe pain	4	0
Vomiting	2	6
Fever	0	2
Stitcle ijected	0	1

## RESULTS

The present study was carried out in total 50 numbers of patients. The maximum numbers of patients were between 20-24 year (40%) of age group followed by 34% in 25-29 years of age group (Table 1). The incidence of primary infertility was 78% & secondary infertility was 22% (Table 2). Majority of patients was reside to urban areas (58%) (Table 3). Out of 50 patients, 38 patients had both type of tubal patency by Sonosalpingography & 39 patients had both type of tubal patency by Diagnostic Laparoscopy with hromopertubation test (Table 4 & 5).

Hydrosalpinx pelvic was more common pathology in both type of test (4 cases & 5 cases respectively) (Table 6). Severe pain (4 cases) was occurred in Sonosalpingography and vomiting (6 cases) in Diagnostic Laparoscopy (Table 7). For evaluation of tubal patency, SSG had sensitivity of 91.67% and specificity of 100% for evaluation of tubal patency. In contrast, in diagnostic laparoscopy for evaluation of tubal patency, the sensitivity is 95.83% and specificity is 100%.

## DISCUSSION

A Present study was conducted in 50 infertile women, out of which 78% infertile women belongs to primary infertility & 22% belongs to secondary infertility. Which is consisted with Seal Subrata Lall<sup>3</sup> et al found that majority of women with primary infertility.

Our study showed that the 40% belongs to 20-24 years age group & 34% belongs to 24-29 year of age group. Mean age of primary infertility was 26.90 yr. & for secondary infertility was 25.45 year. Which is consisted with Seal Subrata Lall<sup>3</sup> et al found primary infertility belong to the 20-30years of age group of women.

Out of 50 patients, 38 patients had both type of tubal patency by Sonosalpingography & 39 patients had both type of tubal patency by Diagnostic Laparoscopy with chromopertubation test. Our findings confirms to those of Allahabadia<sup>4</sup> G. N found 82% tubes bilaterally patent by sonosalpingography and 82% by laparoscopy. Our findings conflict that F.F. Mitri<sup>5</sup> et al (1994) who found bilateral patency by sonosalpingography in 31.25%. Bilateral tubal blockage was reported by Allahabadia<sup>4</sup> G.N in 12% and 12% cases by sonosalpingography and diagnostic laparoscopy respectively. A study was done by Beenamol<sup>6</sup> et al (2013) demonstrated by bilateral tubal blockage in 16% and 16% cases in sonosalpingography and diagnostic laparoscopy respectively.

Our study showed that the Hydrosalpinx pelvic was more common pathology in Sonosalpingography & Diagnostic Laparoscopy test (4 cases & 5 cases respectively). The sonosalpingography has also certain other advantage it is it is a non-invasive procedure, outpatient procedure, less time consuming and cost effective, anesthesia is not required. It causes no radiation hazards, it avoid allergic reaction. Its disadvantage are tubal spasm may lead to the diagnosis of the tubal occlusion. In hydrosalpinx tubal flow may give a false impression of tubal patency, intra tubal pathology cannot be detected site of blockage, cannot be detected precisely peritubal adhesion and motility of the tubes cannot amerced properly.

Our study showed that the evaluation of tubal patency, SSG had sensitivity of 91.67% and specificity of 100% for evaluation of tubal patency. In contrast, in diagnostic laparoscopy for evaluation of tubal patency, the sensitivity is 95.83% and specificity is 100%. Which is consisted with Nitin N. Kulkarni et al<sup>7</sup> & J. Anuradha et al<sup>8</sup>, concluded that low risk subjects for tubal factors in infertility, sonosalpingography can be employed as a screening procedure to pick up subjects needing HSG and laparoscopy.

## CONCLUSION

We concluded that sonosalpingography is highly sensitivity and specific and is less invasive. The sonosalpingography should be used initially to assess tubal patency in case of infertility, if any abnormality is detected on sonosalpingography, and confirm by diagnostic laparoscopy.

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