

Comparison of Transvaginal Sonosalpingography to Chromolaparoscopy for Evaluation of Tubal Patency in Infertile Patients

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Abstract:

Background: A reliable, safe and cost effective method to assess tubal patency in case of infertility is very essential. Present study was undertaken to compare transvaginal sonosalpingography and chromolaparoscopy for evaluation of tubal patency in infertile patients.

Methodology: 50 patients with infertility were subjected to transvaginal sonosalpingography and chromolaparoscopy preferably in a same cycle. All were evaluated for fitness by detailed history taking, general physical examination and systemic examination.

Results: Sonosalpingography found bilateral tubal blockage in 30% cases and unilateral blockage in 4% cases on each side. Chromolaparoscopy found bilateral tubal blockage in 28% cases and unilateral blockage in 4% cases on each side. Sensitivity of sonosalpingography was 96.7% and specificity was 87.5%. Positive predictive value was found to be 93.75%.

Conclusion: As sonosalpingography has higher sensitivity and specificity and is reliable, simple, cost effective, non invasive and a well tolerated method, it should be used initially to assess tubal patency in case of infertility.

Keywords: sonosalpingography, chromolaparoscopy, tubal patency

I. Introduction

The incidence of tubal disease in infertility varies from country to country. In India it has been estimated to be about 40%. The prevalence of pelvic inflammatory disease, genital tract tuberculosis and chronic infection is quite common in our country and hence the incidence of tubal factors in infertile women is high.

The assessment of tubal patency is the commonest and most practical method of evaluating tubal function. Since the development of tubal insufflation test by Rubin I (1954), different methods have been devised from time to time to determine the tubal factors (1). Noteworthy procedures are hysterosalpingography, chromolaparoscopy, salpingoscopy, falloposcopy, radionuclide hysterosalpingography, and transvaginal sonosalpingography.

This study is undertaken to compare transvaginal sonosalpingography and chromolaparoscopy and the results will be compared on the basis of tubal patency.

II. Material And Methods

The study was conducted in the Department of Obstetrics and Gynaecology, Jaipuria Hospital, attached to Rajasthan University of Health Sciences, Jaipur. It included total 50 women attending the infertility clinic during the year 2015.

All these women were clinically evaluated by detailed history taking, general physical examination and systemic examination including vaginal examination to rule out any disease. Relevant laboratory tests were carried out in all patients. Criteria for exclusion from study were –

- 1) Acute pelvic inflammatory disease
- 2) Any suspected genital tract malignancy
- 3) Male partner with oligospermia less than 10 million/ml

Informed and written consent were taken from the rest after proper counseling. Then they were subjected to transvaginal sonosalpingography in the proliferative phase and chromolaparoscopy in the secretory phase of menstrual cycle.

III. Results

Table 1: Findings of Sonosalpingography (SSG)

	Number of cases	Percentage
Bilateral Patent	31	62
Bilateral Blocked	15	30
Right Blocked or Left Patent	2	4
Left Blocked or Right Patent	2	4

Based on sonosalpingography finding bilateral tubal blockage was detected in 30% cases. In 4 cases unilateral tubal patency was seen.

Table 2: Findings of chromolaparoscopy

	Number of Cases	Percentage
Bilateral Patent	30	60
Bilateral Blocked	14	28
Right Blocked or Left Patent	2	4
Left Blocked or Right Patent	2	4
Test not done	2	4
Total	50	100

Based on laparoscopy finding bilateral tubal blockage was detected in 28% cases. In 4 cases unilateral tubal patency was seen. In 4% of cases, tubercles were seen and beading was seen on laparoscopy, so the dye was not injected because of the fear of dissemination of Koch's.

Table 3: Assessment and correlation amongst the two tests for tubal patency

	Bilateral Patent	Bilateral Blocked	Left Blocked or Right Patent	Right Blocked or Left Patent
Sonosalpingography	31	15	2	2
Chromolaparoscopy	30	14	2	2

Table shows that sonosalpingography for diagnosis of patent tubes has 96.7% sensitivity and 87.5% specificity i.e. in this group of patients the diagnosis of tubal patency made by sonosalpingography was always confirmed by subsequent chromolaparoscopy.

In two patients we got false positive results (in left tube) i.e., patent tubes on sonosalpingography but blockage on chromolaparoscopy. In both the cases there was hydrosalpinx which may itself be the reason for the false positive result since the turbulence of flow of saline through the dilated tubes may simulate spillage on USG screen.

In one patient false negative results were elicited i.e. tubes were blocked on sonosalpingography but patent on chromolaparoscopy. This may be due to tubocornual spasm, mucous plugs blocking the tubes, and technical or human error.

IV. Discussion

The present study aims at comparing the two methods in order to find out a safe, reliable and comfortable method to assess tubal patency in cases of infertility. In present study on sonosalpingography, 30% cases had blocked fallopian tubes on both sides with 4% cases showing blockade unilaterally on each side. Chromolaparoscopy found bilateral tubal blockage in 28% cases and unilateral blockage in 4% cases on each side. In our study agreement between sonosalpingography and chromolaparoscopy was 85.7% which quite convincingly showed that sonosalpingography may be substituted for chromolaparoscopy as a tubal patency test. Another study showing identical results was by Heikkinen and co-workers (1995) who evaluated the advantages and accuracy of transvaginal sonosalpingography in the assessment of tubal patency with regards to chromolaparoscopy. Sixty-one Fallopian tubes were examined by both techniques, resulting in concordance of 85%. According to Tufekci et al. (1992), the results obtained from transvaginal sonosalpingography and chromolaparoscopy were completely consistent for 76.32% of cases and partially consistent for 21.05% of cases (2). Recently, there have been many studies published using transvaginal sonosalpingography for tubal diagnosis that also reiterate the fact that sonographic diagnosis of patent tubes is reliable.

B Friberg, C Joergensen et al (1998) performed transvaginal sonosalpingography in 14 women consulting for infertility (3). The results were compared with chromolaparoscopy. As compared with those of the other methods, sonosalpingography findings manifested total agreement in 50% of cases, total disagreement in 22%, and partial agreement in the remaining 28%. The method was well tolerated by the women studied, and six out of nine women who had previously undergone hysterosalpingography found sonosalpingography to cause less discomfort. Thus, the findings suggest that sonosalpingography might prove useful as a means of ascertaining tubal status at an early stage in infertility evaluations.

Kore et al (2000) also found that when results of sonosalpingography were compared with those of chromolaparoscopy, there was 93% correlation between the results (4). Onah HE (2006) assessed sonologically that 77 of the study subjects had bilateral patent tubes, while five had unilateral tubal patency (5). In one woman, there was uncertainty about tubal patency or blockage. In 18 women, the findings at sonosalpingography were confirmed at laparoscopy in 11 women or laparotomy (two women) or by the fact that the patients became pregnant (five women). In 15 (83.3%) of these 18 women, the findings at sonosalpingography and laparoscopy or of the woman becoming pregnant were compatible. So we found that the findings of Heikkinen (1995) (85%) and Onah (83.3%) were nearly identical to our studies (6).

In our study, sensitivity of sonosalpingography was 96.7% and specificity was 87.5%. Positive predictive value was found to be 93.75%. Radic V et al (2005) studied 68 patients (7). Sensitivity and specificity of sonosalpingography for the assessment of the tubal status was 100 and 66% respectively, negative predictive value was 100% and positive predictive value was 61%.

Subrata Lall et al (2007) studied 100 cases of infertility and found that sonosalpingography had 97.3% sensitivity and 92% specificity in comparison to chromolaparoscopy (8). As noted, our findings are quite consistent with those of Subrata Lall et al. Considering the more no of cases (100) in the latter study; it gets a higher reliability and accuracy.

Thus sonosalpingography offers a much less invasive method of diagnosing tubal pathology while maintaining a high sensitivity and specificity similar to that of chromolaparoscopy (9). Moreover sonosalpingography can be done for patients who have bronchial asthma or cardiac problems and are temporarily unfit for surgery. Sonosalpingography can be offered initially to infertile patients. If any abnormality is detected on sonosalpingography, hysterosalpingography or laparoscopy can be done for confirmation.

V. Conclusion

Transvaginal sonosalpingography with the combination of air and saline is a low cost, reliable, safe and comfortable examination method (10). Sonosalpingography should be used initially to assess tubal patency in cases of infertility on an outpatient basis. The gold standard investigation still remains to be chromolaparoscopy.

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