



COMPARISON OF DIAGNOSTIC VALUE OF LAPROSCOPY & HYSTEROSALPHINGOGRAPHY FOR TUBAL PATENCY IN INFERTILITY WOMEN

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ABSTRACT

BACKGROUND-

Infertility is defined as failure of a couple to conceive after 12 months of regular intercourse without use of contraception in women less than 35 years of age; and after six months of regular intercourse without use of contraception in women 35 years and older. A number of diagnostic tests are being used in clinical practice to assess tubal patency as part of the work-up for infertility, such as: Chlamydia trachomatis, IgG antibody testing, hysterosalpingography, sonosapinography & laparoscopy.⁶

METHODS-

Prospective cross sectional study done with 50 infertile women fitting the inclusion criteria.

RESULTS-

In our study on Hysterosalpingography 28(56%) patients had bilateral tubal patency, 8(16%) patients had unilateral block, 14(28%) patients had bilateral tubal occlusion and on diagnostic laparoscopic chromopertubation 28(56%) patients had bilateral tubal patency, 7(14%) patient had unilateral tubal patency, 5(10%) patient had bilateral tubal occlusion.

CONCLUSION-

The results suggest that hysterosalpingography is useful as a primary screening procedure, but laparoscopy provides a more accurate assessment of tubal patency in the investigation of infertility.

KEYWORDS : Hysterosalpingography, Comparison, Infertility

INTRODUCTION:

Infertility is defined as failure of a couple to conceive after 12 months of regular intercourse without use of contraception in women less than 35 years of age; and after six months of regular intercourse without use of contraception in women 35 years and older.¹

The most accepted definition of infertility —No pregnancy despite 12 months of regular intercourse || has probabilistic appeal. Given a monthly probability of pregnancy of 20%, there is 93% chance of conception in 12 months. Therefore the use of 1 year as a time interval for attempted conception before the diagnosis of infertility is applied is both clinically and statistically justified.²

A number of diagnostic tests are being used in clinical practice to assess tubal patency as part of the work-up for infertility, such as: Chlamydia trachomatis, IgG antibody testing, hysterosalpingography, sonosapinography & laparoscopy.⁶

MATERIALS AND METHOD –

This was a Prospective cross sectional study of 50 patients with history of primary or secondary infertility selected from IPD of Jawaharlal Nehru medical College and Acharya Vinobha Bhave Rural Hospital. A Tertiary Health Care Centre Located In Sawangi, Wardha, Maharashtra. The age group of the patients was between 18 yrs. - 45 yrs. The study population was selected depending upon the total number of patients (fitting the criteria) visiting the IPD of AVBRH Department Of Obstetrics and gynecology for a period of 1 years (September 2015 to September 2016).

The hysterosalpingography was performed by radiologist as first line investigation. And after 1 month, Diagnostic Laparoscopic chromopertubation was performed by an infertility specialist. Results of hysterosalpingography and laparoscopy for tubal patency were recorded.

Hysterosalpingography:

The HSG is performed in the department of radiology. The procedure is performed between days 6 and 12 of the menstrual cycle at least 48 hours after menses had ceased. The women are advised to avoid unprotected intercourse in this period. HSG is

performed using a sterile technique. The patients are placed in a lithotomy position, and a vaginal speculum is inserted. The balloon catheter is inflated within the endocervical canal or lower uterine cavity. Approximately 10–15 mL of a water-soluble contrast is injected manually through the cannula. Fluoroscopic examination is performed during the injection. Three x- ray films are taken; images of early and maximal opacification of the uterine cavity, fallopian tubes, and peritoneal contrast spillage is obtained. Prophylactic antibiotics are prescribed. The patients are routinely pre-medicated prior to the procedure with oral Mefenamic acid 500 mg three times per day until 48 hours after the procedure. The result of HSG is evaluated in radiology department.

After 1 Month Laparoscopy is performed under a general anaesthesia by an infertility specialist.

DIAGNOSTIC LAPAROSCOPIC CHROMOPERTUBATION:

A bimanual per-vaginal examination was done followed by insertion of Sims's posterior vaginal wall speculum and Sims's anterior vaginal wall retractor and cervix visualized. The cervix was held with uterine manipulator or a single tooth tenaculum for manipulation if required during the procedure.

Under aseptic precautions abdominal wall was elevated by manually grasping the skin and subcutaneous tissue to maximize the distance between the umbilicus and the retroperitoneal vessels and the trocar was inserted at an angle of 45 degree to the horizontal. In obese patients with a more vertical approach to trocar insertion was adopted.

Insufflation with CO₂ was done at the rate of 1 lit /min (8-12 mmhg) and pneumoperitoneum was achieved. Light cable, tube for CO₂ insufflation and camera was attached to it. White balance was done after which the scope was inserted through the cannula and the cavity was inspected for any abnormality (Adhesions, Endometriosis, tubercles, fibroids, ovarian cysts, PCO).

Secondary trocars were placed 8 cm from the midline under vision if manipulation was required. In suspected cases of TB (Tuberculosis) biopsy was taken for AFB culture and sample was also sent for TB

PCR.

For chromopertubation a Leech Wilkins' cannula was inserted in the cervix and methylene blue dye dissolved in Normal Saline was injected and spillage was noted by the laparoscope.

Video documentation was done for the entire procedure and abnormalities were noted. If operative intervention was required, it was done after taking the consent from the husband. (e.g. adhesiolysis, ovarian drilling, cystectomy, myomectomy).

After the completion of the procedure secondary trocars were removed under vision and before removing the scope completely pneumoperitoneum was reduced. Primary trocar was removed and the wounds were closed by 2-0 monofilament non-absorbable sutures.

Patient was discharged the next day with 3 days of broad-spectrum antibiotic cover and suture removal done in OPD on day 7 of procedure.

RESULTS

In this study the 3(6%) cases were found in the age group of <20 years followed by 16 (32%) cases in the age group of 21-25 years, 19(38%) cases were in the age group of 26-30 years while 7(14%) cases were in the age group of 31-35years the age group of 36-40 years 2(14%) and in age group > 40 years is 3(6%)
The Mean Age is: 28.40_+ 6.73.

Tubal patency test was done by injection of methylene blue dye through the cervix and visualization of spillage of dye in the peritoneal cavity. Chromopertubation in primary and secondary infertility group was done and in primary infertility group it was observed that 28 cases (56%) had B/L patent tubes in Hysterosalpingography, 28 cases (56%) had B/L patent tubes in diagnostic laparoscopic chromopertubation. 8 cases (16%) had unilateral patency in Hysterosalpingography, 7 cases (14%) had unilateral patency in Diagnostic laparoscopic chromopertubation , 14 cases (28%) had B/L occlusion in Hysterosalpingography and 5 cases (10%) had B/L occlusion in Diagnostic laparoscopic chromopertubation.

Table 1: Number of patients with normal and abnormal results of HSG and laparoscopic chromopertubation

Results	Normal	Abnormal		Total
HSG	29(58%)	21(42%)		50
		07(14%)	14(28%)	
LAPROSCOPY	38(76%)	12(24%)		50
		7(14%)	5(10%)	

In present study out of 50 cases, 29 (58%) cases had bilateral patent tubes, total occluded tubes were 21(42%) : unilateral tubes occluded were 7(14%) , bilateral tubes occluded were 14(28%) in Hysterosalpingography, 38 (76%) cases had bilateral patent tubes , total occluded tubes were 12(24%) : unilateral tubes patent were 7(14%) , bilateral tubes occluded were 5 (10%) in diagnostic laparoscopic chromopertubation .

The Hysterosalpingography findings in the present study showed 1 case (2%) didelphys uterus, 1 case (2 %) of bicornuate uterus, 2 cases (4%) of septate uterus, 2(4%) cases of endometrial polyp.

Table 2: Other findings on Laparoscopic chromopertubation

Other Findings	No of patients	Percentage
Shape of the uterus		
Didelphys Uterus	1	2
Bicornuate Uterus	1	2
Adhesions	5	10

Ovary		
Corpus Luteal Cyst	1	2.00
Left Ovary-Small Ovary	1	2.00
Ovary Streak	1	2.00
Right ovarian cyst	1	2.00
Right Ovary Blocked	1	2.00
Right ovary multiple-Graffian Follicle	1	2.00

Diagnostic Laparoscopic chromopertubation finding in present study of both primary as well as secondary infertility group were observed. There were 1 (2%) case of Didelphys uterus , 1 (2%) case of Bicornuate uterus , 5 (10%) cases of adhesions , , 1 (2%) cases of corpus luteal cyst , 1 (2%) case of left ovary small , 1 (2%) case of ovary streak , 1 (2%) case of right ovary cyst , 1 (2%) of right ovary blocked and 1 (2%) right ovary multiple graffian follicle .

Table 3: Detection of tubal status at HSG and Laparoscopic chromopertubation

HSG	Diagnostic Laparoscopy		κ2-value	p-value
	Positive	Negative		
Positive	29	1	15.23	0.0001,5
Negative	10	10		
Total	39	11		

- Sensitivity=74.36%(57.87-86.96%)
- Specificity=90.91%(58.72-99.77%)
- Positive Predictive Value =96.67%(95% CI=82.78-99.92%)
- Negative Predictive Value=50%(27.20-72.80%)
- Diagnostic Accuracy=78

DISCUSSION

The evaluation of tubal patency is traditionally considered fundamental in the study of causes of infertility. Laparoscopy with chromopertubation is widely accepted as the "Gold standard" method for evaluating of tubal patency. Presently, this procedure is considered the most accurate test available for assessing tube related fertility. The advantages of this procedure include an ability to simultaneously evaluate the abdominal cavity in addition to other pelvic structures and also allows for the therapeutic excision of endometriotic lesions as well as restoration of abnormal pelvic findings. Laparoscopy has higher diagnostic merits, it additionally incurs high operating cost, requires skilled surgeon, also has operative and anesthesia related risks and associated with morbidity and mortality. Hence, a low cost and the risk methodological approach should be addressed as a "first choice" investigation.

Patency of the Fallopien tubes is routinely assessed by hysterosalpingography (HSG), but it involves radiation exposure and risk of allergy to dye.

Discrepancy is a result of inaccurate diagnostic methods, lack of uniform system of classification and many of them are asymptomatic. Mean prevalence of uterine malformation in general population and in the population of fertile women is approximately 4.3%, in infertile patients approximately 3.5% and in patients with recurrent pregnancy losses approximately 13%. . The incidence of uterine anomaly is 7.6%.

Diagnostic laparoscopy is the gold standard for diagnosing the tubal pathology, peritoneal factors, endometriosis and intra-abdominal causes of infertility.

On analyzing the type of infertility in the present study out of 50 cases of infertility, primary infertility were 29(58%) and secondary infertility were 21(42%), which was comparable with the of study of Nayak PK (2013) 69% cases were of primary and 31 % of secondary infertility Boricha Y.G et al (2011), who reported that primary infertility was 70% and secondary infertility was 30%. This

indicates that primary infertility is more common as compared to secondary infertility.

In the present study the commonest age group 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.

The mean age of the study population was 28.40 ± 6.73 years. Kore S et al, in their study reported similar observation where most of the women were between 25-30 years of age.

Our study shows that (28%) Bilateral tubal block was detected in Hysterosalpingography and (10%) in diagnostic laparoscopic chromopertubation. Tubal factor is among the most common infertility causes, with infertility being seen in approximately 30–35% of couples according to Miller JH et al (1999). The study by Chakraborti et al (22.7%) and Gokhan Goynumer et al (24%).156 which shows bilateral tubal block to be the common tubal cause of Infertility.

In our study on Hysterosalpingography 28(56%) patients had bilateral tubal patency, 8(16%) patients had unilateral block, 14(28%) patients had bilateral tubal occlusion and on diagnostic laparoscopic chromopertubation 28(56%) patients had bilateral tubal patency, 7(14%) patient had unilateral tubal patency, 5(10%) patient had bilateral tubal occlusion which is comparable to Sheth SS and Krishna UR (1979) who studied in 100 infertile patients who underwent HSG and laparoscopy. 14 of the 48 patients were diagnosed radiologically who had bilateral tubal block and had both tubes patent at laparoscopy while 3 more had 1 patent tube. In 10 patients where 1 tube was diagnosed to be blocked at HSG. They concluded that laparoscopy has a definite advantage over HSG.

In our study we found Hysterosalpingography showed 1 case (2%) didelphys uterus, 1 case (2%) of bicornuate uterus, 2 case (4%) of septate uterus, 2 (4%) cases of endometrial polyp whereas, Diagnostic Laparoscopic chromopertubation finding were 1 (2%) Didelphys uterus, 1 (2%) case of Bicornuate uterus, 5 (10%) cases in which adhesions were present, 1 (2%) cases had of corpus luteal cyst, 1 (2%) case of left ovary small, 1 (2%) case of ovary streak, 1 (2%) case of right ovary cyst, 1 (2%) right ovary blocked, 1 (2%) right ovary multiple follicle which was comparable to Fayed JA et al (1988) in which HSG and diagnostic laparoscopy was done for patients with infertility in which Laparoscopy revealed peritubal adhesions in 29.8% of patients whereas HSG only 8.8% cases. It was concluded that laparoscopy excels HSG in the diagnosis of pelvic pathology and thus should always be performed whenever pelvic pathology is suspected whereas Duignan NM et al (1972) had One thousand consecutive cases of diagnostic laparoscopy was reported. Significant abnormality was found in 37.5% of primary and 51% of secondary infertility patients. Adhesions and endometriosis were the common abnormalities. The findings at HSG and laparoscopy agreed in only 70% of cases. Laparoscopy provided a more accurate assessment of tubal patency and function than HSG.

It indicates that Tubal patency plays a major role for conception in the aetiology of infertility and evaluation by laparoscopy along with chromopertubation will give a better idea regarding the cause of the patency and management of the condition.

CONCLUSION

The results suggest that hysterosalpingography is useful as a primary screening procedure, but laparoscopy provides a more accurate assessment of tubal patency in the investigation of infertility. HSG shows more false negative but noninvasive primary screening and shows exact site of block. Diagnostic laparoscopy more sensitive but invasive, associated with hospitalization an risk of anaesthesia, although with added advantage of evaluation of ovarian and peritoneal factor, as Laparoscopy provided a more accurate assessment of tubal patency and function than HSG. Laparoscopy provided a more accurate

assessment of tubal patency and function than HSG.

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