

**ROLE OF LAPAROSCOPY IN INVESTIGATION OF FEMALE INFERTILITY: A RETROSPECTIVE STUDY OF 50 CASES**Sailatha R<sup>1</sup>, Sathiya S<sup>2</sup>, A. M. Famida<sup>3</sup>, Vijayalakshmi K<sup>4</sup>, Renuka S<sup>5</sup>, S. Misha Pepsi<sup>6</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT:** Infertility is not only a medical, but a serious social problem as well, especially in our country. Use of diagnostic and therapeutic laparoscopy in infertility has been a focus of attention in recent years and is found to be very effective method in evaluating these cases. Traditional way to assess the uterine cavity, tubal structures and tubal patency was hysterosalpingography, but it has now largely been superseded by hysteroscopy and laparoscopy. It is concluded that laparoscopy is useful in diagnosing cases with endometriosis, tubal factor infertility and exclusion of bilateral anatomical tubal pathology by diagnostic laparoscopy could avoid IVF treatment in these cases.

**KEYWORDS:** Diagnostic Laparoscopy, Female Infertility, HSG.

**INTRODUCTION:** Primary infertility is defined as inability of a couple to achieve pregnancy within one year of defined time of unprotected intercourse with adequate coitus. 85-90% of healthy young couples conceive within 1year. Infertility therefore affects 10-15% of couples. Female factor contribute most (40-50%) in the etiologies of infertility followed by male factor (30-40%), both partner (10%) and unexplained (10%) (Speroff et al). Major causes of female infertility include ovarian dysfunction, tubal disease, endometriosis, uterine or cervical factors.

Advances in endoscopic surgery have revolutionized the approach of obstetrician for diagnosis and management of patients with infertility.

In one study, in presence of normal HSG, laparoscopy identified pelvic disease in about half of the patients. A Cochrane review has shown that laparoscopic ovarian diathermy in clomiphene resistant PCOS is at least as effective as gonadotrophin treatment and lower multiple pregnancy rates.

Kanal P, Sharma S,<sup>[1]</sup> concluded that laparoscopy combined with HSG is more effective method to reveal tubal blocks. However they suggested that hysterosalpingo-contrast-sonography (Hylosy) was a cost effective screening test as compared to diagnostic laparoscopy with HSG in the assessment of tubal patency for the investigation of infertility patients.

Pelvic factors other than tubal occlusions are neither diagnosed nor treated in a timely manner by indirect tubal patency tests.

The objective of our study was to highlight the role of laparoscopy in establishing diagnosis of female infertility.

**MATERIAL AND METHODS:** The present study was a retrospective study from Jan-2012 to Jan-2014 during which 50 patients with infertility were evaluated by diagnostic laparoscopy.

The infertile couples were examined by taking detailed history, physical examination, basic endocrinological investigations, full blood count, blood urea, blood sugar, ECG, CXR, husband's semen analysis.

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Patients with all contraindications related to procedure of laparoscopy like generalized peritonitis, bowel obstruction, hernia, tuberculous peritonitis with adhesions, active genital tuberculosis and large pelvic mass were all excluded from study. Some (20%) of the cases underwent HSG first before diagnostic laparoscopy, but some preferred to get a diagnostic laparoscopy directly.

Diagnostic laparoscopy was done in post menstrual phase within day 9 of menstrual cycle under GA. Chromopertubation was carried out in all cases of infertility to test the patency of tubes under laparoscopic vision by using 10-15 ml of 0.5% autoclaved methylene blue dye.

50 women of the age group 20-40yrs who could not achieve pregnancy within 1yr of defined time of unprotected intercourse were selected in the study. Study was conducted in CHRI, Dept of Obstetrics and Gynecology over a period of 2 years from JAN 2012-2014. The couples were examined by taking detailed history, physical examination, basic endocrinological investigations and semen analysis.

**RESULTS:** Total of 50 patients were selected for our study. 39(78%) of the patients belonged to primary infertility and 11(22%) belonged to secondary infertility group.

Age group	Primary infertility (%)	Secondary infertility (%)
20-24	7 (17.95%)	0
25-29	14 (35.90%)	9 (81.82%)
30-34	16 (41.03%)	2 (16.18%)
35-39	2 (5.13%)	0

**Table 1: Age groups of women with infertility at time of laparoscopy**

Maximum number of cases in primary infertility group belonged to age group of 30-34 years i.e. 16(41.03%) while 14(35.90%) of cases belonged to age group of 25-29 years, Table-1. Tanahatoe's study also revealed same prevalence in age group (average 32.3yrs).<sup>[2]</sup> The maximum numbers of cases in secondary infertility were in age group of 25-29 years i.e. 9(81.82%).

Duration of infertility (years)	Primary infertility	Secondary infertility
<2	7 (17.95%)	1 (9.09%)
2-4	20 (51.28%)	7 (63.64%)
5-7	8 (20.51%)	1 (9.09%)
8-10	0	2 (18.18%)
>10	4 (10.26%)	0

**Table 2: Duration of infertility at time of presentation**

Table 2 Duration of infertility at the time of presentation in both primary and secondary infertility group were mostly 2-4 years i.e. 51.28% of cases in primary and 63.64% of cases in secondary infertility. This again was the prevalence in Tanahatoe's study (average 2.9yrs).<sup>[2]</sup>

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Laparoscopy findings	Primary infertility	Secondary infertility
Normal pelvis	14 (35.90%)	1
Tubal block with adhesion	3 (7.70%)	1 (9.09%)
Tubal block without adhesion	6 (15.38%)	1 (9.09%)
Tubal block with cystic ovaries	4 (10.26%)	1 (9.09%)
Tubal patency with cystic ovaries	10 (25.64%)	0
Tubal patency with adhesion	4 (10.26%)	1 (9.09%)
Endometriosis	2 (5.13%)	1 (9.09%)
Ovarian simple cyst	4 (10.26%)	1 (9.09%)
PCOD	3 (7.07%)	1 (9.09%)
Fibroid	6 (15.38%)	2 (18.18%)
TO mass	0	1(9.09%)
Genital TB	2 (5.13%)	0

**Table 3: Laparoscopy findings**

Table 3: The commonest abnormal finding by laparoscopy in patients with primary infertility was ovarian pathology which included simple cyst and polycystic ovarian disease in 21 cases (53.85%).

Though ovarian pathology was diagnosed earlier by USG, we went ahead with laparoscopy for these patients as many of them had tubal obstruction as seen in HSG. The second most common finding on laparoscopy was tubal occlusion 13(33.34%). As already mentioned 4 cases (10.26%) had both tubal occlusion and cystic ovaries.

Tubal block was the commonest finding in patients with secondary infertility (27.27%). No significant complications were noted in any of the cases.

HSG	Confirmation by laparoscopy
3 B/L tubal block	3 B/L tubal block
1 B/L tubal block	Had U/L tubal block
1 B/L tubal block	Had patent tubes both sides
2 patent tubes on both sides	Both had U/L tubal block
1 inconclusive	B/L tubal block

**Table 4**

Table 4: HSG was done in about 10 cases before taking them for Diagnostic laparoscopy. One such case found to have bilateral patent tubes by HSG, had bilateral tubal block on diagnostic laparoscopy. Many such examples as shown in the Table-4 shows that HSG results are not always very reliable due to many factors including the observers interpretation.

**DISCUSSION:** Role of laparoscopy in the diagnosis of primary and secondary infertility is established beyond doubt. Tubal occlusion, peritubal and periovarian adhesions are responsible for inhibition of ovum pickup and transport. The major cause of tubal pathology is pelvic inflammatory disease. Tubal block was one of the major causes of infertility in our study. When tubal patency has been demonstrated by HSG, peritubal adhesions and/or endometriosis can still exist and preclude

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conception. Patients with bilateral tubal disease should be offered either ART or microsurgery according to patient's age and extent of tubal disease. Henig et al in 1991,<sup>[3]</sup> found that in 21%, adnexal adhesions and pelvic endometriosis were identified during surgery in spite of a normal HSG.

In 2002, Fatum M et al<sup>[4]</sup> suggested neglecting Diagnostic laparoscopy after normal HSG in couples with unexplained infertility and they also recommended proceeding with ovulation induction for several cycles before referring to ART. In 2003, Capelo FO et al,<sup>[5]</sup> emphasized that pelvic pathologies found during diagnostic laparoscopy such as advanced stage endometriosis, pelvic adhesions complicating tubo-ovarian relationship and tubal disease affects a woman's chance to conceive spontaneously or by use of ovulation induction alone.

Such findings influence the physicians' treatment strategy and decrease the emotional stress and financial burden resulting from unnecessary and ineffective treatment plans decided upon before Diagnostic laparoscopic results. The gold standard for evaluation of tubal patency is laparoscopic chromopertubation.

In 2003 Tanahatoe SJ et al,<sup>[6]</sup> retrospectively evaluated the accuracy of diagnostic laparoscopy among patients with male sub-fertility, cervical hostility and unexplained infertility before IUI with respect to pelvic pathologies found on laparoscopy leading to change of treatment strategy. The authors found abnormal findings on laparoscopy in 35% of patients and in 25% of patients' treatment plan have changed after diagnostic laparoscopy.

In 2008 Tanahatoe SJ et al,<sup>[7]</sup> investigated the additional values of diagnostic laparoscopy with respect to diagnosis and further treatment plan change to ART after an abnormal HSG retrospectively. In this study the agreement between abnormalities found by HSG and laparoscopy was found to be poor. The author recommended diagnostic laparoscopy after an abnormal HSG in the infertility treatment prior to making a decision for IUI or ART.

In a prospective study in 2012 Bonneau C et al,<sup>[8]</sup> recommended diagnostic laparoscopic evaluation of female pelvis for unexplained infertility patients during infertility investigations by demonstrating a high rate of pelvic pathologies related to infertility.

Contrarily, after a normal HSG, it is not cost effective to proceed with diagnostic laparoscopy for an infertile woman without history of pelvic surgery, PID, positive chlamydia antibody test, endometriosis and unexplained secondary infertility.

Nakagawa K et al,<sup>[9]</sup> strongly recommended diagnostic laparoscopy for unexplained infertility patients because of high rate of abnormal findings on laparoscopy in spite of normal HSG findings. For the evaluation of tubal patency and peritubal adhesions especially endometriosis, HSG is not reliable and requires laparoscopy (Swart et al).<sup>[10]</sup>

Laparoscopy still reveals tubal pathology or endometriosis in 35-68% of cases, even after normal HSG (Al Badawi et al 1999)<sup>[11]</sup> and (Henig et al).<sup>[3]</sup>

Retrospective study of 300 patients by P K Nayak et al<sup>[12]</sup> reveals that diagnostic hysterolaparoscopy is an effective and safe tool in comprehensive evaluation of infertility particularly for detecting peritoneal endometriosis, adnexal adhesions, etc.

**CONCLUSION:** A tubal abnormality was found to be the cause for infertility in majority of the cases. Laparoscopy along with HSG is very effective method in evaluating cases of primary infertility. Further studies are needed to investigate the etiologies of these abnormalities, so that measures could be taken to bring down the occurrence of such condition.

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HSG and laparoscopy are complimentary rather than competitive procedures. The accuracy of diagnosis is enhanced when 2 procedures are combined especially in those cases where the result of one of the tests is doubtful.

However, based on current literature, when the woman's HSG is normal, one cannot recommend laparoscopy as a first line diagnostic tool for infertility work-up due to lack of cost-effectiveness. According to American Society of Reproductive Medicine, diagnostic laparoscopy is indicated when there is evidence of strong suspicion of pelvic endometriosis, pelvic/adnexal adhesions or significant tubal diseases. Prior to applying aggressive empirical treatment like ART, involving significant cost and/or potential risks to unexplained infertile patients, laparoscopy should be strongly considered. This helps in formulating specific plan of management.

### REFERENCES:

1. Kanal P, Sharma S. Study of Primary infertility in females by diagnostic laparoscopy. Internet Journal of Medical update 2006 Jul –Dec., 1(2): 7-9.
2. S J Tanahatoe, C. B Lambalk and P G A Hompes (2005). The role of laparoscopy in IUI: a prospective randomized reallocation study. Human reproduction Vol.20, No. 11 pp.3225-3230.
3. Henig I, Prough S G, Cheatwood M and DeLong E (1991). Hysterosalpingograph, laparoscopy and hysteroscopy in infertility. A comparative study. J. Reprod. Med 36, 573-575.
4. Fatum M, Laufer N, Simon A. Investigation of infertile couple: Should diagnostic laparoscopy be performed after normal HSG in treating infertility suspected to be of unknown origin? Human Reprod. 2002; 17 (1): 1-3.
5. Capelo FO, Kumar A, Steinkampf MP, Azziz R. Laparoscopic evaluation following failure to achieve pregnancy after ovulation induction with clomiphene citrate. Fertil Steril, 2003; 80 (6): 1450-3.
6. Tanahatoe SJ, Hompes PG and Lambalk CB 2003 a- Investigation of the infertile couple: Should diagnostic laparoscopy be performed in infertility work up programme in patients undergoing IUI? Human Reprod 18, 8-11.
7. Tanahatoe S, Lambalk C, Mc Donnell J, Dekker J, Mijatovic V, Hompes P. Diagnostic Laparoscopy is needed after abnormal hysterosalpingography to prevent over-treatment with IVF. Reprod Biomed Online, 2008; 16 (3): 410-5.
8. Bonneau C, Chanelles O, Sifer C, Poncelet C. Use of laparoscopy in unexplained infertility. Eur J Obstet Gynecol Reprod Biol 2012; 163 (1): 57-61.
9. Nakagawa K, Ohgi S, Horikawa T, Kojima R, Ito M, Saito H. Laparoscopy should be strongly considered for women with Unexplained infertility. J Obstet Gynaecol 2007; 33 (5): 665-70.
10. Swart P, Mol B W, van der Veen F, van Beurden M, Redekop WK and Bossuyt PM (1995). The accuracy of HSG in the diagnosis of tubal pathology: a meta-analysis. Fertil Steril 64, 486-491.
11. Al Badawi IA, Fluker MR and Bebbington MW (1999). Diagnostic laparoscopy in infertile women with normal Hysterosalpingogram. J. Reprod Med 44, 953- 957.
12. Prasanta K Nayak, Purna C Mahapatra, JJ Mallick, S Swain, Subarna Mitra and Jayaprakash Sahoo - Role of diagnostic laparoscopy in the evaluation of infertility: A retrospective study of 300 patients. J Hum Reprod Sci. 2013 6(1): 32-34.

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