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EVALUATION OF TUBAL FACTORS IN INFERTILE PATIENTS BY DIAGNOSTIC LAPAROSCOPY

Gynecology

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ABSTRACT

Objective: To evaluate tubal factors in infertility for infertile patients with diagnostic laparoscopy.

Study Design: This study had been carried out in Obstetrics and Gynecology department of V.S Hospital, Ahmedabad, Gujarat. For our study we used laparoscopy and the tubal patency was tested by chromopertubation using methylene blue dye.

Method: The criteria for inclusion was to study all primary and secondary infertile females who had been through diagnostic laparoscopy and patients with medical disorders or contraindications for laparoscopy were excluded.

Result: Total of 70 patients underwent laparoscopy during the study period. Most patients (82.9%) were in age group 21-35years. 41 (58.5%) patients were in primary infertility group while 29 (41.4%) patients were in secondary infertility group. The duration of infertility was between 1 to 5 years was in 47(67.1%) whereas 21.4% cases had been infertile for 6 to 10 years. Tubal pathology was detected in 65.7% cases of primary infertility and 72.2% cases of secondary infertility. Bilateral tubal occlusion was found in 25.7% and unilateral occlusion in 20% cases.

Conclusion: To determine if the patient's infertility is due to tubal factor, diagnostic laparoscopy and chromopertubation test should be recommended as first step.

KEYWORDS:

Tubal Factors, Laparoscopy, Infertility, Tubal pathology, chromopertubation

INTRODUCTION

Tubal factor infertility accounts for a large portion of female factor infertility. The most prevalent cause of tubal factor infertility is pelvic inflammatory disease and acute salphingitis. The incidence of tubal damage after one episode of pelvic infection is approximately 12%, 23% after two episodes and 54% after three episodes.1, 2

Proximal, distal, and peritubular damage can be caused by a number of pathologic processes such as inflammation, endometriosis, and surgical trauma.3

Genital tuberculosis is an important cause of female infertility in developing countries like India, Nepal, Bangladesh and Pakistan. It is one of the major causes for severe tubal disease leading to infertility. Unlike pulmonary tuberculosis, the clinical diagnosis of GTB is difficult because in majority of cases the disease is either asymptomatic or has varied clinical presentation.4 A combination of clinical and laparoscopic diagnoses, along with endometrial histopathology studies, acid-fast bacillus culture, and polymerase chain reaction assays provides the best available method for the diagnosis of genital tuberculosis in infertile women.5 Tubal pathology impairs functions of the fallopian tube and reduces fertility. The degree of tubal pathology determines the possibility for fertility. Hence the evaluation of the fallopian tube is necessary to determine the management plan of infertility. Hysterosalpingography (HSG) is often performed as a first line approach to assess tubal patency and the presence of adhesions; however, HSG has limitations in detecting tubal pathology.6

Laparoscopy and chromopertubation is widely considered the gold standard test for investigating tubal patency. Additionally, it allows assessment for peritubal disease, adhesions and endometriosis. This has led to a recommendation by the NICE (UK) that women suspected of having comorbidities (such as endometriosis and pelvic inflammatory disease should undergo laparoscopy so that pelvic and tubal pathology can both be assessed.7

AIM

The aim of the study was to evaluate the cause of infertility due to tubal factors with the help of diagnostic laparoscopy.

METHODS

Seventy women presenting with complaints of primary and secondary infertility were investigated for tubal disease by laparoscopy at NHL medical college and hospital Ahmedabad. Inclusion criteria were no prior pelvic surgery, no history of pelvic infection, normal bimanual pelvic examination, and normal semen parameters of partner. Those patients who had medical disorders and contraindication for laparoscopy were excluded from study. Laparoscopy was scheduled in proliferative phase of menstrual cycle.

Methodology

Laparoscopy was performed under general anesthesia. A one cm incision was made within or just below the lower edge of the umbilicus. Through this incision the abdominal cavity is inflated with carbon dioxide gas and pneumoperitoneum being obtained. A trocar was inserted in the same region. The cannula of the trocar was left, and the trocar was pulled out. Then a laparoscope was introduced through the cannula. During the procedure, the pelvis was inspected, including uterus, fallopian tubes, uterosacral ligaments, and Pouch of Douglas. The tubes were inspected for any abnormality in their length and shape. Both ovaries were examined regarding their size, shape, thickness of peripheral follicles. Peritubal, periovarian and omental adhesions, tubo-ovarian masses, endometriotic deposits, fibroid, presence of fluid in the Pouch of Douglas or any other pathology, if present was noted. The patency of fallopian tubes was ascertained by injecting methylene blue into the uterine cavity and its spill through the fimbrial ends was checked. Variables were age, primary and secondary infertility, duration of infertility, tubal patency (yes or no), bilateral tubal block and unilateral tubal block. The study protocol was approved by the Institutional ethics committee. Patients were enrolled after having provided their informed written consent.

RESULTS

There were 41 (58.6%) cases of primary infertility and 29 (41.4%) cases of secondary infertility. 83% women were in the age group of 21 to 35 years (Table 1). In 67.1% of women, the duration of infertility was between 1 to 5 years whereas 21.4% cases had been infertile for 6 to 10 years (Table 2). 86% women had regular menstruation while 14% had irregular cycles.

Table 1: Primary and secondary infertility age distribution.

Age	Primary Infertility	Secondary Infertility	No.	%
21-25	14	8	22	31.4
26-30	13	7	20	28.6
31-35	7	9	16	22.9
36-40	7	5	12	17.1
Total	41	29	70	100

Table 2: Infertility Duration:

Duration years	Primary Infertility	Secondary Infertility	Total N	%
1-5	35	12	47	67.1
6-10	11	4	15	21.4
11-15	5	2	7	10
16-20	1	0	1	1.4

Diagnostic laparoscopy revealed normal pelvic organs in 9(13%) cases, Chronic pelvic inflammatory disease in 25 (35.7%), endometriosis in 10(14.3%) and congenital anomalies of uterus in 3(4.3%) cases, fibroid in 8(11.4%) and15 patients that is 21.4% had PCO (Table 3).

Table 3: Findings of chromopertubation.

Findings	No	%
Bilateral Block	18	25.7
Unilateral Block	14	20
Peritubular Adhesion(spill seen)	18	25.7
Healthy & Patent tubes	20	28.6

Table 4: Diagnostic laparoscopy findings

Findings	No:	Percentage
Normal pelvic organ	9	12.9
Chronic inflammatory disease	25	35.7
Endometriosis	10	14.3
Congenital anomaly of uterus and tubes	3	4.3
Fibroid	8	11.4
PCO	15	21.4

Findings of chromopertubation are shown in (Table 3). 25.7% cases had bilateral tubal block, 20% had unilateral block and in nearly 25.7% cases though the tubes were found patent significant peritubal adhesions were noted.

Details of tubal pathology detected in cases of primary and secondary infertility are shown in (Table 5).

Table 5: Details of tubal pathology detected in cases of primary and secondary infertility.

Tubal pathology(n=48)	Primary N=41	%	secondary Infertility N=29	%	TotalInfertility N=70	%
Nonspecific PID	19	46.3	15	51.7	34	48.5
Tuberculous Salphingitis	2	4.8	1	3.4	3	4.2
Endometriosis	5	12.2	4	13.7	9	12.8
Congenital anomaly	1	2.4	1	3.4	2	2.8
Ectopic pregnancy	0	0	0	0	0	0
Total	27	65.7	21	72.2	48	68.3

Table 6: Complications of laparoscopy.

Complication of laparoscopy	Primary Infertility (N=41) N	%	Secondary Infertility (N=29) N	%	
Pyrexia	5	12.2	4	13.8	
Right shoulder tip pain	5	12.2	4	13.8	
Nausea and vomiting	10	24.4	8	27.6	
No complication	21	51.2	13	44.8	

There were no complications in 51.2% of primary and 44.8% patients with secondary infertility groups. The major complication post laparoscopy was nausea and vomiting in both primary 24.4%and secondary infertility 27.6% respectively with minor complications being pyrexia and shoulder tip pain (Table 6).

DISCUSSION

In the present study, tubal pathology was detected in 68.3% cases and bilateral tubal block in 25.7% cases and unilateral block in 20% cases. These observations illustrate that the prevalence of tubal pathology in women complaining of infertility is high in our community. In Ikechebelu JI and Mbamara SU study, 39.5% women had normal patent tubes while (60.4%) had tubal pathologies like bilateral tubal occlusion in (38.3%) and unilateral tubal occlusion in (22.1%) women.8 In the current study, tubal disease was observed in 65.7% cases while Kanal P and Sharma S in their study, reported tubal blockage in 42.5% of primary infertility.9 Nonspecific pelvic inflammatory disease was observed in 19 (46.3%) cases in primary infertility and 15 (51.7%) cases in secondary infertility whereas in T Naz, L Hassan, NF Gulmeen, S Sultan study Pelvic inflammatory disease was reported in 9 (6.6%) and 6 (10.5%) cases of primary and secondary infertility respectively. The common finding was tubal blockage in 36(26.47%) and 19 (33.3%) cases of primary and secondary infertility respectively.10 after one episode of PID, a woman has an estimated 15% chance of infertility. After two episodes, the risk rises to 35%. After three episodes, the risk for infertility is nearly 75%.

In the present study, the diagnosis of genital tuberculosis was made by laparoscopy in 3 (4.2%) cases. Bilateral tubal block was seen in the cases. Sharma JB et al studied laparoscopic findings in genital TB in 47.1% cases. (65.8%) . The various findings on fallopian tubes were normal looking tubes in (7.1%), inability to visualize in 12 (14.1%), presence of tubercles on tubes in 3 (3.52%), caseous granuloma in 3 (3.52%), hydrosalpinx in 15 (17.6%) (Right tube 11.7%, left tube 5.9%), pyosalphinx in 3 (3.5%) on right tube and 2 (2.35%) in left tube, beaded tube in 3 (3.5%) on right tube, 4 (4.7%) in left tube with tobacco pouch appearance in 2 (2.35%) women.12 Genital tuberculosis is common in India and a combination of clinical and laparoscopic diagnoses, along with endometrial histopathologic studies, acid-fast bacillus culture, and polymerase chain reaction assays provides the best available method for the diagnosis of genital tuberculosis in infertile women.13 Endometriosis was observed in 10 (14.3%) cases in the present study but significant peritubal adhesions were found in 18 (25.7%) cases whereas N Aziz reported endometriosis in 6 (12%) cases and peritubal and periovarian adhesions in 6 (12%) cases.11 Laparoscopy remains the gold standard for diagnosis and surgical removal at that time should be first line treatment.14 Despite the fact that a causal relationship between endometriosis and infertility has not been clearly established, the fecundity rate of untreated women with endometriosis is lower than normal couples.15 Robabeh M and Roozbeh T in their comparative study of hysterosalpingography and laparoscopy, concluded that although laparoscopy is considered as the reference standard in infertility workup, HSG can be performed first and the use of laparoscopy should be limited to cases suspected for etiologies other than intratubal, such as endometriosis and peritubal adhesions.16

Tubal occlusion and peritubal or periovarian adhesions are factors responsible for inhibition of ovum pickup and transport. Laparoscopy is thus a definitive way to diagnose them.

Additional pelvic pathology was found in 23 (32.8%) cases. The commonest was polycystic ovaries in 15 (21.4%) cases and fibroid as the least common in 8 (11.4%). Similar results were observed in various other studies.8. Other pathologies observed include uterine anomalies (unicornuate uterus with one fallopian tube)

CONCLUSION

Tubal pathology was detected in 68.3% cases of infertile women in our study. These observations suggest that the use of laparoscopy and chromopertubation test should be recommended as a first step in the investigation of infertile women with tubal factor.

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