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Original Research Article

A Retrospective Study of Leparoscopic Evaluation of Tubal Factors in Case of Infertility

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Abstract

Background*:** 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 salpingitis. Tubal factor infertility accounts for approximately 25-35% of cases of female infertility. The aim of this study was to determine the role of leparoscopic evaluation of Tubal factors in case of infertility**.** ***Methods*:** A retrospective study was carried out at Department of Gynae and Obstetrics UHC, Dhamrai, Dhaka, Bangladesh from January to December 2023. 55 patients were selected for laparoscopic evaluation. Inclusion criteria were patients with no prior pelvic surgery, normal bimanual pelvic examination, normal semen parameters of partner and no ovulatory dysfunction. After obtaining thorough history & detailed examination, patients were informed about the procedure and written informed consent was taken. ***Results: 55 patients underwent laparoscopy during the study period. Most patients 10 were in the age group of <20 yr, 15 were between 21-30 yr & 20 were 31- 40 yr of age and 10 were between 36 – 40 yrs of age. Among these 55 patients 24 patients had primary infertility while 31 had presented with secondary infertility. Diagnostic laparoscopy revealed normal pelvic organs in 9 (16.3%) cases, Chronic pelvic inflammatory disease in 3 (5.4%), endometriosis in 13 (23.6%) and congenital anomalies of uterus in 1(1.8%) cases. 7.2% cases had bilateral tubal block, 27.3% had unilateral block and in 7.2% cases though the tubes were found patent significant peritubal adhesions were noted. Tubal pathology was detected in 55.5% cases of primary infertility and 42.1% cases of secondary infertility. Among those who had tubal pathology, nonspecific pelvic inflammatory disease was noted in 33.3% and genital tuberculosis was diagnosed in 2.7% cases. The most common complications were pyrexia, shoulder tip pain, nausea and vomiting. ***Conclusion***: Laparoscopy is a safe and effective diagnostic tool in evaluating tubal status of infertile patients. Laparoscopy and chromopertubation test should be recommended as a first step in the investigation of infertile women with tubal factor.

Keywords: Laparoscopy, tubal factors, infertility.

INTRODUCTION

Tubal-related infertility is the cause of the majority of female infertility. The most common causes of tubal infertility are pelvic inflammatory disease and acute salpingitis. The incidence of tubal damage after pelvic inflammatory disease is about 12%, 23% after two episodes, and 54% after three episodes [1, 2]. Patency of the fallopian tubes can be diagnosed by hysterosalpingography (HSG) or laparoscopy with chromopertubation. Unfortunately, it is a tragedy that infertility is considered a curse for couples and also has a significant impact on the family and the community as a whole [2]. Birth rates vary in different parts of the world, ranging from 8 to 10% worldwide of couples are infertile [3]. Infertility is divided into primary and secondary infertility. Primary infertility means that a couple cannot conceive within one year even if they have sex without contraception, and secondary infertility means that they are unable to conceive even if they conceive once. Blockage of the fallopian tubes is one of the most common causes of female infertility. Approximately 20% of female infertility cases can be attributed to fallopian tubes [4]. Genital tuberculosis is an important cause of female infertility in developing countries such as Bangladesh, India, Nepal and

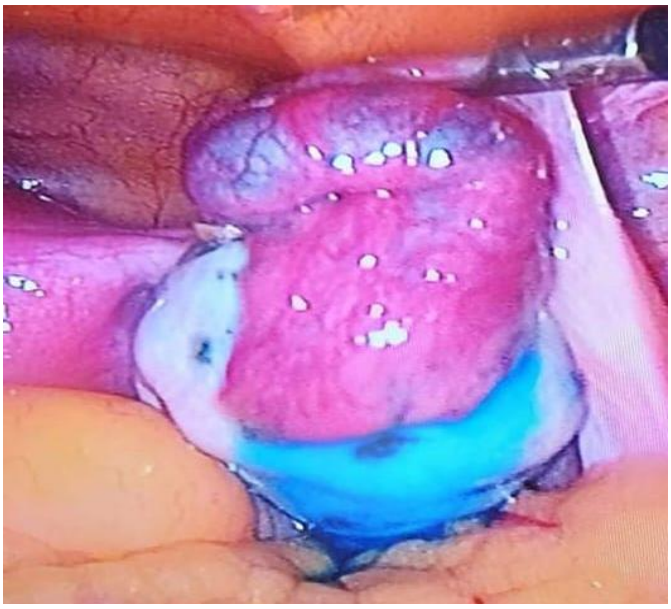
Pakistan. It is one of the major causes of severe fallopian tube disease leading to infertility. Unlike pulmonary tuberculosis, clinical diagnosis of GTB is difficult as it is mostly asymptomatic or has variable clinical manifestations [4]. A combination of clinical and laparoscopic diagnosis, in addition to endometrial histopathological examination, acid-fast bacillus culture, and polymerase chain reaction testing, is the best method to diagnose genital tuberculosis in infertile women [5]. The achievement of pregnancy depends on the degree of fallopian tube blockage. Patients who have had tubal surgery in the past are more likely to have tubal blockage. When evaluating infertile couples, the patency of the fallopian tubes should be evaluated as soon as possible. Tubal pathology affects the function of the fallopian tubes and reduces fertility. The degree of fallopian tube pathology determines the chances of pregnancy. A tubal examination is necessary to plan treatment for infertility. Hysterosalpingography (HSG) is often performed as the first method to assess tubal patency and the presence of adhesions. However, HSG has limitations in detecting tubal pathology [6]. Laparoscopy and chromopertubation are generally considered the gold standard for testing tubal patency. In addition, they can be used to evaluate for tubal disease, adhesions, and endometriosis. This has led to the recommendation by NICE (UK) that women with suspected comorbidities (e.g. endometriosis and pelvic inflammatory disease) should undergo laparoscopy so that both pelvic and tubal pathology can be evaluated [7]. The aim of this study was to determine the role of laparoscopy in the diagnosis of infertile women with tubal factors.

METHODOLOGY

A retrospective study was carried out at Department of Gynae and Obstetrics UHC, Dhamrai, Dhaka, Bangladesh from January to December 2023. 55 patients were selected for laparoscopic evaluation. Inclusion criteria were patients with no prior pelvic surgery, normal bimanual pelvic examination, normal semen parameters of partner and no ovulatory dysfunction. After obtaining thorough history & detailed examination, patients were informed about the procedure and written informed consent was taken. Laparoscopy was performed in follicular phase of menstrual cycle, under general anesthesia. During the laparoscopy, pelvis was inspected for any adhesions or endometriotic spots. Any structural abnormalities of uterus and tubes were noted. Testing of fallopian tube patency was performed by injecting a dilute solution of methylene blue through cervix via Rubin's Canula Tubal patency assessed during laparoscopy was classified as no tubal occlusion, one or two sided tubal occlusion, proximal or distal tubal occlusion. Any complications of laparoscopy like intra operative damage to bowel or blood vessels, post-operative nausea, vomiting, pyrexia or shoulder tip pain was noted.

Statistical Analysis

All data was entered and analyzed using SPSS version 21. The variables were stratified. Quantitative variables like age and duration of infertility has been presented as mean & standard deviation. Qualitative variables like type of infertility, previous history, laparoscopic findings of chromopertubation complication of laparoscopy were presented as frequency and percentage. A test of significance was applied. P value of 0.05 or less was considered significant.



Pic-1: Chromopertubation test.

RESULTS

In total 55 patients 10 were in the age group of <20 yr, 15 were between 21-30 yr & 20 were 31- 40 yr of age and 10 were between 36 – 40 yrs of age. Among these 55 patients 24 patients had primary infertility while 31 had presented with secondary infertility. In these 55 patients 1 had infertility of 0-1 yr, 5 had 2-4 yr while 26 patients were infertile for 5-8 yr and 30 had infertility of 9-15 yr.

Table-1: Distribution of patients by age (N=55)

Age (Yr)	No of Patients	%
<20	10	18.2
21-30	15	27.3
31-35	20	36.3
36-40	10	18.2

Table-2: Distribution of patients according to type of infertility (N=55)

Type of infertility	No of Patients	%
Primary infertility	24	43.6
Secondary infertility	31	54.4

Table-3: Distribution of patients according to duration of infertility (N=55)

Duration (yr)	No of Patients	%
0-1 yr	1	1.8
2-4	5	9.1
5-8	26	47.2
9-15	30	54.5

Table 4: Findings of diagnostic laparoscopy

Findings	No.	Percentage
Normal pelvic organs	9	16.3
Chronic inflammatory disease	3	5.4
Endometriosis	13	23.6
Congenital anomalies of uterus and tubes	1	1.8
Fibroids	20	36.3
Polycystic ovaries	9	16.3

Diagnostic laparoscopy revealed normal pelvic organs in 9 (16.3%) cases, Chronic pelvic inflammatory disease in 3 (5.4%), endometriosis in 13 (23.6%) and congenital anomalies of uterus in 1(1.8%) cases (Table-4).

Table 5: Findings of chromopertubation

Findings	No.	Percentage
Bilateral block	4	7.2
Unilateral block	15	27.3
Peritubal adhesions (spill seen)	4	7.2
Healthy and patent tubes	32	58.3

Table 6: Details of tubal pathology detected in cases of primary and secondary infertility

Tubal pathology (n=33)	Primary Infertility (n=36)		Secondary infertility (n=19)		Total (n=55)	
	N	%	N	%	N	%
Nonspecific pelvic inflammatory disease	12	33.3	7	36.8	19	34.5
Tuberculous Salpingitis	1	2.7	0	0	1	1.8
Endometriosis	5	13.6	3	15.7	8	14.5
Congenital anomalies	0	0	0	0	0	0
Ectopic Pregnancy	0	0	0	0	0	0
Total	20	55.5	8	42.1	28	50.9

Findings of chromopertubation are shown in (Table-5). 7.2% cases had bilateral tubal block, 27.3% had unilateral block and in 7.2% 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-6). Tubal pathology was detected in 55.5% cases of primary infertility and 42.1% cases of secondary infertility. Among those who had tubal pathology, nonspecific pelvic inflammatory disease was noted in 33.3% and genital tuberculosis was diagnosed in 2.7% cases.

Table 7: Complications of laparoscopy

Complications of laparoscopy (n=55)	Primary infertility (n=36)		Secondary infertility (n=19)	
	N	%	N	%
Pyrexia	4	11.1	2	10.5
Right shoulder tip pain	4	11.1	2	10.5
Nausea and Vomiting	9	25.0	5	26.3
No complications	19	52.8	10	52.7

There were no complications in 52.8% of primary and 52.7% patients with secondary infertility groups. The most common complications were pyrexia, shoulder tip pain, nausea and vomiting (Table-7).

DISCUSSION

Examination of the female reproductive tract is one of the essential components of infertility evaluation. Laparoscopy is considered the gold standard method for evaluating tubal patency. In 25-30% of infertile couples, tubal peritoneal factors are the cause of infertility. Laparoscopy is a mandatory procedure for the complete evaluation of infertile couples. Age of female partner is a significant determinant factor in achieving conception and although, there is no universally accepted definition of advanced maternal age, 35yr is considered as the limit in fertility term. In total 55 patients 10 were in the age group of <20 yr, 15 were between 21-30 yr & 20 were 31- 40 yr of age and 10 were between 36 – 40 yrs of age. In these 55 patients 1 had infertility of 0-1 yr, 5 had 2-4 yr while 26 patients were infertile for 5-8 yr and 30 had infertility of 9-15 yr. These results were similar to study where mean age of patients was 31 yr [7]. Among these 55 patients 24 patients had primary infertility while 31 had presented with secondary infertility. It was observed in a study where tubal pathology was detected in 64.7% of primary infertility and 68.7 % of secondary infertility [8]. The diagnostic laparoscopy should be considered early in symptomatic patients during infertility work up. Genital tuberculosis is common in Bangladesh 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 [7]. Endometriosis was observed in 13 (23.6%) cases in the present study but significant peritubal adhesions were found in 4 (7.2%) cases whereas N Aziz reported endometriosis in 6 (10.9%) cases and peritubal and peri-ovarian adhesions in 6 (10.9%) cases [8]. Laparoscopy remains the gold standard for diagnosis and surgical removal at that time should be first line treatment [9]. 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 [10]. 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 [11]. 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 28 (50.9%) cases. The commonest was fibroids in 20 (36.3%) cases and polycystic ovaries in 7 (12.72%) cases. Similar results were observed in various other studies [8]. Other pathologies observed include uterine anomalies (unicornuate uterus with one fallopian tube).There were no complications in 52.8% of primary and 52.7% patients with secondary infertility groups. The most common complications were pyrexia, shoulder tip pain, nausea and vomiting. In a large finish follow up study the complication rate of diagnostic laparoscopy was 0.6 per 1000 procedure, and the most common complication were pyrexia, should tip pain, nausea & vomiting [11].

CONCLUSION

Laparoscopy is an effective diagnostic total for evaluation of pelvic pathologies especially related to fallopian tubes. Tubal pathology was detected in 66% 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. We as trained gynecologists should strive for educating these ladies & counselling them regarding need of evaluation of their infertility by proper methods & laparoscopy not only help in identification of

unsuspected pathology, but also help us in future decision making regarding their treatment.

Conflict of Interest: None.

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