

Laparoscopic Evaluation of Female Factor in Bangladeshi Infertile Couple

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Abstract:

Background: Infertility prevails in good number in our society, causing social disharmony and distress. Laparoscopy is now a very effective tool for diagnosis and evaluation of female infertility.

Method: This cross sectional study was conducted in Infertility Unit of Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, from July, 2012 to June 2014. The aim of the study is to identify common pelvic pathologies of female factor infertility by laparoscopy so that early detection and treatment modalities can be instituted.

Total 230 sub fertile patients attending OPD were selected for this study. Patients with DM, HTN, known case of hypothyroidism and male factor infertility was excluded from study. Detailed clinical history of every patient was recorded on a pre-set questionnaire and physical examination was performed. Laparoscopy was scheduled in proliferative phase of menstrual cycle.

Results: Among the study subjects, 130 (56.5%) had primary infertility while 100 (43.5%) secondary infertility. On laparoscopy, 64.4% patient had normal sized uterus, 31 % had bulky uterus. Two patients had bicornuate uterus in secondary infertility cases. Uterus was restricted in mobility in 41% of patients due to endometriosis, pelvic inflammatory disease (PID) or previous pelvic surgery. Fibroid uterus was detected in 30(13%) and 10(4.3%) cases of primary and secondary infertility cases respectively. Bilateral tubal blockage was present in 16(6.9%) and 17 (7.4%) cases of primary and secondary infertility respectively. Forty (17.4%) cases of primary infertility were detected as polycystic ovaries (PCO) which was 30(13%) in cases of secondary infertility. Endometriosis was found in total 9(3.9%) patient in both the groups. Pelvic adhesion was found in 22(9.5%) and 21 (9.1%) cases of primary and secondary infertility respectively.

Conclusion: Laparoscopy could diagnose a substantial number of portion pelvic pathology. In a developing country like Bangladesh, earlier and justified intervention with laparoscopy can save time and expense of infertility treatment by diagnosing pelvic factor responsible for infertility.

Keywords: Laparoscopy, primary infertility, secondary infertility.

Introduction:

Infertility is defined as failure to conceive during one year of unprotected frequent intercourse¹. It is a public health problem, both in developing and developed countries, affecting 10-15% of couples². In many low-resource settings as in Bangladesh,

infertility is common and frequently associated with negative psychosocial consequences including marital instability, divorce, social isolation and stigmatization³. In most of the cases, treatment of infertility has a lengthy procedure and it is somehow expensive.

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Leading causes of infertility include tubal disease, ovulatory disorders, uterine or cervical factors, endometriosis and male factor. Major causes according to WHO on a global basis are malnutrition, pelvic tuberculosis and puerperal infections leading to tubal blockage^{4,5}. Several studies describe risk factors for tubal pathology such as previous abdominal surgery and previous pelvic inflammatory disease (PID). However, up to 68% of patients without any of these risk factors can still possess abnormalities as shown by laparoscopy⁶⁻⁸.

Generally, laparoscopy is usually reserved for couples who have already completed a more basic infertility evaluation including assessing for ovulation, ovarian reserve, ultrasound and hysterosalpingogram for the female and semen analysis for the male. Less invasive diagnostic tests such as patient's history, chlamydia antibody testing (CAT), ultrasonography and hysterosalpingography (HSG) are available, but it is still a matter of debate how the value of these tests compares with laparoscopy in the infertility work-up⁹. A meta-analysis of studies comparing Chlamydia antibody titres and laparoscopy for tubal pathology has demonstrated that discriminative capacity of chlamydial antibody titres in the diagnosis of tubal pathology is comparable to that of HSG. However it often fails to provide information about severity of tubal disease which is an important indicator to decide treatment options. It also is unable to detect endometriosis¹⁰. Early stages of endometriosis is a common factor for infertility which is easily detected by laparoscopy.

Bangladesh is an overpopulated developing country. Here, infertile couples are mostly treated by inexperienced hands initially. When they reach a tertiary centre where they are supposed to go earlier, it is already late. Laparoscopy helps us to detect pelvic pathology by direct visualization. Our present study is to see what are the common pelvic organ pathology affecting female partner in our country and whether early institution of laparoscopy benefit the patients.

Methods and materials:

All infertile couples attending in outpatient department of the Centre for Assisted Reproduction of BIRDEM General Hospital, Dhaka during the period of July, 2012 to June 2014 were enrolled. Patients suffering from both primary and secondary infertility were included in this study. Age of the patients were between 18 to 35 years. Patients who had medical disorders as DM, HTN, known case of hypothyroidism and male factor infertility was excluded from study.

Before admission, detailed clinical history was taken and clinical examination was done. A set of basic

investigations were carried out for fitness of general anaesthesia including ultrasonography of lower abdomen before laparoscopy. Hysterosalpingography was not done routinely. If the patient had irregular menstruation, basic hormones (FSH, LH, TSH, Prolactin) were done to evaluate ovulatory defect. Finally patients selected for laparoscopy were done as an OPD procedure on 18-21 days of their menstrual cycle.

Data of the identified patients were collected from patient case records and it included factors such as age, duration and type of infertility, clinical examination findings, and gynecological ultrasound. Previous treatment history included details of ovulation stimulation, intrauterine insemination (IUI) and other treatment. Laparoscopy were performed in the morning. A laparoscope was inserted into the abdomen through the umbilicus. Carbon dioxide (CO₂) gas was introduced into the abdomen prior to inserting the laparoscope. Uterus, Pouch of Douglas, fallopian tubes, ovaries were inspected for any pathology.

Intra operative findings such as presence of peritubal adhesions, endometriosis, tubal pathology, perihepatic adhesions, and hysteroscopic findings were recorded in a structured form. Dye test was done in each case. Minor interventions like ovarian drilling, adhesiolysis, removal of small cysts were performed in same sitting. Patients were discharged on the same day evening with necessary medications. Data analysis was done using SPSS 20. Informed consent was taken from every patient with proper explanation of risks and complications of the procedure. The study protocol was approved by ethical committee of BIRDEM hospital.

Results:

Two thirty patients were included for diagnostic laparoscopy out of total 550 infertile patients. In this series, 130 (56.5%) patients were in primary infertility group and 100 (43.5%) patients were in secondary infertility group. Most of the patients (59.6%) ages were between 20-30 years (Fig-1). Duration of infertility was 2-5 years in 46% patients whereas 30% patients had been infertile for 5-10 years. 57.8% patients had regular menstrual cycle.

Patients with secondary infertility reported 10% with alive issues, 1% still birth, 29% had history of abortion, 13.5% had history of menstrual regulation and 3% had previous ectopic pregnancy. Total 11 patients had history of appendicitis, 5 patients had tuberculosis and 18 patients underwent some kind of pelvic surgery.

On laparoscopy, 64.4% patients had uterus of normal size; 40 % patient had irregular shaped uterus due to fibroid most of which belongs to primary infertility group. One hundred out of 130 primary infertility patients had regular shaped uterus (Table-I). Almost

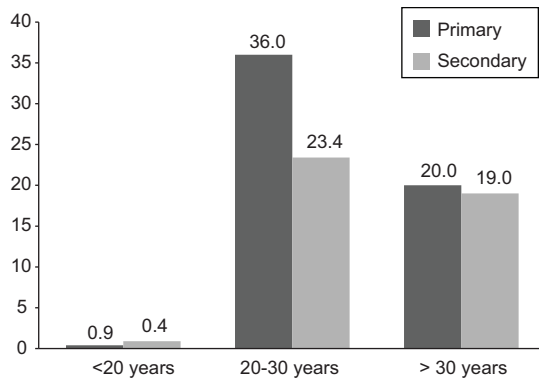


Fig.-1: Distribution of subjects according to their age (n=230)

equal number of patients (20 and 21) of both group were found to have pelvic adhesion. Endometriotic lesions were found in pouch of Douglas in 4% patients. Pouch of Douglas was free in 77.4% patients (Fig-2).

Normal fallopian tube was present on right side in 70% and on left side in 84.3% of patients. We found peritubal adhesion more in right tube than left tube (22% in right tube and 14 % in left tube). Number of hydrosalpinx is almost equal in both groups. Bilateral tubal block was present in 33(14.3%) patients. Single tubal block in either right or left side was found in 22 and 25% of cases respectively (Fig-3). Detailed

findings of both fallopian tubes are shown in Table- II.

In Table-III, no ovarian pathology was found in 77-79 % of patients. We see that polycystic ovary was found higher number in primary infertility group (17.4%) than that of secondary infertility (13%). Chocolate cyst was also more common in primary infertility patients. More detailed comparison is given in Table -III.

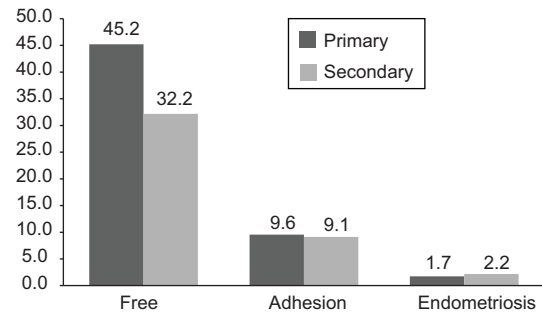


Fig 2: Distribution of subjects according to pathological findings in the pouch of Douglas (n=230)

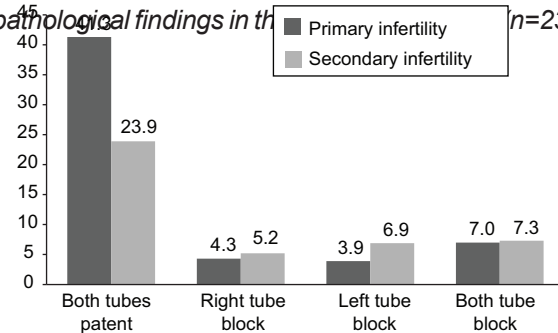


Fig-3: Distribution of study subjects according to tubal patency test (n=230)

Table-I

Distribution of study subjects according to laparoscopic findings of uterine size, shape, mobility (n=230)

Laparoscopic findings	Primary infertility Number(%)	Secondary infertility Number(%)	Total
Uterine size			
Normal	88(38.2)	60(26)	148(64.4)
Smaller	7.0(3)	3.0(1.3)	10(4.3)
Bulky	35(15)	37(16)	72(31.3)
Uterine shape			
Regular	100(43.5)	88(38.3)	196(85.1)
Irregular	30(13)	10(4.3)	40(17.3)
Bicornuate	-	2(0.9)	2 (0.9)
Mobility			
Mobile	109(47)	80(34.8)	189(82.2)
Restricted	21(9.13)	20(8.7)	41 (17.8)

Table-II*Distribution of study subjects according to laparoscopic findings of fallopian tubes (n=230)*

Laparoscopic findings	Primary infertility Number(%)	Secondary infertility Number(%)	Total
Right tube			
Normal	114(49.6)	46(20)	160(69.6)
Adhesion	10(4.34)	41(17.8)	51(22.1)
Kinked	2(0.9)	5(2.2)	7(3.04)
Absent	-	3(1.3)	3(1.3)
Hydrosalpinx	4(1.7)	5(2.2)	9(3.9)
Left tube			
Normal	115(50)	79(34.3)	194(84.3)
Adhesion	7(6.5)	7(3.04)	14(6.0)
Kinked	1(0.43)	3(1.3)	4(1.7)
Absent	-	3(1.3)	3(1.3)
Hydrosalpinx	7(3.04)	8(3.4)	15(6.5)

Table-III*Distribution of study subjects according to the laparoscopic findings of ovaries (n=230)*

Laparoscopic findings	Primary infertility Number(%)	Secondary infertility Number(%)	Total
Right ovary			
Normal	44(19.1)	35(15.2)	79(34.3)
Adhesion	10(4.3)	11(4.8)	21(9.1)
Smaller	4(1.70)	1(0.43)	5(2.1)
Multicystic	13(5.7)	18(7.8)	31(13.4)
Polycystic	40(17.4)	30(13)	70(30.4)
Chocolate cyst	19(18.3)	5(2.2)	24(10.4)
Left ovary			
Normal	48(20.9)	29(12.7)	77(33.4)
Adhesion	8(3.5)	13(5.7)	21(9.1)
Smaller	4(1.7)	1(0.4)	5(2.1)
Multicystic	18(7.8)	22(9.6)	38(16.5)
Polycystic	40(17.4)	30(13)	72(31.3)
Chocolate cyst	12(5.2)	5(2.2)	17(7.4)

Discussion:

Introduction of laparoscopy has tremendously improved the ability to investigate long standing infertility. Uterus, fallopian tubes, ovaries can be directly visualized by laparoscopy and information about present pelvic pathology can be obtained.

In this study, we have found 66.7 women (29%) had history of abortion and 27 women (13.5%) had history of menstrual regulation (MR). A similar study was performed by Biswas R et al where secondary infertility following post abortion was 18%, following

MR was 21.5% and following still birth 9%¹¹. Here tubal pathology might have occurred following gonococcal, chlamydial, or other STD causing asymptomatic pelvic inflammatory disease (PID). Another study done in sub-Saharan countries showed tubal factors (such as unilateral or bilateral tubal occlusion, pelvic adhesion, and other abnormalities) in 32%. About 66% of African women experienced tubal factors compared to about 33% worldwide. About 9% of women reported a history of sexually transmitted disease (STD), and 8% reported abortion complications¹².

In our study, 18 (7.8%) patient had pelvic surgery, 11 (4.8%) had history of appendicitis, 5 (2%) had history of pulmonary tuberculosis. More of these patients belonged to secondary infertility group. Hovav Y et al studied the role of diagnostic laparoscopy in primary and secondary infertility. In only 3 of the 20 patients with primary infertility was there no history of an pelvic surgery, pelvic inflammatory disease, or an abnormal hysterosalpingography of the 62 women who suffered secondary infertility and had positive findings in laparoscopy, 15 had no history of suspect findings¹³.

In our study, on laparoscopy, 30 (13%) patients of primary infertility group had irregular uterus due to fibroid. There was adhesion in Pouch of Douglas in 9.6% of patients with primary infertility which was a bit higher than secondary infertility. Pelvic endometriosis was found in 2.2% of patients of secondary infertility. In a case series published by Aziz N et al, endometriosis was found in 4 (12.5%) cases with primary infertility and 2 (11.1%) cases with secondary infertility. Pelvic inflammatory disease (PID) was found in 1 (3.1%) and 2 (16.7%) cases of primary and secondary infertility respectively. Bicornuate uterus was present in 1 cases of secondary infertility¹⁴. In a study of 100 infertile patients, Biswas R et al showed 9% had fibroid uterus, 2% had bicornuate uterus and 18% had bulky uterus¹¹. We found only 2 (9%) patients with bicornuate uterus in our study.

In the present study, in cases of secondary infertility both tubes were blocked in 17 (7.4%) cases and both tubes were patent in 55 (23.9%) cases and only one tube was blocked in 28 (20.5%) cases. A similar study was done by Chowdhury S et al where tubal blockage was found in 15% cases of primary infertility and 17.5% cases of secondary infertility¹⁵. This finding is much lower than the series by Collet M where the study was done in Eastern Gabon in the infertility belt, where the tubal occlusion was present in 82.2% cases. This high prevalence of tubal occlusion in Africa was probably due to sexual promiscuity, which play a major role in causing secondary subfertility¹⁶. Bilateral tubal occlusion was found in 35.5% cases in laparoscopy in infertile patients of Nigeria shown in a study by Olorin EO et al which is higher than our study. The higher prevalence might be due higher incidence of STD in Nigeria because of freedom of sexual activity in the society¹⁷.

It is known that incidence of tubal factors in case of primary infertility is about 15% and in secondary infertility 40%¹⁸. Different types of tubal pathology were observed laparoscopically such as peritubal adhesion, hydrosalpinx, agglutination of fimbria, tubal blockage (unilateral/ bilateral) which played important role in both primary and secondary infertility. A study by Gulfareen H et al has shown that the commonest finding by laparoscopy in patients with primary infertility was endometriosis which accounted for 11 (55%) while in secondary infertility tubal occlusion was more common which accounted for 3 (30%) cases¹⁹.

In a cross sectional study published by Naz et al, ovarian pathology was found in 18 (13.23%) cases of primary and 4 (7.01%) cases of secondary infertility. Polycystic ovaries (PCO) were detected in 12 (8.82%) and 2 (3.5%) cases of primary and secondary infertility respectively. Endometriotic cysts and deposits were found in 15 (10.29%) cases of primary and 3 (5.26%) cases of secondary infertility⁴. In our study, findings show & periovarian adhesion in 4.3% cases of primary and 4.8% in cases of secondary infertility which is significant in secondary infertility. Frequency of PCOS and chocolate cyst was higher in primary infertility. PCOS was present in 17.4% patients of primary infertility and 13% patients of secondary infertility. Chocolate cyst was present in 23.5% patients with primary and 4.4% of secondary infertility. A study by Aziz N showed five (15.6%) cases of primary infertility were detected as polycystic ovaries (PCO) which was not found in cases of secondary infertility. Endometriosis was found in 4 (12.5%) cases with primary infertility and 2 (11.1%) cases with secondary infertility¹⁴. A similar study by Khan MI in Bangladesh in a study of 50 infertile patients, has shown pelvic pathology like endometriosis was present in 5 (10%) cases, adhesion was detected in 14 (28%) and chocolate cyst was found in 3 (6%) cases²⁰. In another similar study, Shetty SK et al showed endometriosis in 12 (24%) cases and peritubal adhesion in 4 (8%) cases where endometriosis was higher but adhesion was lower than our study²¹. A prospective study conducted by Boricha YG et al showed 10 (20%) had tubal pathology out of 50, 7 (14%) cases had unilateral block and in 3 (6%) cases both tubes were blocked²².

We could conclude that common causes responsible for infertility in this study were tubal occlusion,

endometriosis, peritubal and periovarian adhesions. Ovarian causes were seen in primary infertility predominantly. On the other hand, tubo-peritoneal factors were predominantly present in cases of secondary infertility.

In a poor country like Bangladesh, most of the patients initially go to untrained health practitioners for treatment of infertility leads to further delay in proper management. Laparoscopy not only helps in identification of unsuspected pathology but also contributes to decision making. So it should be considered as an initial and important investigations for the evaluation of infertile couple.

Conclusion:

From this study, it can be concluded that tubal blockage, pelvic adhesion and endometriosis are important tuboperitoneal factors in infertility. Laparoscopic procedures are more convenient and more precise for diagnosis of pelvic pathology. There should be proper guidance and education of infertile women to consult earlier at proper infertility clinic. Early decision for laparoscopy specially in case of secondary infertility can be cost effective and minimize time for decision making. There is need to establish the role of laparoscopy in both the diagnosis and management of patients with infertility and larger studies need to be carried out.

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