

**LAPAROSCOPIC EVALUATION OF TUBAL FACTORS IN PATIENTS WITH
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ABSTRACT

Objective: In this study or main goal is to evaluate the tubal factor pathology in case of infertile patients with diagnosed PCOS by laparoscopy. **Method:** This retrospective study was carried out at tertiary medical college and hospital from 2018 to 2019 where a total of 100 women who were diagnosed case of infertility with PCOS included in the study. **Results:** During the study, in primary infertility 70.59% patient had no history of contraception. Only 8.82% had taken oral pill and 20.59% used barrier method. In secondary infertility had no history of contraception 25% had taken oral pill, 6.25% had taken IUCD and 6.25% used barrier method. Laparoscopic study of fallopian tube showed in primary infertility the tube of the right side was normal looking in 52 (76.47%), peritubal adhesion was present in 12 (17.65%) and hydrosalpinx was present in 4 (5.88%) cases. The tube of the left side was normal looking in 50 (73.53%), peritubal adhesion was present in 10 (14.71%) and hydrosalpinx was present in 8 (11.76%) cases. In secondary infertility the tube of the right side was normal looking in 16 (50.00%), peritubal adhesion was present 8 (25.00%) hydrosalpinx in 6 (18.75%) and the tube was absent in 2 case. In the left side the tube was normal looking in 20 (62.50%), peritubal adhesion was present in 8 (25.00%) and hydrosalpinx in 4(12.50%) cases. **Conclusion:** Without laparoscopic examination, investigation of female sub fertility is incomplete. In our country laparoscopic facility is available only in few centres as its use requires considerable expertise. So there should be more supports and opportunities for making enough competent laparoscopists. Then the infertile couples will be benefited from it and achieve their goals of infertility.

KEYWORDS: Laparoscopic evaluation, tubal factors, polycystic ovarian syndrome (PCOS).**INTRODUCTION**

Infertility is defined as inability of a couple to conceive within a certain period of time –one year of frequent unprotected intercourse. It is seldom physically debilitating disease, but severely affects the couple's psychological harmony. About ten to fifteen percent of couples prove to be childless. Sterility implies an intrinsic inability to achieve pregnancy whereas infertility implies a decrease in the ability to conceive. The prevalence of infertility ranges from seven to twenty-eight percent depending on the age of women. Sterility affects one to two percent of couples.^[1]

About half of patients are suffering from primary infertility in which no previous pregnancy has occurred and another half is secondary infertility in which prior conception although not necessary, alive birth has occurred. Primary infertility was found to be more frequent due to male involvement and secondary infertility due to female involvement.^[2]

Infertility is a significant common problem affecting perhaps one couple in six. The cause of infertility varies from country to country and different social group. Infertility can be due to either partners, or both. Overall an etiology for infertility can be found in 80% of cases with even distribution of male and female factors including couple with multiple factors.

A primary diagnosis of male factor is made in approximately 25% of cases. Ovulatory dysfunction, tubal and peritoneal factors comprise the majority of female factor infertility. In 15-20% of infertile couple, the etiology cannot be found and a diagnosis of unexplained infertility is made.^[3]

Polycystic ovarian syndrome is a complex heterogeneous syndrome with characteristic of abnormalities of ovarian morphology and endocrine profile as well as clinical disorder. This syndrome includes hyper insulinaemia, adult onset of diabetes, hypertension and an atherogenic lipid profile.

PCOS is a common cause of an ovulation and infertility in women. Women with this syndrome do not ovulate regularly and therefore have irregular menstrual cycles. Their ovaries contain multiple small cystic structures, usually about 4-9 mm in diameter. This gives the ovaries a characteristic “polycystic” appearance.

Tubal pathology is believed to be one of the most important causes of female infertility. It affects 14% of couples and 40% of infertile women.

We know that, the fallopian tube is more than just a tube. Numbers of events occur within the tube including capacitation of sperm, fertilization and early development of zygote and embryo. So any damage to the fallopian tube can prevent the sperm from reaching the uterine cavity leading to infertility and tubal ectopic pregnancy respectively.

The impaired tubal functions include defective ovum pick up, impaired tubal motility, loss of cilia and complete obstruction of the lumen. The impaired function of anyone is related to tubal infection or peritubal adhesions following pelvic infection, surgery or endometriosis. So it is obvious that assessment of tubal condition is very vital for management of infertile women. No laboratory test is available for determination of physiological function of the fallopian tube.^[4]

Laparoscopy is a transperitoneal endoscopic technique that provides excellent visualization of pelvic structures and often permits the diagnosis of gynecological disorders and pelvic surgery without laparotomy. It should be performed by physicians trained in laparoscopic techniques who can recognize and treat common complications and can perform additional therapeutic procedures when indicated.

Laparoscopy should be the procedure of any infertility investigation. However more recently, an increasing number of clinicians have been using laparoscopy with hysteroscopy in the early assessment of infertility. Although a simple technique in skilled hands, laparoscopy is not without complications such as infections, haematoma and injury to the bowel and great vessels. Several studies reported that the incidence of unsuspected pelvic pathology found at laparoscopy is approximately 50%. It is reasonable to assume that mechanical problems are more frequent in secondary infertility than in primary infertility in couples that have no ovulation or sperm defects. In a study carried in 1988 showed that tubal damage, endometriosis and PID were common findings in secondary infertility. However, there is failure to find reports that make a distinction to find reports distinguishing the positive pathology findings at laparoscopy between primary and secondary infertility.^[5]

The aim of this retrospective study is to evaluate the role of laparoscopy in the evaluation of primary infertility vs.

secondary infertility. Also, to evaluate the tubal factor pathology in case of infertile patients with diagnosed PCOS by laparoscopy

OBJECTIVES

General objective

- To evaluate the role of laparoscopy in the evaluation of primary infertility vs. secondary infertility.

Specific objective

- To document the tubal factors abnormalities in patients with polycystic ovarian syndrome who undergoes laparoscopy.
- To find out the difference of tubal factors in patients with PCOS both primary and secondary infertility.
- To find out the numbers with unilateral or bilateral tubal pathology.

METHODOLOGY

Types of the study

- This was a retrospective study.

Place and period of the study

- This study was carried out at tertiary medical college from 2018 to 2019.

Sample size

- A total of 100 women who were diagnosed case of infertility with PCOS included in the study.

Inclusion criteria

- Diagnosed case of infertility with PCOS
- 2. PCOS was diagnosed according to Rotterdam criteria (2003)
- either 2 must be present-
- Oligo or anovulation
- Hyperandrogenism (clinical and or biochemical)
- Ultrasonographic evidence of Polycystic ovaries
- 3. Informed consent

Exclusion criteria

Following categories were excluded from this study –

- Male factor causes like abnormality in sperm analysis, abnormality in sexual function were excluded from this study.
- Women more than 40 years and less than 20 years were excluded.
- Hypothyroidism / hyperprolactinaemia.
- Diabetes mellitus.
- Premature ovarian failure.

METHODS

Before admission, detailed history was taken from Gynae out patient department from both husband and wife. Then clinical examination was done. After a detailed history and clinical examination, a set of basic investigations were done and include.

- Blood: TC, DC, Hb%, ESR
- Blood sugar, Blood grouping & Rh typing

- Urine: R/M/E.
- HBsAg
- Semen analysis of husband.
- X-ray chest P/A view.
- USG of lower abdomen

RESULTS

Table 1: Age distribution of 100 cases of infertile female patient.

Age (in years)	Primary Infertility		Secondary Infertility	
	Frequency	Percentage (%)	Frequency	Percentage (%)
20-29	44	64.71	20	62.5
30-39	24	35.29	12	37.50
Total	68	100	32	100

Age distribution showed that in primary infertility 44 (64.71%) were aged 22-29 years. 24(35.29%) were 30-39 years. In secondary infertility 20 (62.5%) were aged 20-29 years, 12 (37.50%) Were 30-39 years.

Table 2: Comparison of complaints between primary infertility & secondary infertility.

Complaints	Primary (n=68)		Secondary (n=32)	
	No.	Percentage (%)	No.	Percentage (%)
1.Chronic pelvic pain	12	17.65	14	43.75
2.Dysmenorrhoea	20	29.41	10	31.25
3. Dyspareunia	16	23.53	6	18.75
4. Discharge	40	58.82	24	75.00
Mild	36	52.94	18	56.25
Moderate	2	2.94	2	6.25
Severe/Excess	2	2.94	4	12.50

Table 2 showed that in primary infertility, chronic pelvic pain was present in 12 (17.65%), dysmenorrhoea in 20 (29.41%), dyspareunia in 16 (23.53%) and discharge in 40 (58.82%).

In secondary infertility chronic pelvic pain was present in 14 (43.75%), dysmenorrhoea in 10 (31.25%), dyspareunia in 6 (18.75%) and discharge in 24 (75%) cases.

Table 3: Contraceptive history of infertility cases.

History of Contraception	Primary Infertility		Secondary Infertility	
	No.	Percentage (%)	No.	Percentage (%)
No H/o contraception	48	70.59	20	62.50
Oral pill	6	8.82	8	25.00
IUCD	0	0.00	2	6.25
Barrier method	14	20.59	2	6.25
Total	68	100	32	100

Table 3 showed that in primary infertility 70.59% patient had no history of contraception. Only 8.82% had taken oral pill and 20.59% used barrier method. In secondary infertility had no history of contraception 25% had taken oral pill, 6.25% had taken IUCD and 6.25% used barrier method.

Study of past medical and surgical history showed that in 88% cases there was not relevant medical or surgical history. In only 6% cases had attack of appendicitis and subsequent appendectomy. In 2% case there was ectopic pregnancy, 2% salpingitis and 2%, pulmonary tuberculosis.

Table 4: Relevant past history of 100 cases of infertility.

Past Medical / Surgical History	No. of Patient	Percentage (%)
No past medical or surgical	88	88
Appendicitis	6	6
Ectopic pregnancy	2	2
Salpingitis	2	2
Puerperal Sepsis	0	0
Pulmonary T.B.	2	2
Total	100	100

Table 5: Obstetrical History of Secondary infertility case (n=32).

Obstetrical History	No. of Patient	Percentage (%)
Para 1 or more	16	50.00
One alive child	6	18.75
Still birth	4	12.50
IUFD	2	6.25
Dead	4	12.50
Abortion	10	31.25
MR	6	18.75

Obstetrical history of secondary infertility showed that 6 (18.75%) had at least one alive child, 4 (12.50%) had history of stillbirth, 2 (6.25%) had IUD, 10 (31.25%) had history of abortion, 6 (18.75%) had history of MR and 4 (12.50%) had alive child who died later on.

Note: Two patients had ectopic pregnancy with previous history of MR.

Table 7: Morphological changes of fallopian tubes in Primary & Secondary infertility.

Morphological	Primary Infertility				Secondary Infertility			
	Right		Left		Right		Left	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Normal looking	52	76.47	50	73.53	16	50.00	20	62.50
Peritubal adhesion	12	17.65	10	14.71	8	25.00	8	25.00
Hydrosalpinx	4	5.88	8	11.76	6	18.75	4	12.50
Absent	0	0.00	0	0.00	2	6.25	0	0.00

Laparoscopic study of fallopian tube showed in primary infertility the tube of the right side was normal looking in 52 (76.47%), peritubal adhesion was present in 12 (17.65%) and hydrosalpinx was present in 4 (5.88%) cases. The tube of the left side was normal looking in 50 (73.53%), peritubal adhesion was present in 10 (14.71%) and hydrosalpinx was present in 8 (11.76%) cases. In

secondary infertility the tube of the right side was normal looking in 16 (50.00%), peritubal adhesion was present 8 (25.00%) hydrosalpinx in 6 (18.75%) and the tube was absent in 2 case. In the left side the tube was normal looking in 20 (62.50%), peritubal adhesion was present in 8 (25.00%) and hydrosalpinx in 4 (12.50%) cases.

Table 8: Condition of the fimbria in infertility.

Morphological	Primary Infertility				Secondary Infertility			
	Right		Left		Right		Left	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Normal	52	76.5	50	73.53	16	50.00	20	62.50
Agglutinated	12	17.6	12	17.65	10	31.25	10	31.25
Not Properly Visualized	4	5.9	6	8.82	4	12.5	2	6.25

Laparoscopic review showed that primary infertility fimbria of the right side was normal in 52 (76.5%), agglutinated in 12 (17.6%) and in 4 (5.9%) not properly visualized in the left side fimbria was normal in 50 (73.53%), agglutinated in 12 (17.65%) and in 6 (8.82%) not properly visualized. In the secondary infertility the

fimbria of the right side was normal in 20 (150%), agglutinated in 10 (31.25%) and in 4 (12.5%) not properly visualized. In the left side fimbria was normal in 20 (62.50%) agglutinated in 10 (31.25%) and in 2 (6.25%) not properly visualized.

Table 9: Tubal patency by dye test.

Result	Primary Infertility				Secondary Infertility			
	Right		Left		Right		Left	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Dye test +ve	48	70.59	56	82.35	20	62.50	24	75.00
Dye test -ve	18	26.47	12	17.65	10	31.25	8	25.00
Doubtful	2	2.94	0	0.00	0	0.00	0	0.00

Tubal patency test showed that in primary infertility dye test was positive in the right side in 48 (70.59%) cases and in the left side in 56 (82.35%) cases. Dye test was negative in the right side in 18 (26.47%) cases and in the left side in 12 (17.65%) cases and was doubtful in the right side in 2 (2.94%) case.

Note: In secondary infertility two cases had previous right sided salpingo ophorectomy due to ectopic pregnancy.

In secondary infertility dye test was positive in the right side in 20 (62.5%) cases and in the left side in 24 (75%) cases. Dye test was negative in the right side in 10 (31.25%) cases and in the left side in 8 (25%) cases.

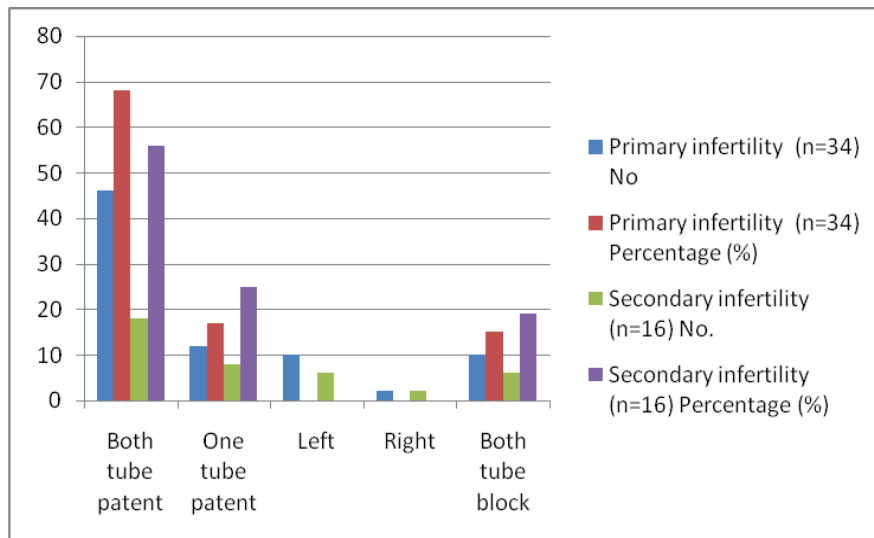


Figure 1: Tubal Patency test in primary & secondary infertility.

In primary infertility both tubes were patent in 46 (68%), only one tube was patent in 12 (17.00%) and both tubes were blocked in 10 (15%). On the other hand in secondary infertility both tubes were patent in 18 (56%) cases, only one tube was patent in 8 (25%) and both tubes were blocked in 6 (19%) cases.

DISCUSSION

In this study out of 100 infertility patients about 68% had primary and 32% had secondary infertility. A study made by in 2003 also showed 69% had primary and 30% had secondary infertility.^[4] Another study showed 57% had primary and 30% had secondary infertility.^[5]

In this study out of 100 cases 64% were above the age of 25 years and they had already passed the age of optimal fertility (25-29yr) when they were ready to have children and therefore created a problem as regards to fertility.

When considering the duration of infertility mean duration is 6.8 years in this study. This differs from the another study where majority of the patients came for investigation after 2-5 years.^[6]

In this study, use of contraceptive by the majority of the infertile couples was almost nil. About 67% couples had never used any type of contraceptive method, only 17% had used hormonal contraceptive pills for short period (3-8 months), 13% used barrier method and only 6% used IUCD in case of secondary sub-fertility. Similar study showed that 78% couples had never used any type of contraceptive, only 16% women used hormonal contraceptive and remaining 6% used barrier methods.^[7]

A normal fallopian tube is needed for ovum transport, fertilization and transport of fertilized ovum to the uterus. Any abnormality of fallopian tube interface fertility. No laboratory test is available for determination of physiological functions of the fallopian tube. By laparoscopy we can find out anatomical integrity of tube

i.e. tubal patency. Incidence of pathology of fallopian tube varies according to sexually transmitted disease, post abortal and puerperal infection. In this study in primary infertility both tubes were found to be blocked in 15%, only one tube patent in 17% and both tubes were patent in 68%. In secondary infertility both tubes were patent in 56% cases. Similar findings were observed by Chowdhury S and Chowdhury T.A in case of primary infertility but not in secondary infertility where tube blockage was found in 15% in the former and 17.5% in the later group.

This finding is much lower than series where the tubal occlusion was present in 82.8% cases. In the present study peritubal adhesion was present in 17.65% at right and 14.7% at left side in primary infertility. In secondary infertility it was present in 25% at both sides.^[8]

Hydrosalpinx was found in 5.9% in the right side and 11.76% in the left in primary infertility and 18.75% and 12.5% in right and left side respectively in secondary infertility.

Here tubal pathology (peritubal adhesion and hydrosalpinx) were seen to be more common in secondary infertility cases than the primary infertility. This increased prevalence of peritubal adhesion and hydrosalpinx in secondary infertility might be relate to history of abortion, MR, still birth and IUCD insertion which are 31.25%, 18.75%, 12.5% and 6.25 respectively in this study.

Another study reported that, where secondary infertility, following post abortion 59.10%, MR 16%, still birth 9.1%, past obstetric history is important in cases of secondary sub-fertility. But the prevalence of peritubal adhesion and hydrosalpinx in primary infertility where there was no such history was not negligible. Here pathology might be related to gonococcus or Chlamydial infection causing asymptomatic pelvic inflammatory diseases (PID).^[9]

It was seen that in secondary infertility peri tubal adhesion, hydrosalpinx and tubal blockage were more common in right side than in the left side but it was not true for the primary infertility. This higher prevalence of tubal pathology in the right side might be related to the appendix, a structure which lies in right side of pelvis.

Bilateral tubal occlusion was found in 35.3% by laparoscopy in infertile female patients of Nigeria³⁹ which was higher than this study. The higher prevalence might be due to more STDs in Nigeria than ours because of less conservative attitude of that society. It should be emphasized that laparoscopy is the most important investigating method for evaluation of the tubal factors, as the findings missed on hysterosalpingography are diagnosed on laparoscopy and for management of both primary and secondary infertility. It is an essential step prior to any anticipated intervention as it provides essential information regarding the nature and extent of future surgery.

In this study there was a strong correlation between the tubal blockage and history of MR, abortion and stillbirth. In secondary infertility in 6 (18.75%) cases there was a history of MR and both of them were association with unilateral tubal blockage and peritubal adhesion.

In 10(31.25%) cases there was a history of spontaneous abortion but half of them had no tubal pathology and both tubes were found to be patent. Only in 2 case there was bilateral tubal blockage and in 6 (18.75%) cases hydrosalpinx. In 4 (12.5%) cases there was a history of stillbirth. Of them, one was associated with bilateral tubal blockage and two with unilateral tubal blockage.

When this study was compared with another study done in sub-Saharan countries, it was found that, in secondary infertility 25% cases had a history of MR and majority of them had unilateral tubal blockage.^[5]

Review of medical and surgical history showed that in 6% cases there was a history of appendicitis. One case later on, had a ectopic pregnancy and right sided salpingo-oophorectomy was done. The other case had right sided tubal blockage. In 2% case there was a past history of pulmonary tuberculosis but laparoscopically both tubes were completed healthy and patent. But in this case menstrual cycle was irregular which might be associated with an ovulation.

Another study 6% cases has a past history of pulmonary tuberculosis and all of them were in primary infertility group and in them laparoscopy showed both tubes were blockage in 2 cases.^[6]

In this study only 2% case had a history of IUCD insertion and here the Right tube was found blocked and there was peritubal adhesion. Tubal blockage was more frequent in the right in both primary and secondary infertility. There was as strong correlation between tubal

pathology and history of MR, abortions, still birth, IUCD and appendicitis. The study showed that tubal blockage is an important cause of infertility in Bangladesh though it was not high as found in Africa and other western countries.

CONCLUSION

Infertility definitely has some tragic dimension in the family life of many couples. The causes of infertility vary from country to country and in different social groups. The main variable is the incidences of tubal occlusion caused by infection after child birth or abortion and tuberculosis. This can be prevented by extending medical services where they are not readily available. It has also been found that in this country many infertile couples reported very late for investigation because of ignorance, poverty and poor communication facilities.

Without laparoscopic examination, investigation of female sub fertility is incomplete. In our country laparoscopic facility is available only in few centers as its use requires considerable expertise. So there should be more supports and opportunities for making enough competent laparoscopists. Then the infertile couples will be benefited from it and achieve their goals of infertility.

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