

Application of laparoscopy in current fertility practice

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ABSTRACT

Background: The present study is carried out with the objective of establishing the role of diagnostic and operative laparoscopy as a simple, safe and accurate tool in the evaluation of infertility. The aims of current study were to study the application of laparoscopy in current fertility practice, to evaluate indications for diagnostic laparoscopy for infertility, to study findings of diagnostic laparoscopy and to study various operative procedures performed for correction of infertility.

Methods: This is a prospective study of 50 women undergoing infertility workup in a private hospital from January 2011 to January 2012. All infertile women having primary or secondary infertility were included in the study. Couples having male factor infertility were excluded from the study. Data were collected and analyzed.

Results: Our study is conducted in 50 cases of infertility patients out of which 74% were primary infertility and 26% were secondary infertility. Uterine factors were found in 16% of cases, tubal factors were found in 44% of cases, ovarian factors were implicated in 30% of cases out of which majority (12%) had PCOD. Among the peritoneal factors (18%) endometriosis and pelvic adhesions were found in 6% each. In spite of thorough laparoscopic evaluation no cause (unexplained infertility) was found in 14% of cases and hence overall, the pelvic pathology was found in 86% of cases.

Conclusions: Laparoscopy is the gold standard for diagnosing tubal and peritoneal disease, endometriosis, adhesions and other pelvic pathology, because no other imaging technique provides the same degree of sensitivity and specificity.

Keywords: Laparoscopy, Infertility

INTRODUCTION

The desire to reproduce is an intensely motivating human force. Couples may also experience strong religious, cultural and social pressure to conceive. Infertility is a life crisis for them. The number of couples seeking medical help for infertility is increasing dramatically (from 8% to 10-15%).^{1,2} This problem is compounded by the trend towards delayed child bearing age to achieve socio-economic, educational and professional goals as well as the newer diseases which are seen mostly related to the changes in the lifestyle.^{6,8,9}

Today in the era of scientific advancement and technology, newer diagnostic and operative modalities have paved the path for further insight into this problem. Laparoscopy has emerged in recent years as an accurate method of assessing, evaluating and treating infertility.^{3,4,7} Direct visualization of abdominal and pelvic organs in laparoscopy allows the rapid diagnosis to be made in many conditions where clinical examination and less invasive techniques such as ultrasound and hysterosalpingography fail to identify the problem.^{5,19}

Laparoscopy is the gold standard for diagnosing tubo-peritoneal disease, endometriosis and adhesions and because no other imaging technique provides the same degree of sensitivity and specificity. It is also helpful in the diagnosis of uterine and ovarian factors.^{11,12}

Thus, in view of all the above revelations, the present study is a humble endeavor to establish the role of diagnostic and operative laparoscopy as a simple, safe and accurate tool in the evaluation of infertility.

Laparoscopy in infertility

A. Diagnostic laparoscopy in infertility

Diagnostic laparoscopy is included now as a part of initial work-up for infertility. Common factors are:^{13,14,17}

1) Tubal factors

Tubal testing can be done to find out:

- Tubal patency.
- Tubo-ovarian adhesions which may interfere with tubo-ovarian function
- Laparoscopic evaluation necessary before constructive surgery.

2) Ovarian factors

Inferior surface of the ovary can be inspected by flipping it over with grasping forceps or probe for presence of corpus luteum, follicular cyst, microcyst, chocolate cysts, PCOD, adhesions etc.

Ovarian biopsy is indicated in cases of primary or secondary amenorrhoea, anovulation.

3) Uterine factors

Uterine factors like small corneal myomas or congenital malformations can be diagnosed.

4) Endometriosis

Endometriosis is one very important cause of unexplained infertility and can be diagnosed in early stages by laparoscopy.

5) Post operatively

In tubal surgery as in second look puncture to demonstrate tubal patency and, if necessary, to carry out adhesiolysis and minor corrective surgery.

B. Operative laparoscopy in infertility

Laparoscopy has been used for:^{15,16,18}

- Ovarian drilling

- Fimbrioplasty and salpingostomy
- Ovarian cystectomy
- Myometomy
- Tubo-ovarian mass
- Resection and ablation of endometriosis
- Adhesiolysis
- Mullerian agenesis
- Salpingo-ovariocystectomy

METHODS

This is a prospective study of 50 women undergoing infertility workup in a private hospital from January 2011 to January 2012.

All infertile women having primary or secondary infertility were included in the study. Couples having male factor infertility were excluded from the study. Data were collected and analyzed.

RESULTS

A study consisting of 50 infertility patients, both primary and secondary, was undertaken at a private hospital in Ahmedabad from January 2011 to January 2012, to know the role of diagnostic laparoscopy in the evaluation of infertility.

Table 1: Duration of infertility.

Duration of infertility (Years)	Primary		Secondary		Total	
	No.	%	No.	%	No.	%
1-5	25	67.5	9	69.2	34	68.0
6-10	10	27.0	3	23.1	13	26.0
11-15	1	2.7	-	-	1	2.0
16-20	1	2.7	1	7.6	2	4.0
Total	37	100.0	13	100.0	50	100.0

Table 2: Uterine factors in infertility.

Uterine factors	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
Hypoplastic uterus	3	8.1	-	-	3	6.0
Mullerian anomalies	2	5.4	-	-	2	4.0
Fibroid uterus	1	2.7	2	15.3	3	6.0
Endometrial TB	-	-	-	-	-	-
Total	6	16.2	2	15.3	8	16.0
Inference	Congenital anomalies (hypoplastic uterus) and Mullerian anomalies were more commonly seen in primary infertility. Patients with p=0.107 whereas acquired causes (fibroid uterus) were more commonly seen in secondary infertility patients with P value = 0.107.					

In the present study, 37 cases (74%) were of primary infertility and 13 cases (26%) were of secondary infertility.

In this study, majority of patients of primary infertility belonged to the age group of 21-25 years (51.3%) and that of secondary infertility to 26-30 years (46.15%).

In this study, uterine factors accounted for 16% of infertility causes. Mullerian anomalies were found in 2 cases of primary infertility, out of which one had unicornuate uterus and another had sub septate uterus.

Table 3: Tubal factors in infertility.

Tubal factors	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
B/L tubal block	5	13.5	1	7.6	6	12.0
U/L tubal block	2	5.4	1	7.6	3	6.0
Peritubal adhesions	4	10.8	2	15.3	8	16.0
Hydrosalpinx	3	8.1	1	7.6	4	8.0
T.O. mass	2	5.4	-	-	2	4.0
Delayed spillage	1	2.7	-	-	1	2.0
Total	17	45.9	5	38.4	22	44.0
Inference	Peritubal adhesions are found in majority of infertility patients followed by bilateral tubal block.					

Table 4: Results of chromopertubation test.

Results of chromopertubation test	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
B/L positive	27	72.9	10	76.9	37	74.0
B/L negative	5	13.5	1	7.6	6	12.0
U/L positive	3	8.1	2	15.3	5	10.0
Delayed spillage	1	2.7	-	-	1	2.0
Not perceived	1	2.7	-	-	1	2.0
Total	37	100.0	13	100.0	50	100.0
Inference	Majority of infertility patients (74%) had bilateral positive chromopertubation test.					

Table 5: Ovarian factors.

Ovarian factors	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
PCOD	5	13.5	1	7.7	6	12.0
Streak ovaries	2	5.4	-	-	2	4.0
Ovarian cysts	2	5.4	1	7.7	3	6.0
Bald ovaries	3	8.1	1	7.7	4	8.0
Total	12	32.4	3	23.1	15	30.0
Inference	Majority of infertility patients had PCOD as an ovarian factor.					

In present study, ovarian factors accounted for 30% of cases of infertility in our study. Of the 3 ovarian cysts, one was dermoid cyst, one was chocolate cyst of ovary and the other was simple ovarian cyst.

Table 6: Peritoneal factors in infertility.

Peritoneal factors	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
Endometriosis	2	5.4	1	7.7	3	6.0
Pelvic adhesions	2	5.4	1	7.7	3	6.0
Pelvic infection	1	2.7	1	7.7	2	4.0
Pelvic tuberculosis	1	2.7	-	-	1	2.0
Total	6	16.2	3	23.1	9	18

Table 7: Causes of infertility at laparoscopy.

Causes of infertility	Primary (n=37)		Secondary (n = 13)		Total (n=50)	
	No.	%	No.	%	No.	%
Uterine factors	6	16.2	2	15.3	8	16
Tubal factors	17	45.9	5	38.4	22	44
Ovarian factors	12	32.4	3	22.8	15	30
Peritoneal factors	6	16.2	3	23.0	9	18
Unexplained	5	13.5	2	15.3	7	14
Total	46	124.2	15	114.8	61	122
Inference	Majority of infertility patients had tubal factors among the causes					

Table 8: Causes of infertility at laparoscopy in different studies.

Factors	Study conducted by	
	Bhude AG (%) ¹⁰	Present study (%)
Uterine factors	20.0	16.0
Tubal factors	42.93	44.0
Ovarian factors	9.7	30.0
Peritoneal factors	10.96	18
Unexplained	27.8	14

DISCUSSION

In Laparoscopy offers the advantage of making a precise diagnosis by direct visualization of the internal genital organs together with ovarian biopsy and chromopertubation, when added onto hysterosalpingography and advanced endocrinological studies, gives necessary armamentarium for diagnosis, treatment and prognosis of the infertile couple.

In recent years, many clinicians have started using laparoscopy as an integral part of the routine assessment of infertile couple.

Laparoscopy is the gold standard for diagnosing tubal and peritoneal disease, endometriosis, adhesions and other pelvic pathology, because no other imaging technique provides the same degree of sensitivity and specificity.

Laparoscopy has proved of great value in the evaluation of the infertile couple because of low complication rates, conclusive and easy to interpret findings. Hence it is an indispensable diagnostic tool in the evaluation of infertile couples.

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