

Laparoscopic Evaluation of Female Factors in Infertility

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ABSTRACT

Objective: To find out different causes of female infertility with diagnostic laparoscopy and their comparative frequency in primary and secondary infertility.

Study Design: A case series.

Place and Duration of Study: Department of Obstetric and Gynaecology, Liaquat University Hospital (LUH), Hyderabad, from January 2006 to December 2007.

Methodology: All infertile women underwent diagnostic laparoscopy for primary and secondary infertility during the study period were included. Couples who had not lived together for at least 12 months, and those with male factor infertility were excluded. Data were collected on a proforma, and analysed on SPSS package for windows version 10. Frequencies were calculated for laparoscopic findings regarding primary and secondary infertility.

Results: Fifty infertile women underwent laparoscopy during the study period, 32 (64%) had primary infertility while 18 (36%) secondary infertility. Eight (25.0%) patients with primary and 2 (11.1%) patients with secondary infertility had no visible abnormality. The common finding was tubal blockage in 7 (21.9%) and 6 (33.3%) cases of primary and secondary infertility respectively. 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 infertility. Pelvic inflammatory disease (PID) was found in 1 (3.1%) and 2 (16.7%) cases of primary and secondary infertility respectively. Peritubal and periovarian adhesions were detected in 2 (6.3%) cases with primary infertility and 4 (22.2%) cases with secondary infertility. Fibriod was found in 2 (6.3%) and 1 (5.6%) cases of primary and secondary infertility respectively. Ovarian cyst detected in 2 (6.3%) cases with primary infertility while none was found in cases of secondary infertility.

Conclusion: Most common causes responsible for infertility were tubal occlusion, endometriosis, peritubal and periovarian adhesions. Ovarian causes were seen in primary infertility only.

Key words: Laparoscopy. Primary infertility. Secondary infertility. Causes.

INTRODUCTION

Infertility leads to considerable personal suffering and disruption of family life. According to United Nations "Reproductive health is a state of complete physical mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and to its functions and processes".¹

Infertility is a problem of global proportions, world wide more than 70 million couples suffer from infertility.² The current evidence indicates 9% prevalence of infertility (of 12 months) with 56% couples seeking medical care in more developed and 51.2% in less developed countries.³ Female factors of infertility were more common (57.5%) in central part of Iran.⁴ In Pakistan the prevalence of infertility is reported as 21.9%.⁵ The common factors responsible for infertility in females are anovulatory disorder, tubal factors, endometriosis, uterine and cervical factors.⁶ An accurate diagnosis is

the key to successful treatment. The workup of the female partner begins with history and examination. It is more important to perform the relevant investigation in a logical order at the correct time than to perform a series of tests as a routine simple, least invasive and most predictive investigations should be performed first. Diagnostic laparoscopy is generally not a part of initial infertility evaluation, however, number of reports have shown that it is effective procedure for evaluation of long- term infertility.^{7,8}

Laparoscopy provides information regarding tubal and ovarian status, uterine normality and standard means of diagnosing various pelvic pathology e.g. pelvic inflammatory disease, endometriosis, pelvic congestion and tuberculosis.⁹⁻¹⁰

Beside this it is the most useful method of assessment of the tubal patency. After normal hysterosalpingography, laparoscopy reveals abnormal findings in 21.68% cases of infertile couples.¹¹ Untreated pelvic inflammatory disease, post-abortal, postpartum infection and tuberculosis are common factors of infertility in developing countries.¹²

This study was carried out to determine the different causes of female infertility, and their comparative frequency in patients with primary and secondary infertility on diagnostic laparoscopy at the study centre.

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METHODOLOGY

This observational study was carried out from January 2006 to December 2007 in Obstetrics and Gynaecology Department. All the women who failed to conceive after 12 months of regular intercourse, were included. Couples who had not lived together for at least 12 months, those with male factor infertility, and patients with absolute or relative contraindication for laparoscopy i.e. any pre-existing cardiovascular or respiratory condition, generalized peritonitis, intestinal ileus or obstruction and abdominal hernia, were excluded.

A complete and relevant history and clinical examination was carried out. A complete hormonal profile including FSH, LH, prolactin, progesterone, testosterone, TSH, and abdominal ultrasound was done.

Fifty infertile women underwent laparoscopy for infertility. The patients were admitted in the premenstrual period. After taking informed consent, diagnostic laparoscopy was carried out.

During the procedure, the pelvis was inspected, including uterus, fallopian tubes, round ligaments, uterovesical pouch, 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, evidence of ovulation and their relationship with fimbrial end the tubes. 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 or Gention violet into the uterine cavity and its spill through the fimbrial ends was checked. Dilatation and curettage was carried out in patients with menstrual abnormalities or suspected endometrial tuberculosis, and endometium was sent for histopathology.

All the above information was recorded in proforma, and analyzed on SPSS version 10. For demographic parameters of patients including age, duration of infertility mean, and frequencies were calculated for symptoms and laparoscopic findings regarding primary and secondary infertility.

RESULTS

The ratio of primary and secondary infertility was 2:1. Out of 50 patients, 32 patients (64%) presented with primary infertility and 18 patients (36%) presented with secondary infertility.

The mean duration of infertility was 3.7 years and 7.3 years in primary and secondary infertility respectively, while mean age of presentation was 28 years in primary infertility and 32 years in secondary infertility (Table I).

Table I: Demographic characteristics.

| Characteristic | Primary infertility (32) | | Secondary Infertility (18) | |
|----------------|--------------------------|------|----------------------------|------|
| | (no) | % | (no) | % |
| Age | | | | |
| < 20 years | 5 | 15.6 | 0 | 00.0 |
| 20-30 years | 11 | 34.3 | 6 | 33.3 |
| 31-40 years | 16 | 50.0 | 12 | 66.6 |
| Duration | | | | |
| < 2 years | 9 | 28.1 | 2 | 11.1 |
| 2-5 years | 19 | 59.1 | 2 | 11.1 |
| > 5 years | 4 | 12.5 | 14 | 77.7 |

Out of 32 patients with primary infertility 6 patients (18.75%) had no other symptom. Twenty six patients (81.25%) presented with various symptoms like pelvic pain in 3 patients (9.37%), dysmenorrhoea in 9 patients (28.12%), dyspareunia in 5 patients (15.65%), 4 patients (12.5%) had irregular cycles, 2 patients (6.25%) presented with excessive weight gain 1 each (3.12%) presented with hirsutism, secondary amenorrhoea, and menorrhagia.

Among the 18 patients with secondary infertility, 3 patients (16.6%) were asymptomatic, while dyspareunia was the commonest symptom in 5 patients (27.2%) and 3 patients (16.66%) had pelvic pain. Other symptoms like dysmenorrhoea was seen in 4 (22.22%), 3 patients (16.66%) had a history of irregular cycles.

D&C and LSCS were the commonest previous surgeries. Fifty percent of patients presented with primary infertility had previous D&C, while in secondary infertility 44.44% patients had LSCS.

Various causes found in infertility are shown in Table II. Laparoscopy revealed normal findings in 10 out of 50 patients, 8 (25%) patients with primary infertility and 2 patients (15.7%) with secondary infertility. Abnormal findings were present in 40 (80%) patients out of 50. It was seen that the most common cause observed by laparoscopy was tubal occlusion (26%) of total. This was followed by polycystic ovaries (15.6%), endometriosis (12.5%) in case of primary infertility while peritubal and periovarian adhesions (22.2%) and pelvic inflammatory disease (PID, 16.7%) were second most common causes in cases of secondary infertility. Among 50 patients, 10 patients had no any post-procedural complications. Few minor complaints like pyrexia, abdominal discomfort, shoulder pain, vomiting and dry cough were noted in the rest.

Table II: Laparoscopic findings regarding cause of female infertility.

| Findings | Primary infertility | | Secondary infertility | | Totals 50 |
|-------------------------------------|---------------------|------|-----------------------|------|--------------|
| | no | % | no | % | |
| Tubal occlusion | 7 | 21.9 | 6 | 33.3 | 13 (26.0) |
| PCO | 5 | 15.6 | 0 | 0 | 5 (10.0) |
| Peritubal and periovarian adhesions | 2 | 6.3 | 4 | 22.2 | 6 (12.0) |
| Endometriotic deposits | 4 | 12.5 | 2 | 11.1 | 6 (12.0) |
| PID | 1 | 3.1 | 3 | 16.7 | 4 (8.0) |
| Normal | 8 | 25.0 | 2 | 11.1 | 10 (20.0) |
| Failure to visualize | 1 | 3.1 | 0 | 0 | 1 (2.0) |
| Fibroid | 2 | 6.3 | 1 | 5.6 | 3 (6.0) |
| Ovarian cyst | 2 | 6.3 | 0 | 0 | 2 (4.0) |

The results are expressed in numbers and percentage

DISCUSSION

Laparoscopy is a mandatory procedure for full assessment of the infertile couple. Statistics regarding infertility in general population are difficult to overcome by since 40% of infertile couples do not attend a hospital or clinic for treatment illustrating potential for error in hospital based statistics.¹³

Female age is the single most important determinant of spontaneous as well as treatment –related conception. While there is no universally accepted definition of advanced reproductive age, 35 years is considered as the limit in fertility terms (American Society of Reproductive Medicine 2006).¹⁴ In this study (21.87%) 7 patients presenting with primary infertility and (22.22%) 4 patients presenting with secondary infertility were of age i.e. > 35 years. NICE recommendation states that women over 35 years of age should be referred early from primary care for investigation and treatment.¹⁴

There is corresponding rise in mean age at which women present with infertility. In the present study the mean age at presentation was 28 years in primary infertility and 32 years in secondary infertility, while Talib reported earlier mean age in both groups i.e. 22.1 and 29.4 years in primary and secondary infertility respectively.¹³

The duration of infertility was 2-5 years in majority of patients (59.1%) of primary infertility, while it was over 5 years in majority of patients (77.7%) with secondary infertility. None had less than 2 years of duration in case of secondary infertility. Similar results reported from Lahore i.e. 58% of patients had primary infertility of 2-5 years while 71% of patients had infertility of over 5 years, and none had primary infertility of less than 2 years.¹⁵

Major symptoms in the present study were pelvic pain, dyspareunia, and irregular cycles which are in accordance with other infertility studies at national and international level. These symptoms were found to be frequently associated with organic pelvic pathology. The diagnostic laparoscopy should be considered early in symptomatic patients during infertility workup.¹⁶

In this study, normal pelvic findings and patent tubes on laparoscope was found in 25% cases of primary infertility and only 11.1% cases in secondary infertility. The most commonly found pathologies were polycystic ovarian disease, endometriosis, adhesions and tubal blockage.

Among ovulatory disorders polycystic ovarian disease was the commonest endocrine disorder associated with anovulation. The prevalence of polycystic ovarian disease (PCO) in asymptomatic women is thought to be between 16 and 33%.¹⁷ In the present study the incidence of polycystic ovarian disease was 15.6% in case of primary infertility and none was found in cases of secondary infertility.

Endometriosis may lead to female infertility, although it has not been confirmed whether endometriosis can be the sole cause of infertility or it is only contributory factor that leads to it. Nevertheless, most women who are infertile suffer from endometriosis. The clinical signs and symptoms that make on of endometriosis (dysmenorrhoea, dyspareunia, abnormal uterine bleeding, chronic pelvic pain and/or pelvic mass, utero-sacral ligament nodularity) are not reliable enough to justify diagnosis and treatment. Current thinking dictates visual and/or microscopic confirmation through laparoscope before diagnosing or treating a patient for endometriosis.¹⁸

The study conducted by Mahmood showed incidence of endometriosis in 13.6% of patients in cases of primary infertility and 2.52% in case of secondary infertility, while in present study the frequency of endometriosis in case of primary infertility was 12.5% and 11.11% in case of secondary infertility, and concluded that the presumption that endometriosis is uncommon in Asian women is considered to be erroneous.^{9,19}

The frequency of fibroid in the present study was 6% in all cases of infertility, similar results reported by Khaula from Lahore. The incidence of myoma in women with infertility without any obvious cause of infertility is estimated to be 1-2.4%.²⁰

Tubal disease accounts for 15-20% of cases of primary infertility and approximately 40% of secondary infertility.²¹ In the present study, the frequency of tubal occlusion was 21.9% and 33.33% in cases of primary and secondary infertility respectively. It represents the aftermaths of pelvic infection or surgery. A single episode of PID carries up to 10% risk of future tubal factor infertility. In present study the frequency of pelvic inflammatory disease (PID) was 8%.

Table II shown pelvic inflammatory diseases (PID) and tubal blockage were more frequently found in secondary infertility, as compared to primary infertility, same results have been reported from Peshawar.²²

Tubal occlusion and peritubal or periovarian adhesions are factors responsible for inhibition of ovum pickup and transport. In the present study, the frequency of peritubal and peri-ovarian adhesions was 6.25% in case of primary infertility and 22.22% in case of secondary infertility. Laparoscopy is thus a definitive way to diagnose them.

In Pakistan, most of patients usually go to alternative medicine and un-trained health practitioners for the treatment of infertility, which leads to further delay in proper management. Laparoscopy not only helps in identification of unsuspected pathology, but also contributes to decision making. It should be considered initially as part of the infertility evaluation in women, especially those with a history of pelvic inflammatory disease, pelvic surgery, and chronic pelvic pain.²³

CONCLUSION

The ovulatory disorders were common in primary infertility, and the tubal factor was the commonest factor in both types of infertility in the present study. Laparoscopy should be considered earlier in women with history of PID, pelvic surgery and chronic pelvic pain for effective treatment decisions.

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