

Original Article

FREQUENCY OF CAUSES OF PRIMARY INFERTILITY IN PATIENTS UNDERGOING DIAGNOSTIC LAPROSCOPY

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Objectives: To determine the frequency of causes of primary infertility in females undergoing laparoscopy.

Material & Methods: A total of 80 cases were included in this study. Laparoscopy was performed and the findings of endometriosis, pelvic adhesions, pelvic tuberculosis, ovulatory disorders and others like pelvic inflammatory disease and fibroid uterus were recorded

Results: In this study normal pelvic findings were observed in 46% patients, Endometriosis was found in 11% patients, pelvic adhesions 17% patients anovulatory disorders in 11% patients, fibroid in, 7.5 % patients, fibroid and adhesions in patients 3.8% patients and fibroid and endometriosis in patients 2.5% patients.

Conclusion: It is concluded from the study that diagnostic laparoscopy is a valuable technique and a mandatory invasive investigation for complete assessment of female infertility.

Keywords: Primary infertility, diagnostic laparoscopy, laparoscopic findings.

Introduction

Primary Infertility is defined as inability to conceive after 1 year of unprotected sexual intercourse¹. The incidence of infertility in any community varies between 5-15%, both partners in relationship contribute to potential fertility. The female factor contributes maximum (40-55%) in the etiology of infertility followed by the male factor (30-40%); both partners contribute (10%) and unexplained infertility occurs in (10%)². There are three main causes of female infertility: anovulation (21%), tubal disease (14%) and endometriosis (6%). Other causes include mucous hostility (3%) sexual dysfunction (6%) and unexplained infertility (27%)³. Evaluation of an infertile couple generally begins after 12 months of unprotected sexual intercourse but it can be indicated earlier if there are already specific high risk factors in either partner. In male this could be a history of azoospermia, testicular surgery, vasectomy or coital failure. Reasons for early referral in women include oligomenorrhoea, known endocrine conditions effecting ovulation, history of tubal disease, endometriosis or salpingectomy or female partner older than 35 years⁴. At all times, consideration should be given to social and psychological needs of the couple.

In males, the first investigation includes semen analysis after a period of 2-7 days of abstinence from intercourse with a sensitivity of 89.6%.

In females, normal menstrual cycle is suggestive of ovulation but the confirmation of ovulation is usually obtained by means of a mid-luteal serum

progesterone level in excess of 30nmol/L 7 days before the onset of menstruation. In case of cycles longer or shorter than 28 days serial progesterone check may be needed (Progesterone tracking).

When menstruation is either very irregular or absent, additional biochemical investigations are indicated such as serum FSH and LH, prolactin, TSH and where PCOS is suspected, serum testosterone and androstenedione and SHBG. Where an adrenal cause is to be excluded, serum DHEA and DHEAS, 17-OH progesterone should be done.

Once preliminary investigations suggest that a woman is ovulating and semen parameters are satisfactory, the next step is the assessment of tubal status. Tubal disease implies tubal block and pelvic adhesions due to infection, endometriosis or previous surgery. Laparoscopy is a gold standard investigation for diagnosing this⁵. Laparoscope is an instrument which contains both a fiber optic bundle for light transmission and a series of lenses to transfer the image back to the eye piece. A colored dye is injected through the cervix while carrying out laparoscopic inspection of the pelvis. Failure of dye to pass through the tube is indicative of blockage. Pregnancy and menstruation should be excluded before the procedure.

Diagnostic laparoscopy gives a complete view of peritoneal cavity, pelvic viscera, pouch of Douglas, peritoneal fluid, uterorsacral ligaments. The procedure should be carried out in a systematic Fashion and a written record including diagrams and

if possible photographs should be made of the findings. At least two ports are required to allow manipulation of pelvic structures to ensure thorough assessment. The bowel can sometimes obscure the view, and a probe to move this out of the way will often be helpful. Sometimes a third probe may be required if surgeon wishes to treat minor adhesions or endometriosis, in order to allow the introduction of scissors or diathermy/laser instrument and suction/irrigation apparatus.

With laparoscope, we can identify the causes of infertility and treat the condition immediately with minimally invasive surgical procedures. In cases where surgical correction is not possible, laparoscopic findings will guide us to perform In Vitro Fertilization earlier⁶. In either case diagnostic laparoscopy can allow many patients to avoid needless cycles of treatment and related emotional stress and financial burden.

Inclusion Criteria:

1. Women between age 15-40
2. Patient's consent to participate in the study.
3. Primary infertility.

Exclusion Criteria:

1. Patient is unfit for general anesthesia on pre-anesthesia assessment.
2. Bleeding disorders-on clotting profile.
3. Contra-indications to laparoscopy like
 - A. Massive Obesity-BMI > 30
 - B. History of circulatory or respiratory problems which render the Trendelenburg position and pneumoperitoneum a hazard.
 - C. Acute generalized peritonitis- on clinical assessment.
 - D. Chronic abdominal tuberculosis already diagnosed.
 - E. Advanced malignancy already diagnosed.
 - F. Abdominal hernia- on clinical assessment.

Data Collection Procedure:

Eighty patients admitted in the ward through OPD fulfilling the inclusion and exclusion criteria were included in the study. Laparoscopy was performed and the findings of endometriosis, pelvic adhesions, pelvic tuberculosis, ovulatory disorders and others like pelvic inflammatory disease and fibroid uterus were recorded. Patency of the tubes was also checked.

Data Analysis:

Data was analyzed using SPSS version 10.

Results

During the study period a total of 80 patients of primary infertility were enrolled.

The age of the patients presenting with primary infertility ranged between 20-40 years, with a mean age of 28.89 with SD of 3.70.

So maximum cases of infertility (64%) were in the age group of 26-30 years followed by the age group of 31-35 years (19%).

61% of patients were married for 1-5 years, 31% patients were married for 6-10 years and 8% patients were married for more than 10 years. This study shows majority of the cases were brought to the hospital within 1-5 years of infertility.

The laparoscopic findings observed in this study were: normal pelvic findings in 37 patients (46.25%), endometriosis in 9 patients (11.25%), pelvic adhesions in 14 patients (17.5%) anovulatory disorders in 9 patients (11.25%), fibroid in 6 patients, (7.5 %), fibroid and adhesions in 3 patients (3.75%) and fibroid and endometriosis in 2 patients (2.5%) (**Table 1**).

Dye spill was also performed, with 60 patients (75%) having positive dye spill and 20 patients (25%) having negative dye spill (**table 2**).

Table 1: Distribution of cases by primary infertility (Laparoscopic Findings).

Laparoscopic Findings	No.	Percentage
Normal pelvic findings	37	46.2
Pelvic adhesions	14	17.5
Endometriosis	09	11.5
Anovulatory disorders	09	11.2
Fibroid	06	7.5
Fibroid+Adhesions	-3	3.7
Fibroid+ Endometriosis	02	2.5
Tuberculosis	-	-
Total	80	100.0

Table 2: Distribution of cases by dye spill.

Dye Spill	Number	Percentage
Positive	60	75
Negative	20	25
Total	80	100.0

Table-3: Distribution of cases by dye spill according to laparoscopic findings.

Laparoscopic Findings	No. Of Cases	Dye spill+ve		Dye spill-ve	
		No.	Percentage	No.	Percentage
Normal pelvic findings	37	30	81.0	07	18.9
Pelvic Adhesions	14	04	28.57	10	71.42
Endometriosis	09	08	88.88	01	11.11
Anovulatory Disorders	09	08	88.88	01	11.11
Fibroid	06	05	83.33	01	16.66
Fibroid+Adhesions	03	03	100.0	-	-
Fibroid+ endometriosis	02	02	100.0	-	-
Tuberculosis	-	-	-	-	-

Discussion

Infertility is a significant health problem with an incidence of 5-15%. It has become not only a medical but a social problem as well. It makes life miserable for the couple. So intervention and treatment should be started earlier. In Pakistan, the most common cause of infertility is pelvic inflammatory disease which is mostly due to delay in the diagnosis and treatment.

Laparoscopy is the gold standard for diagnosing pelvic pathology⁵. It gives a complete view of peritoneal cavity, pelvic viscera, pouch of Douglas, peritoneal fluid and uterosacral ligaments. Direct visualization of the pelvis permits identification of adhesions, fibroids, endometriosis, ovarian cysts and other pathology which may be relevant to infertility and would be missed at HSG.

The results of the study show that most of the patients are in the age group of <30 years that constitutes 64 %. The mean age of the women is 28.8 years. This is consistent with the observation of Jedrzejczak et al⁷. This is also similar to a study conducted in Bahawal Victoria Hospital, Bahawalpur⁸ and Israa University Hospital, Hyderabad, Pakistan⁹.

As far as period of infertility is concerned, majority of the cases are brought to the hospital within 5 years of infertility that constitutes 61% of all the cases. It is similar to the study conducted in the department of Obs & Gyne, MLB Medical College, Jhansi (UP), India¹⁰.

On laparoscopy, 54% patients revealed abnormal findings¹¹. Pelvic adhesions were found to be the most common cause of infertility i.e. 18% of the patients. Tubal factor which account for 15-30% of infertility in all women is common in developing country with high rate of pelvic inflammatory

disease but limited resources. This is consistent with the study conducted in King Faisal University, Dammam¹¹ and also with another study conducted in combined military hospital.

The prevalence of PID in Pakistan is 12.8%. The incidence of tubal factor infertility increased with number and severity of PID episodes.

The second cause of infertility identified was anovulatory disorders i.e 11% of the patients. Among anovulatory disorders, polycystic ovaries were the most common cause. In our country, it is mainly due to obesity. This is consistent with the study conducted in Liaquat University of Medical and Health Sciences, Jamshoro¹⁴ and also with another study conducted in Israa University, Hyderabad⁹.

The third cause identified was endometriosis in 11% of the patients. Endometriosis results in structural damage to the tubes and ovaries causing infertility. To date it is not known how mild endometriosis causes infertility, but it is recognized that these patients have reduced fertility rate.

In 8% of the patients, fibroid was seen as a cause of blockage of tubes.

In this study, 20 (25%) out of 80 patients had negative dye spill while 60 (75%) patients had positive dye spill. So the clinical implications of this study are that diagnostic laparoscopy is a mandatory investigation for complete assessment of female infertility. Although, it requires equipment, training, anesthesia and expertise, the need of time is that more & more diagnostic laparoscopy centres should be opened specially in Government setup so that the people suffering from infertility can be helped out.

Like other studies, our study has certain limitations. Prediction models may vary with the nature of patient population from which these are derived.

Our study group represented a selected group of patients presenting with infertility to a tertiary care center and included patients with relatively advanced disease. This model would be expected to have the best predictive value in a population similar to the one from which it is derived. Thus it would be best applied in patients attending large hospitals and may not perform as well in primary care settings. Further studies will be necessary regarding this aspect. Laproscopic findings of infertility are not completely objective and are subjected to interobserver variation.

Conclusion

In this study, pelvic abnormalities were detected in

54.75% of the patients. Pelvic adhesions were the most common abnormality detected (17.5%) followed by endometriosis, anovulatory disorders and fibroid.

It is concluded from the study that diagnostic laparoscopy is a safe technique and a mandatory invasive investigation for complete assessment of female infertility despite the fact that it requires equipment, training, anesthesia and expertise.

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