

Role of Diagnostic Laparoscopy in Evaluation of Female Subfertility Factors

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Back ground: Diagnostic laparoscopy is an important adjuvant in gynaecology. Aim was to evaluate the role of diagnostic laparoscopy in identification of various unsuspected factors associated with subfertility in female and diagnosed on laparoscopy.

Methods: Two hundred thirty five patients with complaints of infertility underwent diagnostic laparoscopy. These patients either presented in gynae out patient department or infertility clinic gynae unit I Services Hospital, Lahore. Patients with absolute or relative contraindications for laparoscopy were excluded from study.

Results: Tuboperitoneal disease alone or combined with tubal blockage was responsible for major factor for infertility followed by polycystic ovarian disease, endometriosis and leiomyoma of uterus. One in 6 patients were found to have no pelvic abnormality.

Conclusion: Diagnostic laparoscopy is invaluable technique and must be carried out for complete assessment of female infertility factors. It was helpful in assessing the severity of pelvic adhesions, extent of endometriosis and selection of appropriate treatment.

Key words: Diagnostic Laparoscopy, Female Subfertility, Tuboperitoneal Disease.

Introduction

Laparoscopy (peritoneoscopy) is a transperitoneal endoscopic technique that provides excellent visualization of pelvic structures and often permits the diagnosis of gynaecologic disorders and pelvic surgery without laparotomy¹.

It provides direct visualization of pelvis and complete view of cul-de-sac, pelvic side walls and all pelvic viscera. It also furnishes unsuspected information like pelvic adhesions (peritubal, periovarian), asymptomatic endometriosis, occult tuberculosis, any uterine or adnexal pathology e.g. fibroid, PCO, tubo-ovarian masses or tubal pathology. As well as it is helpful in assessment of severity of pelvic adhesions (extent & type), staging of endometriosis in terms of extent of adhesions, (number and size of lesions). It also allows concurrent therapy in form of cautery or laser treatment in selected cases.

Diagnostic laparoscopy provides thorough evaluation of the tubal and peritoneal factors in infertile patients and hence helpful in selection of appropriate treatment.

The technique is rapidly performed, has a low morbidity rate, a short convalescence and is less demanding in terms of medical facilities, supplies and personnel. However, the use of laparoscope requires considerable expertise. It should always be used by a surgeon familiar with management of complications.

Patients and Method

All patients with complaints of infertility (primary or

secondary) who presented in outpatient department or infertility clinic of Gynae Unit-I Services Hospital, Lahore from January 2002 to February 2004 were studied. After detailed history and thorough clinical examination, few 1st line investigations including hemoglobin gm/dl, urine examination, blood group and Rh factor, blood sugar random mg/dl, husband's semen analysis, hepatitis viral screening and ultrasonography of female pelvic organs were carried out. Other investigations if indicated were also done. Exclusion criteria were absolute or relative contraindications for laparoscopy i.e severe cardiopulmonary disease, presence of large abdominal masses, diaphragmatic hernia, massive intraperitoneal haemorrhage, paralytic ileus, generalized peritonitis, bowel obstruction and gross obesity.

Most of the laparoscopies were carried out as day case operation. After informed consent, patients were called in operation theatre in the morning on day of operation. The patient was called empty stomach after 8 hours fast. The bladder was emptied prior to operation.

Procedure

Dorsal lithotomy position was used. The abdomen, perineum and vagina were cleaned and patient was draped. General anaesthesia with endotracheal intubation was used, B.P., heart rate, was monitored throughout the procedure. After bimanual examination, cervix was grasped with Volsellum forceps. After sounding the uterine cavity, uterine cannula

was passed into cervical canal to manipulate uterus and injection of dye if desired. To create pneumoperitoneum a Veress needle was inserted through the deepest part of umbilicus. Peritoneal cavity was filled with carbon dioxide gas at a rate of 1 litre / minute and intra abdominal pressure was kept between 15-20 mm Hg and 2-3 litres of gas was introduced. Then after withdrawing Veress needle incision was enlarged to 0.5-1 cm and laparoscopic trocar with cannula was inserted into distended abdominal cavity. Trocar was removed and laparoscope was inserted through cannula. It was then connected to cold light optic source and gas machine to maintain constant intra abdominal pressure. The patient was placed in steep Trendelenburg position. Then visualization of uterus, ovaries, uterosacral ligaments, fallopian tubes was carried out and relation of ovaries to fimbriae of fallopian tubes noted and also looked for any adhesions, evidence of ovulation or endometriosis or PCO. Patency of fallopian tubes was checked by injecting 30 cc of methylene blue through intra-uterine cannula. The operation was terminated by evacuating insufflated gas through cannula followed by removal of all instruments. The wound was closed by placing mattress suture with chromic catgut No. I. Aseptic dressing was applied.

Postoperative Care

The patients were observed in recovery room for 4-6 hours and vital signs were noted one hourly. After 4-6 hours oral fluids were started followed by semisolids next day. For pain relief tablet mefenamic acid 250 mg 8 hourly were given for 2-3 days. Patients were sent home on same day with the advice to resume activity next day and come for follow up after 1-2 weeks.

Results

Two hundred thirty five patients underwent diagnostic laparoscopy for infertility during period of January 2002 to February 2004. Various aspects of patients were studied.

Table I reveals that primary infertility was present in 72% of patients and secondary infertility was found in 28% cases.

Table 1: Frequency of infertility.

Variables	No of Patients	Percentage
Primary Infertility	170	72.3%
Secondary Infertility	65	27.7%

Table 2: Age distribution of patients.

Age of Patients (Years)	No. of Patients	Percentage
<20 years	8	3.4%
20-30	129	54.5%
>30	98	42.1%

Table 3: Duration of infertility.

Duration (Years)	No. of Patients	Percentage
<2	29	12.3%
2-5	72	30.6%
>5	134	57.1%

Table 4: Causative factors for infertility.

Causative factors	No. of Patients	Percentage
Peritoneal factors and tubal blockage	72	31.9%
Peritoneal disease	49	21%
Polycystic ovarian Disease (PCOD)	37	15.7%
Endometriosis	21	8.9%
Fibroids	14	6%
No Pathology (Normal)	39	16.5%

Table 5: Complications of the laparoscopy.

Complication	No. of Patients	Percentage
Intra operative	-	-
Post operative	5	2.12%
Immediate pain	1	-
Late Complication Sepsis	4	-
Naval wound infection	2	-
Acute PID	2	-
Total	5	2.12%

Table 2 shows the age range of patients was between

18-40 years. Maximum numbers (54.5%) of patients were in group of 20-30 years. While 42.7% patients were above the age of 30 years and 3.4% were below the age of 20 years.

Table 3 reveals that maximum number (57%) of patients presented after more than 5 years of failure to conceive and 30.6% had duration of infertility of 2-5 years, while 12.3% patient had failure of conception of less than 2 years.

Various associated factors with infertility are shown in the **Table 4**. Almost 53% of patients had tubo-peritoneal disease out of these 32% had peritoneal adhesions alongwith tubal blockage while 21% cases had only pelvic adhesions, PCOD (Polycystic Ovarian disease) was present in 15.7% of patient and endometriosis was found in only 9% of patients. Fibroids of uterus was found in 6% of patients and 39 patients (16.5%) had no abnormality.

Table 5 shows that four patients had sepsis, and 2 of them had infection of naval wound and treated by local antibiotic cream. While other two patients presented with pain in lower abdomen and temperature. They were admitted, treated with antibiotics and analgesics. Overall complication rate was 2.12%.

Discussion

Two hundred thirty five patients had diagnostic laparoscopies for infertility, and out of these 72.3% were for primary infertility and 27.2% for the secondary infertility. This correlated to the study carried out by Saeed S. & Rana S.² In their study 67.69% patients had primary infertility and 32.30% had secondary infertility.

Almost 52% patients in my study had peritoneal adhesions and 31.9% of these patients had massive peritoneal adhesions with tubal blockage, 8.9% of patients had endometriosis and 16.5% had no pelvic abnormality. These results are comparable to a study carried out in Bialystok by Kullowski M. et al.³ Sterility was leading indication for diagnostic laparoscopies in 92.7%. Forty six point five percent of diagnosed infertile women had adhesions in pelvis post inflammatory or surgery. Ten point six percent of them had massive adhesions and tubes were damaged without any chance for surgical correction. The endometriosis was found in 15% of infertile patients and 17% had no pelvic pathology.

Although prevalence of peritoneal adhesions in both studies is comparable but the massive adhesions with tubal damage was significantly higher in my study. This might be due to the fact that most of the

women in our community take treatment by *Dais* who inserts local medications into vagina without any aseptic measures which may lead to overt or subclinical ascending genital tract infection, chronic PID & tubal blockage. Also genital tract tuberculosis is not uncommon in our community which leads to tubal damage and pelvic adhesions. Hence the malpractice by paramedics should be discouraged and evaluation of infertile patients should be carried out in specialized centres only.

Prevalence of endometriosis was almost 9% in this study and correlated to that American literature. Although exact prevalence of endometriosis in general female population of reproductive age is not known, it is believed to lie within range of 3-10%.⁴ The reported prevalence of endometriosis found at laparoscopy in infertile women is 25-30% (Strathy et al, 1982; Candiani et al., 1991; Olive and Schwartz., 1993; Guzicle et al., 1994; Gruppo Italiano per lo Studio dell Endometriosis, 1994)⁵

In this study PCOD was found in 15.7% of patients while in British literature estimate of 5% (documented range varies 3-22%) make PCO most common endocrine disorder depending on criteria used.⁶ As in the absence of a gold standard for diagnosis, the prevalence of PCO in the general population cannot be precisely determined. In this study fibroids were found on diagnostic laparoscopy in 6% of cases. The incidence of myoma in women with infertility without any obvious cause of infertility is estimated to be 1-2.4%.⁷

Diagnostic laparoscopy is the standard means of diagnosing the tubal pathology, peritoneal factors, endometriosis and other intra abdominal causes of infertility. Not only does help in identification of unsuspected pelvic pathology but also contributes to decision making of infertility treatment.

In infertile couples laparoscopy reveals abnormal findings in 21-68% of cases after normal HSG (Wood, 1983 Hening et al, 1991 Opsahle et al, 1993 Cundif et al, 1995 Belisle et al, 1996 al Badawi et al, 1999 Corson et al, 2000)⁵. Hence it is an invaluable technique and must be performed as a final test in infertility work up prior to treatment plan.

Conclusion

Laparoscopy is an important diagnostic adjuvant in gynecology. Although it is potentially hazardous procedure and may give life threatening complications but meticulous attention minimize the dangers. Pelvicscopy is essential investigation to detect tubal and pelvic factors and assessment of case

for treatment. This should have a primary place for assessment of tubal factors. It was found a safe, swift,

Accurate and scientific technique for diagnosis and evaluation of pelvic condition.

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Medical News

A New Vaccine for Tuberculosis

Viable Mycobacterium bovis bacille CalmetteGuérin (BCG) is one of the most widely used vaccines to control tuberculosis. Administered as a single shot to newborns, it prevents severe disease and reduces mortality among children, but it does not protect against pulmonary tuberculosis in children or adults. With 9 million new, mostly pulmonary cases and nearly 2 million deaths from tuberculosis each year, there is a great need for improved vaccines against this devastating disease. When BCG is used for vaccination, the bacilli are taken up by macrophages, where they reside within the phagosome, a membrane-enclosed vacuole. To avoid being killed and digested by the acid-dependent enzymes of the phagosome, the organism blocks acidification of this compartment. Microbacterial urease helps maintain a higher pH, thereby reducing the flow of antigens to the surface of the macrophage, where they are presented to T cells. By knocking out the BCG urease gene, Grode et al. engineered a recombinant bacillus with an impaired ability to counter the acidification of phagosomes. In addition, the authors inserted a lysin gene from Listeria monocytogenes that punctures the membrane of the phagosome under acidic conditions, eventually leading to disintegration of the membrane and release of the bacilli into the cytoplasm. BCG antigens thereby gain access to both MHC class I and class II molecules, activating both CD8+ and CD4+ T cells. Escape of the bacilli into the cytoplasm also triggers apoptosis, which in turn kills the bacilli and releases antigen. Released

antigens can then be taken up by adjacent antigen-presenting cells (dendritic cells), which process the antigen and stimulate the activation of additional T cells through a mechanism termed "cross-priming."

The authors tested the vaccine's safety and efficacy in a mouse vaccination-and-challenge model. After vaccination, animals were challenged by infection with one of the most virulent clinical isolates of M. tuberculosis described to date. This pathogen, known as the W-Beijing strain, has spread throughout Southeast Asia, Eastern Europe, and southern Africa. The new recombinant BCG vaccine provided better protection against infection by H37Rv, a laboratory strain of M. tuberculosis commonly used in such challenges, and a clinically derived W-Beijing strain. In contrast to many previous studies of tuberculosis vaccine that used a mouse model of infection, in this study protection was monitored for more than 200 days to ensure that the immune response was robust and long-lasting.

This candidate tuberculosis vaccine is likely to be more effective than the existing vaccine in humans, because it appears to induce a stronger protective response, targets both CD8+ and CD4+ T cells, is safer than the current BCG vaccine in infected animals, and provides protective immunity against some of the most virulent clinical strains circulating in human populations. The vaccine has been licensed to the Vaccine Project Management Foundation (Hannover, Germany), which fosters the translation of basic research findings into the clinic, and will soon enter phase 1 clinical trials.