www.jmscr.igmpublication.org
Impact Factor (SJIF): 6.379
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v6i5.123

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Role of Diagnostic Laparoscopy in Evaluation of Infertile Women -A Retrospective Study

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Abstract

Background: *The aim of the study is to detect the role of diagnostic laparoscopy in detecting uterine, ovari and pelvic pathologies in infertile women. It should be offered to all infertility cases who have completed a bas infertility evaluation for the female and male. It provides direct visualisation of the pelvic organs and mo importantly the tubal status and patency[1]. Not only does this help in identification of unsuspected pelv pathology but also contributes to decision making of infertility treatment.*

Methods: *This retropective study included 60 infertile women both primary and secondary, it was conducted at department of Obstetrics and Gynaecology, Tagore medical college and hospital chennai, during the period between January 2013 to December 2017. After thorough gynecological examination, necessary investigations were made and written consent form was taken from them before laparoscopy. The patients were kept fasting for 24 hours before the laparoscopy and the procedure was performed under general anaesthesia. To test the patency of tubes, chromotubation was done in all cases under laparoscopic vision by using 10-15 ml of autoclaved methylene blue dye. All the data was collected on pre-designed proforma and the results were tabulated and raw percentages calculated to describe the results.*

Results: *Of sixty women studied, 41 (68%) had primary infertility while 19(32%) secondary infertility. Laparoscopy revealed normal findings in 6 (10%) with primary infertility and 3 (5%) with secondary infertility. The common finding was pelvic adhesion in 13(31%) and 8 (42%) of primary and secondary infertility respectively. Polycystic ovaries were detected in 11(26.8%) of primary infertility and 3 (15.7%) in secondary infertility. Endometriosis was found in 6(14.6%) with primary infertility and 3 (15.7%) in secondary infertility group. Fibroids were found in 4 (9.8%) and 2 (10.5%) in primary and secondary infertility respectively. Ovarian cyst detected in 5(12%) in primary infertility and 2(10.5%) in secondary infertility. Significant observation in this study was ovarian pathology commonly involved in primary infertility but tubal factors in secondary infertility.*

Conclusion: *Laparoscopy is safe and cost-effective method and should be considered as prime diagnostic tool for evaluating the etiology of infertility in women and for effective treatment decisions.*

Keywords: *Diagnostic laparoscopy, Primary infertility, Secondary infertility.*

Introduction

Infertility is well-defined as failure to conceive duringone year of unprotected frequent intercourse. The problem of infertility was affecting approximately 9-16% of married couples[2]. Leading causes of infertility include tubal disease, ovulatory disorders, uterine or cervical factors, endometriosis and male factor infertility[3]. 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[4]. Laparoscopy provides information regarding tubal andovarian status, uterine normality and standard means of diagnosing various pelvic pathology e.g. pelvic inflammatory disease, endometriosis, pelvic congestion and tuberculosis[5]. 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.[6]. The objective of our study was to observe and enumerate the role of diagnostic laparoscopy in female infertility in establishing the cause. This study was carried out to find the different causes for primary and secondary female infertility and their relative prevalence.

Methods

This retrospective study included 60 cases of both primary and secondary infertility in woman. The study was carried out during the period from January 2013 to December 2017 at department of Obstetrics and Gynaecology, Tagore medical college and hospital, Chennai. After thorough gynecological examination and with all necessary investigations (human semen analysis, baseline endocrinal investigations, postcoital study, cervical mucus study, ovulation study, post menstrual HSG) patients were admitted a day before surgery. Written consent form was taken from all the patients. All the patients were kept fasting after 10 pm a day before surgery. Enema was given in morning at 6:00 am. They were advised to void completely before entering the operation room. The diagnostic laparoscopies were performed under general anaesthesia with endotracheal intubation and were maintained on gas, oxygen, nitrous oxide. Pneumoperitoneum was created using carbon dioxide gas through veress needle inserted through lower border of umbilicus keeping in mind not to choose an area adjacent to previous laparotomy scar for fear of damage to adherent bowel. The gas flow rate was kept at 1 liter/minute and approx. 1 to 1.5liter gas was required for diagnostic laparoscopy to maintain pressure of 12 mm Hg inside the peritoneal cavity. The trocar cannula is pushed in at 45 degrees with screwing movement after lifting the lower abdominal wall. The cannula is removed and laparoscope was introduced. The pelvic organs are first inspected by manipulating uterus, tubes, ovaries, pouch of Douglas are visualized for any pathology. Chromopertubation was done to check the patency of tubes by injecting dilute methylene blue through the intrauterine cannula. Any endometriotric implant is ruled out by thorough examination. After completion of procedure, laparoscope is removed and trocar sleeve is kept open to remove air from abdominal cavity. The trocar is introduced and trocar cannula is removed. The skin was sutured and sterile dressing was done. They were discharged on the next day. The parameters to be monitored were decided and recorded accordingly.

Results

Of the sixty women who underwent diagnostic laparoscopy, 41 (68%) had primary infertility and 19(32%) had secondary infertility. Age varied from 18 to 38years. Majority patients of infertility are 61% between the ages of 21-30 years (Table 1).In primary infertility, most of the patients were in the age group of 26 to 30 years19(46%) and >30 years in secondary infertility 8 (42%) patients. Duration of infertility was 2-4 years 30(73%) in primary and 4(21%) in secondary infertility cases and more than 4 year in primary infertility 11(27%) and secondary infertility

15(78%) (Table 2). Majority patients had multiple symptoms. Out of 60 cases 80% were having normal regular menstrual cycle. Out of 41 patients with primary infertility 8 patients (19.5%) had no other symptom. 33 patients (80.5%) presented with various symptoms like pelvic pain in 10 patients (24.3%), dysmenorrhoea in 14 patients (34.14%), dyspareunia in 7 patients (17%), 9 patients (21.9%) had irregular cycles, 3 patients (7.35%) presented with weight loss 3 each (7.3%) presented with hirsutism, secondary amenorrhoea. Among the 19 patients with secondary infertility, 4 patients (21.6%) were asymptomatic, while dyspareunia was the commonest symptom in 7 patients (36.8%) and4 patients (21.6%) had pelvic pain. Other symptoms like dysmenorrhoea was seen in 6(31.5%), 4 patients (21.66%) had a history of irregular cycles (Table 3). While performing laparoscopic procedure 6 patients (10%) and 3 patients (5%) had normal findings in primary and secondary infertility respectively. Bilateral polycystic ovaries were observed in 14(23%) cases among ovarian pathologies followed by other pathologies in 11 (18%) cases including ovarian cyst, chocolate cyst, adhesion, or endometriotic implants (Table 4). In present study, typical pelvic adhesions were found in among 13 (31.7%) patients and about 4 patients had Koch's abdomen. In this study 4(9.7%) in primary and 3(5.7%) in secondary infertility had bilateral tubal blockage while 7(17.6%) and 6(31.5%) had unilateral blockage in primary and secondary infertility respectively. Uterus could not be seen due to adhesion in 6% cases. Among all the cases, 5.6% patients had fibroids and endometriosis was found in 9 patients. The most common finding observed by laparoscopy was pelvic adhesion in both primary and secondary infertility. This was followed polycystic ovaries (26%) in case of primary infertility while tubal occlusion (73%) the second most common causes in secondary infertility, other observation in this study was ovarian pathology significantly involved in primary infertility and tubal factors in secondary infertility. There was no major complication except pain in11 patients, nausea and vomiting in 9cases, fever in 6 cases while 72.3% were asymptomatic postoperatively.

Table-1. Age distribution group of patients with primary and secondary infertility

Age group in years	Primary infertility N=41(68%)	Secondary infertility N=19(32%)
18-20	4 (9.7%)	0
21- 25	9(21.9%)	2 (10.5%)
26-30	19(46.3%)	7 (36.5%)
30-35	6(14.6%)	8 (42.1%)
>35	3(7.3%)	2 (10.5%)

Table-2. Duration of infertility

Duration in year	Primary infertility Number=41	Secondary infertility number=19
2 – 3 yrs	14 (34.1%)	0
3 - 4 yrs	16 (39.0%)	4 (21%)
4 - 5 yrs	7 (17.0%)	9(47.3%)
>5 yrs	4 (9.7%)	6 (34.5%)

Table -3 Symptoms of patients

Symptoms	Primary infertility number	Secondary infertility number
Asymptomatic	8 (19.5%)	4 (21.0%)
Irregular cycle	9(21.9%)	6(16.5%)
Dysmenorrhea	14 (34.14%)	6 (16.5%)
Dyspareunia	7 (17.3%)	7 (36.8%)
Pelvic pain	10(24.3%)	4 (21.0%)
Discharge	5(12.0%)	3(15.7%)
Hair growth	3 (7.3%)	2 (10.5%)
Weight loss	3(7.3%)	1 (5.0%)

Table -4 Laparoscopic findings

Laparoscopic Findings	Primary infertility number	Secondary infertility number
Normal findings	6 (14.5%)	3(15.7%)
Polycystic ovaries	11(26.8%)	3(15.7%)
Chocolate cyst	6 (14.6%)	3(15.7%)
Simple cyst	5 (12.1%)	2(10.5%)
Tubo-ovarian mass	4(9.7%)	2(10.5%)
Bilateral blockage	4 (9.7%)	3(15.7%)
Unilateral blockage	7(17.0%)	6(31.5%)
Pelvic Adhesions	13(31.7%)	8(42.1%)
Hydrosalpinx	3(7.3%)	2(10.5%)
Endometriosis	6(14.6%)	3(15.7%)
Adenomyosis/myoma	6(14.6%)	5(26.3%)
Congenital anomaly of uterus	2(4.8%)	0

Discussion

Infertility is a common and public health problem. The WHO estimates the overall prevalence of primary infertility in India to be between 3.9-16.8%.[7] The female factors contribute most (i.e. 40-55%) in the etiologies of infertility followed by male factors (30-40%), both partners (10%) and unexplained (10%).[8]. 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). In this study (7.3%) 3 patients presenting with primary infertility and (10.5%) 2 patients presenting with secondary infertility were of age i.e. >35 years. According to NICE guidelines women over 35 years of age should be referred early for investigation and treatment[9]. Laparoscopy is an important and well-established procedure which can help these patients by diagnosing the exact cause of infertility in time. It is also cost effective in the initial management of young women with infertility[10]. It allows direct visualisation of the abdominal and pelvic organs where clinical evaluation and imaging techniques have failed or are equivocal. Thus, it is considered as an important tool not only in diagnosis of infertility but also in the treatment of selected cases[11]. The main advantage of the use of laparoscopy for management of infertility lies in its direct visualization of the passage of the dye through the tubes and fimbrail end. As compared to hysterosalpingography the results are much better. The fallopian tube can be examined directly in real time under magnification and in its natural habitat under physiological conditions contrary to hysterosalpingography.[12]. In this study sixty women who underwent diagnostic laparoscopy, 41 (68%) had primary infertility and 19 (32%) had secondary infertility. Ages varied from 18 to 38 years. while Talib reported earlier mean age in both groups i.e. 22.1 and 29.4 years in primary and secondary infertility respectively.[13]

Maximum number of patients 30(68%) presented with less than 4 years of primary infertility while 15 (78%) patients out of 19 had duration of more than 4 years of secondary infertility. In our study, normal pelvic anatomy was found on laparoscope in 6 and 3 cases of primary and secondary infertility respectively. Ovarian pathology in 22 patients was found to be the most common cause of infertility in primary and tubal pathology in 13 patients was found to be the most common cause of infertility in secondary. Cystic ovaries, endometriosis, chocolate cyst, adhesion, or endometriotic implants were also seen. These findings were similar to the study conducted in Thailand by Sinawat et al.[14].

Conclusion

Diagnostic laparoscopy is minimally invasive, more accurate and convenient procedure for diagnosis of infertility. It has revolutionized the management of infertility. Due to safety, high yield, lower complications and cost effectiveness laparoscopy should be recommended in all cases of infertility. Diagnostic laparoscopy should be considered earlier in women with history of pelvic inflammatory diseases, pelvic surgery and chronic

pelvic pain for effective treatment decisions. It may be considered in appropriately selected infertile patients even after normal findings, as important pelvic pathology may be identified in a significant number of patients. It is most useful in diagnosing cases with endometriosis and tubal factor in infertility.

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