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Screening of infertility by laparoscopy in a medical college and hospital of eastern India: A clinical study

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Abstract

Background: Infertility is a major health issue with multifactorial etiology. None of the laboratory findings alone is conclusive in diagnosing infertility. Laparoscopy has come into play in finding the etiology and planning the further management of infertility. This study is conducted to screen causes of infertility in a tertiary care teaching hospital of eastern India.

Methods: 100 cases of primary and secondary infertility were subjected to laparoscopy after taking informed consent. Causes of infertility were found out. The present study was conducted at Hi-Tech Medical College and Hospital, Bhubaneswar, Odisha and initiated after approval from Institutional Ethics Committee of the Institute.

Results: There were 75 cases (75%) of primary infertility as against 25 cases (25%) of secondary infertility. A maximum of 40 cases (40%) were in the age group of 20 - 25 years. Uterine causes contributed about 14 cases (14%), tubal causes contributed about 34 (34%), ovarian factors accounted for 27 cases (27%), peritoneal causes contributed for 7 cases (7%), unexplained infertility accounted for 18 cases (18%).

Conclusions: Laparoscopy is a gold standard for tubal, ovarian cases, in cases of endometriosis and in adhesions till date. Laparoscopy can be used for evaluation of almost all the cases of infertility. Because of its potential diagnostic and therapeutic benefits, all the patients with infertility should undergo laparoscopy prior to any advance procedure in infertility management. Diagnostic laparoscopy has become so important in the evaluation of infertility that it has now been considered as a basic skill which should be learnt by every gynecologist in the advanced scientific era.

Keywords: Infertility, laparoscopy, eastern India

Introduction

Infertility is a couple oriented diseases; still today 12-14% ^[1] of couple are infertile. WHO estimates that 60 to 80 million couples worldwide currently suffer from infertility ^[2]. Incidence of female infertility is 45.67%, male infertility is 54.33% ^[3] & may be both can get involved in some of cases, range varies from region to region. Total infertility is divided into primary and secondary infertility. Definitions of primary infertility vary between studies, but the operational definition, put forth by the WHO, defines primary infertility as "Inability to conceive within two years of exposure to pregnancy (i.e. - sexually active, non-contraception and non-lactating) among women 15 to 49 year old" ^[4]. Secondary infertility refers to the inability to conceive following a previous pregnancy. Globally, most infertile couples suffer from primary infertility ^[5]. An infertility evaluation should be performed if a couple has not achieved conception after one year of unprotected intercourse. Evaluation is the starting point for treatment of infertility as it may suggest specific causes and appropriate treatment modalities. Although the history and physical examination provide important information, specific diagnostic tests are required to evaluate infertility. Because the causes of infertility can be multifactorial, a systematic approach typically is used and involves testing for male factor, ovulatory factor, uterotubal factor, and peritoneal factor. Many of these diagnostic tests are laboratory based, including semen analysis, serum progesterone level, and serum basal follicle - stimulating hormone level ^[6].

The appropriate selection of investigations based on problem areas identified by history and physical examination would guide the physician in the management of the infertile couple ^[7]. Laparoscopy has been suggested as a mandatory step to preclude the existence of peritubal adhesions and endometriosis as causes of infertility ^[8].

Laparoscopy is now a days a gold standard for evaluating fallopian tube morphology and it can also be used for endometriosis diagnosis as if one centimetre lesion can only be diagnosed by laparoscopy and in cases of chronic pelvic pain and to rule out adnexal pathology and congenital defects. This study further focus the role of laparoscopy in finding out the causes of infertility.

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Methods

It was a cross sectional study carried out in the department of obstetrics and gynaecology at Hi-Tech Medical College and Hospital, Bhubaneswar, Odisha. Cases with infertility coming in the OPD were selected after taking informed consent. 100 cases of both primary and secondary infertility were considered. Cases excluded were infertility with male factor and patients with absolute contraindication for laparoscopy i.e. patients with cardiopulmonary disease, diaphragmatic hernia, large abdominal masses, paralytic ileus, gross obesity, generalized peritonitis, bowel obstruction, intraperitoneal haemorrhage.

Firstly, complete history along with complete systemic examination of all the systems, along with per speculum and per vaginal examination were done. After taking informed consent laparoscopy was done under General Anesthesia, during the post menstrual phase in 7th, 8th and 9th day of cycle, pre-operative findings was noted. Chromopertubation with methylene blue dye was carried out to know the patency of the tubes. Tubal, ovarian, uterine and peritoneal factors were assessed and further management plan was made accordingly.

Results

In our present study we found out that out of 100 cases of infertility, there were 75 cases (75%) of primary infertility, and 25 cases (25%) of secondary infertility (Table 1) We also found that maximum number of cases falls in the age group of 20-25 years that is 40cases (40%) followed by 33 cases (33%) in 26-30 years and least number in the age group of more than 40 years that is 03 cases (03%) (Table 2). Maximum number of primary infertility cases were in the age group of 20-25 years that is 34 cases (45.33%) and that of secondary infertility maximum number of cases were in the 26-30 years age group that is 09 cases (36%) (Table 3).

Uterine causes contributed about 14 cases (14%) among which 10 cases (13.33%) were of primary infertility and 04 cases (16%) were of secondary infertility. Tubal causes (peritubal adhesions, tubal blockage, tubo ovarian masses and hydrosalpinx) contributed about 34 (34%) cases, among which 28 cases (37.33%) were of primary infertility and 06 cases (24%) were of secondary infertility. Ovarian factors (PCODS, bald ovaries streak ovaries, ovarian cysts) accounted for 27 cases (27%) among which 19 cases (25.33%) were of primary infertility and 08 cases (32%) were of secondary infertility. Peritoneal causes (endometriosis, genital tuberculosis, adhesions) contributed for 07 cases (7%) among which 05 cases (6.66%) were of primary infertility and 02 cases (8%) were of secondary infertility. Unexplained infertility accounted for 18 cases (18%), among which primary infertility were 13 cases (17.33%) and secondary infertility were 05 cases (20%) (Table 4).

Table 1: Number of patients according to the type of Infertility

	Number of Cases	Percentage of Cases
Primary Infertility	75	75%
Secondary Infertility	25	25%

Table 2: Age distribution in Infertility Cases

Age in Years	Number of Cases	Percentage of Cases
20-25	40	40%
26-30	33	33%
31-35	14	14%
36-40	10	10%
>40	03	3%

Table 3: Age distribution in Primary and Secondary Infertility

Age in Years	Primary Infertility (n=75)	Secondary Infertility (n=25)
20-25	34 (45.33%)	06 (24%)
26-30	24 (32%)	09 (36%)
31-35	06 (8%)	08 (32%)
36-40	04 (5.33%)	06 (24%)
>40	01 (1.33%)	02 (8%)

Table 4: Causes of Infertility on Laparoscopy

Causes	Primary Infertility (n=75)	Secondary Infertility (n=25)
Uterine Causes	10 (13.33%)	04 (16%)
Tubal Causes	28 (37.33%)	06 (24%)
Ovarian Causes	19 (25.33%)	08 (32%)
Peritoneal Causes	05 (6.66%)	02 (8%)
Unexplained	13 (17.33%)	05 (20%)

Discussion

In this study 75 cases (75%) were of primary infertility, and 25 cases (25%) were of secondary infertility. The prevalence of primary and secondary infertility was similar to the study of Avasthi Kumkum *et al.* (2006) [9] and Sharma N *et al.* (2012) [10]. There is overall higher incidence of primary infertility in the population (Table 1) [11]. This study also showed that maximum number of cases falls in the age group of 20-25 years that is 40 cases (40%) followed by 33 cases (33%) in the age group of 26-30 years and least number in the age group of more than 40 years that is 03 cases (03%). Maximum number of primary infertility cases falls in the age group of 20-25 years that is 34 cases (45.33%) and that of secondary infertility maximum number of cases falls in the 26-30 years age group that is 09 cases (36%). Similarly according to Paul C. Adamson *et al.* (2011) [12] the prevalence of primary infertility in India was 12.6% and the mean age was 25.9year range was aged 15-30 year. Roupa Z *et al.* (2009) [13] studied 110 infertile women, 64.5% were 20–29 years, 20.0% were 30-39 years, 11.8% were 40-49 years and 3.7% were over 50 years. In the present study, uterine causes was found in 14 cases (14%), among which 10 cases (13.33%) were of primary infertility and 04 cases (16%) were of secondary infertility. Tubal causes (peritubal adhesions, tubal blockage, tubo ovarian masses and hydrosalpinx) contributed about 34 (34%) cases, among which 28 cases (37.33%) were of primary infertility and 06 cases (24%) were of secondary infertility. Ovarian factors (PCODS, bald ovaries streak ovaries, ovarian cysts) accounted for 27 cases (27%) among which 19 cases (25.33%) were of primary infertility and 08 cases (32%) were of secondary infertility. Peritoneal causes (endometriosis, genital tuberculosis, adhesions) contributed for 07 cases (7%) among which 05 cases (6.66%) were of primary infertility and 02 cases (8%) were of secondary infertility. Unexplained infertility accounted for 18 cases (18%); among which primary infertility were 13 cases (17.33%) and secondary infertility were 05 cases (20%). Aziz N (2010) [14] studied Fifty infertile women who underwent laparoscopy, 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. Fibroid 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.

According to Riffat S *et al.* [15] in 2010, laparoscopy was done in 260 patients, ovulatory failure was found out to be 22.09%, tubal blockage was found to be 14.41% and tubal blockage with tuboovarian mass was found to be 1.31% and endometriosis was found out to be 6.55%. Similar study was done by Cahill *et al.* [16] who found 31% patient had PID, 5% had endometriosis. Tsuji I *et al.* [17] in 2009 stated that 57 infertile patients with normal HSG findings underwent diagnostic laparoscopy. In 46 (80.7%) of these patients, diagnostic laparoscopy revealed pathologic abnormalities. Specifically, endometriosis and peritubal and/or perifimbrial adhesions were found in 36 (63.2%) and 5 (8.8%) of the patients, respectively.

Conclusions

Infertility is a global health issue none of the female should be denied of her motherhood, it is a social stigma but efforts could be made for making a couple complete with a family. We are able to detect the cause(s) of infertility in the pelvic cavity and were able to design a suitable management plan, which could lead to postoperative pregnancy. Laparoscopy is gold standard for tubal and ovarian causes and in cases of endometriosis and in adhesions till date no other technology is present hence laparoscopy can be used for evaluation of almost all the cases of infertility. Diagnostic laparoscopy has become so important in the evaluation of infertility that it has now been considered as a basic skill which should be learnt by every gynecologist in the advanced scientific era. Because of the potential diagnostic and therapeutic benefits, patients with infertility should undergo laparoscopy prior to ART.

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