



Role of Diagnostic Laparoscopy in Cases with Female Infertility

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Abstract

Introduction: Infertility can be defined as failure to conceive despite unprotected sexual intercourse for 1 year regardless of the cause of such a failure. The infertility may be caused due to male or female factors. In some instances, both male and female factors may be responsible. In approximately 15% cases no responsible factor can be identified despite extensive investigations and such infertility is then labelled as "unexplained infertility". Role of diagnostic laparoscopy in evaluation of infertility is important in diagnosis of uterine, tubular and peritoneal causes of infertility.

Materials and Methods: This was a prospective study of women attending the infertility center of our tertiary care obstetric hospital situated in an urban area. Total 60 women with infertility were included in this study on the basis of a predefined inclusion and exclusion criteria. A detailed history, Clinical examination, per speculum and per vaginal examination was done in all the cases. Investigations such as ultrasound and hysterosalpingography was also done. Laparoscopic evaluation was done in 22 (36.67%) selected patients. Data was analyzed using Minitab 17 version. For statistical purpose P value less than 0.005 was taken as significant.

Results: Mean Age of the studied cases was found to be 29.38+/- 4.49 years. Primary and secondary infertility was seen in 71.67% and 28.33% patients respectively. 20 patients (33.33%) had menstrual irregularities in addition to infertility, while chronic abdominal pain and vaginal discharge was present in 4 (6.66%). 4 (6.66%) patients had dyspareunia in addition to infertility. Out of the 22 (36.67%) cases in whom laparoscopy was done the most common cause of infertility was found to be endometriosis which was seen in 12 (20%) cases. Peritubal blockages, hydrosalpinx and other tubal abnormalities were found in 8 (13.33%) cases. In remaining 2 (3.33%) patients no abnormality was detected on laparoscopy.

Conclusion: Laparoscopic evaluation of the women presenting with primary as well as secondary infertility may be helpful in identifying uterine, peritubal and peritoneal causes of infertility and should be done before labelling the infertility to be "unexplained".

Keywords: Infertility, evaluation, Diagnostic laparoscopy, Endometriosis.

Introduction

Infertility can be defined as failure to conceive despite unprotected sexual intercourse for 1 year

regardless of the cause of such a failure¹. Various researchers have reported the prevalence of infertile couples to be between 10-15% depending

upon the demographic characteristics and geographical areas of the studied population². The infertility may be the result of male factors or female factors. In some cases, male as well as female factors both may be seen and, in some cases, neither male nor female factor is identified yet the couple has infertility. The common female factors responsible for infertility includes cervical causes such as cervical mucus abnormalities and cervical stenosis, uterine causes such as congenital uterine anomalies (rudimentary uterus, bicornuate or unicornuate uterus), ovarian failure (turner syndrome) and fallopian tube blockage secondary to pelvic inflammatory diseases³. The male factors responsible for infertility may include azoospermia (secondary to bilateral orchitis, epididymitis, mumps, congenital absence of the vas deferens, idiopathic epididymal obstruction and kallmann syndrome). In some couple the general factors such as environmental and occupational factors, substance abuse and advancing age may be responsible for failure to conceive⁴.

The infertility is divided into primary and secondary infertility depending upon whether the woman had ever been pregnant. Primary infertility is defined as infertility in which the woman has never achieved pregnancy while secondary infertility is when a pregnancy has previously been achieved by the couple but after that regular, unprotected sexual intercourse has not resulted in subsequent pregnancy⁵. Globally it is the primary infertility which afflicts more couples and has been the cause of concern and anguish amongst most of the couples⁶. Primary infertility is not only more common but also it is more likely that the couples with no child will approach an infertility center as compared to the couple who have secondary infertility⁷.

The approach to the investigations of a couple with infertility should be systematic without attributing the blame to either male or female partner and should start if a couple has not achieved pregnancy despite one year of unprotected sexual intercourse⁸. The evaluation

must start with detailed history and clinical examination. Since the causes of infertility are numerous it is important to restrict investigations to the most relevant one in the beginning scope of which can be expanded later on the basis of results of initial tests. Initially the tests should cover the common causes of infertility and may include ultrasound examination, seminal analysis, hysterosalpingography, MR imaging (to rule out structural defects of mullerian ducts). In specific cases the investigations such as karyotyping (Suspected Turner syndrome in female) and diagnostic laparoscopy (For the diagnosis of peritubal blockage and endometriosis) may be needed⁹.

Despite being invasive laparoscopic evaluation of women has an important role in the diagnostic tests for the couples having infertility. It is an essential procedure to diagnose conditions such a peritubal blockage and endometriosis which cannot be diagnosed on the basis of hysterosalpingography¹⁰. We conducted this study to find out the utility of laparoscopy in evaluation of the women presenting with primary as well as secondary infertility.

Materials and Methods

We conducted this prospective study of women attending the infertility center of a tertiary care obstetric hospital situated in an urban area. Total 60 women with infertility were included in this study on the basis of a predefined inclusion and exclusion criteria. Informed consent was taken from all the patients willing to be part of the study. Women having infertility due to male factors were excluded from the study. Demographic details such as age, address, socioeconomic status and educational qualification of all the patients was noted. A detailed history with a special emphasis on menstrual history, duration since marriage, frequency of intercourse, knowledge about fertile period and any history of pelvic inflammatory diseases in past was taken. A detailed systematic clinical examination was done in all the cases. Per

speculum and per vaginal examination was done in all the cases. Patients were divided into primary and secondary infertility on the basis of whether they have ever conceived in past. Ultrasonography and hysterosalpingography was also done in all the cases. Routine blood investigations like complete blood count, bleeding time, clotting time and prothrombin time was done in all cases. Laparoscopy was done in cases where no cause of infertility could be identified on the basis of initial imaging. Physicians opinion and pre-anesthetic evaluation was done in all the cases before laparoscopy. Patients not fit for general anesthesia or having any risk factors which may be a contraindication for laparoscopy were excluded from the study. After taking informed consent laparoscopy was done under GA, during the post menstrual phase in between 7th and 9th day of menstrual cycle, pre-operative findings were noted. Tubal, ovarian, uterine and peritoneal factors were assessed and laparoscopic findings were analyzed. Further management was decided depending upon the findings of laparoscopy. Data was analyzed using Minitab 17 version. For statistical purpose P value less than 0.005 was taken as significant. Microsoft excel was used to prepare graphs and charts.

Inclusion Criteria

- 1- All women attending infertility OPD for primary as well as secondary infertility.
- 2- Age more than 18 years.
- 3- Those who gave informed consent to be part of the study.

Table 2: Age distribution and primary Vs Secondary Infertility

Age groups	Primary Infertility	Secondary infertility	Total
18 - 25 years	4 (6.67%)	2 (3.33%)	6 (10.00%)
26 - 30 years	20 (33.33%)	7 (11.67%)	27 (45.00%)
31 – 35 years	18 (30.00%)	5 (8.33%)	23 (38.33%)
> 35 years	1 (1.67%)	3 (5.00%)	4 (6.67%)
Total	43 (71.67%)	17 (28.33%)	60 (100.00%)

The analysis of the mean age groups of the patients of primary as well as secondary infertility showed that the mean age in primary infertility patient was 28.71 +/- 4.18 while in secondary

Exclusion criteria

1. Couples with male factors responsible for infertility.
2. Those who refused consent.
3. Patients with morbid obesity.
4. Patients with systemic illnesses and compromised cardiovascular status in whom laparoscopy was contraindicated.

Results

Out of the 60 patients with infertility the most common age group which sought consultation was between 26-30 years (45%) followed by 31-35 years (38.33%) and 18-25 years (10%). Patients more than 35 years comprised 6.67 % of total cases. The mean age of the patients was found to be 32.78+/- 6.74 years.

Table 1: Age groups of the studied cases

Age groups	No. of Patients	Percentage
18 - 25 years	6	10.00%
26 - 30 years	27	45.00%
31 – 35 years	23	38.33%
> 35 years	4	6.67%
Total	60	100.00%
Mean Age \pm SD = 29.38+/- 4.49 years.		

The Analysis of the cases on the basis of whether they had primary or secondary infertility showed that out of 60 cases majority of the patients were having primary infertility (71.67%) while patients with secondary infertility were 28.33%.

infertility cases mean age was 29.23 +/- 5.79. The difference in age of these 2 groups was found to be statistically “Not Significant” (P=0.773).

Table 3: Mean age of the patients in primary and secondary infertility

	Mean Age and Standard Deviation	Test of Significance
Primary Infertility Cases	28.71 +/- 4.18	P= 0.7738 (Not Significant)
Secondary Infertility Cases	29.23 +/- 5.79	

Most of the patients were asymptomatic and came for the sole complaint for infertility (53.33%). 20 patients (33.33%) had menstrual irregularities in addition to infertility, while chronic abdominal

pain and vaginal discharge was present in 4 (6.66%). 4 (6.66%) patients had dyspareunia in addition to infertility.

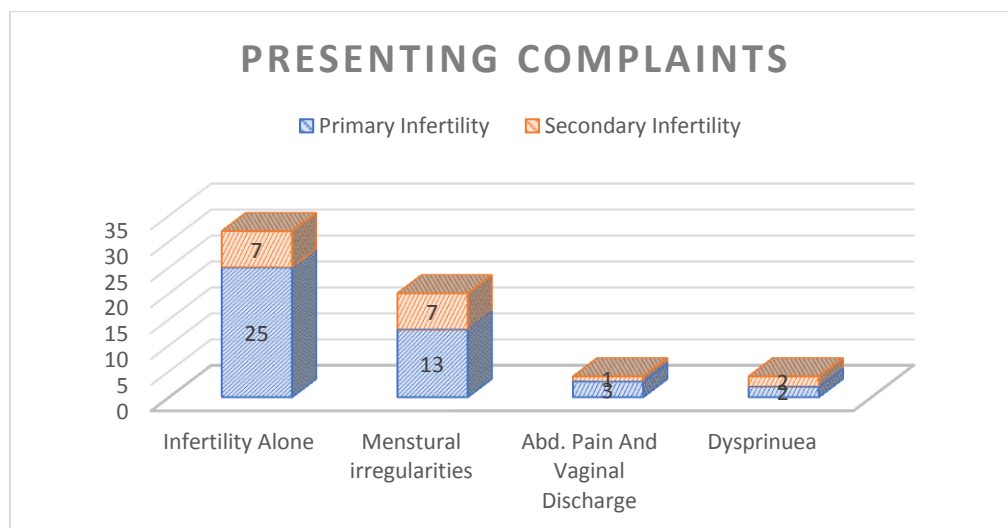


Figure 1: Presenting complaints in females with infertility

The analysis of causes of infertility showed that the most common cause of infertility was menstrual abnormalities including amenorrhea, oligomenorrhea and polycystic ovarian syndrome (20), Tubal blockage (8), Mullerian duct anomalies (4) Ovulatory dysfunction (4) and cervical causes (2). Laparoscopy was done in 22

(36.67%) cases. Out of the 22 cases in whom laparoscopy was done the most common cause of infertility was found to be endometriosis which was seen in 12 (20%) cases. Peritubal blockages, hydrosalpinx and other tubal abnormalities were found in 8 (13.33%) cases. In remaining 2 patients no abnormality was detected on laparoscopy.

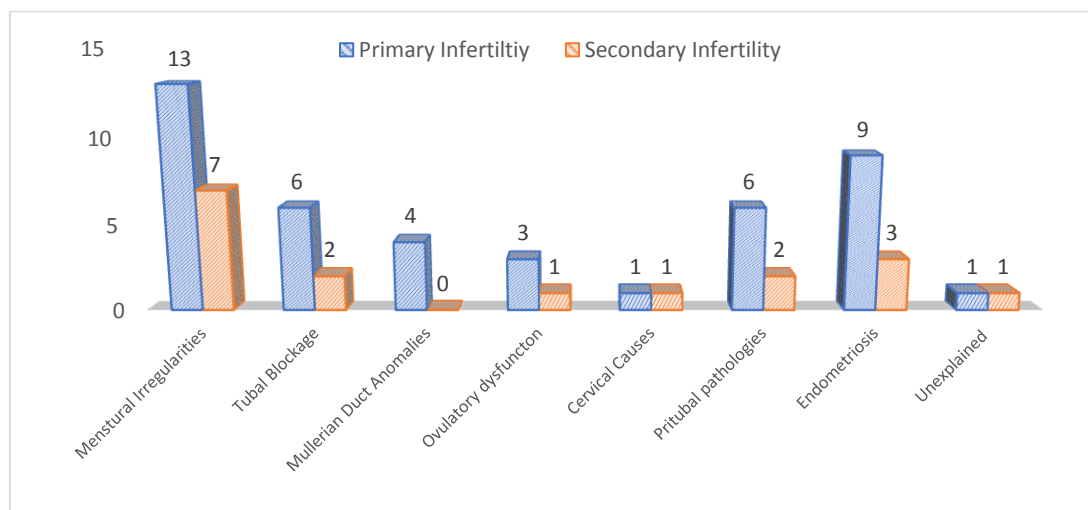


Figure 2: Causes of Infertility in studied cases

Discussion

Though prevalence of infertility varies according to the demography and geographical location the global trend is towards rise in the prevalence of infertility. According to National Center for Health Statistics, the absolute numbers of impaired fecundity increased by about 2.7 million women, from 4.56 million in 1982 to 7.26 million in 2002¹¹. Similar trends have been shown amongst men in whom the fertility rate in the age group of less than 30 years has reported to be decreased worldwide by 15%¹². Though it is very difficult to reliable estimate global prevalence but according to estimates more than 70 million couples are facing the problem of either primary or secondary infertility. The Indian scenario is no different and according to WHO the overall prevalence of primary infertility in India ranges from 3.9% to 16.8%¹³.

In this study most of the patients had primary infertility (71.67%) and only 17 (28.33%) patients were found to be having secondary infertility. IN majority of the studies primary infertility was found to be more common than the secondary infertility. Masoumi SZ et al in their cross-sectional descriptive study of 1200 infertile men and women found that prevalence of primary and secondary infertility was 69.5% and 30.5% respectively¹⁴.

One of the common conditions associated with female infertility was found to be menstrual irregularities and out of studied cases 20 (33.33%) patients had some or the other form of menstrual irregularity including amenorrhea and polycystic ovarian disease. Ashok Kumar et al in their study of 50 infertile females who attended infertility clinic found that the menstrual irregularities were found in 16% of the patients¹⁵.

Laparoscopic evaluation was done in 22 cases (36.67%) in our study because on initial investigation the cause of infertility couldn't be determined. In our study on laparoscopy the common cause of infertility was found to be endometriosis which was seen in 12 (20%) cases. Peritubal blockages, hydrosalpinx and other tubal abnormalities were found in 8 (13.33%) cases. In

remaining 2 (3.33%) patients no abnormality was detected on laparoscopy. Similar abnormalities on laparoscopy was reported by many authors. Naz T et al conducted a cross sectional study of One hundred and thirty-six (70.46%) patients with primary and 57 (29.54%) with secondary infertility¹⁶. All patients underwent laparoscopic examination for evaluation of cause of infertility. The authors reported that Dense pelvic adhesions forming adnexal mass mullerian abnormalities were common uterine causes. Ovarian pathology was found in 18 (13.23%) primary and 4 (7.01%) cases of secondary infertility. PCO (polycystic ovaries) were detected in 12 (8.82%) and 2 (3.5%) cases of primary and secondary infertility respectively. Endometriotic cysts and deposits were found in 15 (10.29%) cases of primary and 3 (5.26%) cases of secondary infertility. Similar abnormalities were reported by Bosteels J et al in their studied of patients with infertility¹⁷.

Despite all the investigations of the couples with infertility there are instance where everything turns out to be normal and no male or female factors can be found out to which infertility can be attributed¹⁸. In our study 2 such patients had every investigation normal including diagnostic laparoscopy. Such couples are labelled to having unexplained infertility and its incidence is reported to be around 15% as reported by various researchers^{19,20}.

Conclusion

Diagnostic Laparoscopy is one of the important investigations before the infertility is labelled as "unexplained" and must be done in cases where male factors is ruled out and initial evaluation of female factors by ultrasound and hysterosalpingography has turned out to be normal. It may detect uterine, peritubal, and peritoneal causes of infertility.

Conflict of Interest: None

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