

Causes of female infertility by Diagnostic Laparoscopy

Tomar S¹, Parmar S², Pradhan A³

¹Dr Surabhi Tomar, ²Dr Dr. Meenal Parmar, ³Dr Aritra Pradhan. All are affiliated with National Institute of Medical Sciences Jaipur, Rajasthan, India.

Address for correspondence: Dr Surabhi Tomar, Email: surabhit@gmail.com

Abstract

Objective: To evaluate the causes of primary female infertility with diagnostic laparoscopy. **Study Design:** This study is a case series. **Place and Duration of Study:** The study has been carried out in Obstetric and Gynaecology department in National Institute of Medical Sciences (NIMS) College and Hospital, Jaipur., Rajasthan, from September 2013 to July 2014. **The tubal patency was tested by chromopertubation using methylene blue dye. Methodology:** Inclusion criteria include all primary infertile females who underwent diagnostic laparoscopy during the study period & Normal pelvic examination. **Couples who had not lived together for at least one year & Women with medical disorders and contraindications for laproscopic surgery were excluded from study. Results:** Out of 100 primary infertility women, mean age of infertility was 27.5 years. Maximum number of patient's presented with infertility of duration less than six years. 43% had tubal blockage as the most common finding which was followed by pelvic adhesions. Bilateral tubal block was diagnosed maximum by laparoscopy and HSG combined i.e. 40% followed by laproscopy alone in 32% cases. **Conclusion:** Most common causes responsible for primary infertility in women were tubal occlusion, peritubal and periovarian adhesions and endometriosis.

Key words: Laparoscopy, Primary infertility, Tubal Occlusion, Peritubal, Periovarian Adhesions.

Introduction

Approximately 5% of the couples are definitive infertile with a nearly zero chance of becoming spontaneously pregnant in the future. Fertility varies across regions of the world and is estimated to affect 8 to 12 percent of couples worldwide [1,2]. Total infertility is divided into primary and secondary infertility. For many couples, infertility and its treatment cause a serious strain on their interpersonal relationship, leading to emotional breakdowns [3]. Tube blockage is one of the most frequent causes of infertility in women.

The degree of tubal pathology determines the possibility for fertility. A number of diagnostic tests are being used in clinical practice to assess tubal patency as part of the work-up for subfertility [1]. 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%). Infertility in female is caused by various factors.

Diagnostic laparoscopy provides a direct visual access to inner pelvic anatomy so that the ovaries, fallopian tubes and uterus can now be studied and its pathology can be directly seen in more details. The main aim of our study

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is to evaluate the most common pathology seen in primary infertility women with the help of laproscopy [4]. Infertility prevalence is from 3.5% to 16.7% in more developing countries, in less developed countries it is from 6.9% to 9.3% and total median prevalence is 9%. In India this trend is increasing. According to Delhi IVF Infertility Research Centre, infertility affects one in six couples. The recent National Family Health Survey (NFHS) estimates showed that, childlessness in 2.4% of currently married women aged over 40 year [5].

Pelvic inflammatory disease and Salpingitis is the common cause for tubal damages. After one episode of pelvic infection the tubal damage is 12%, followed by 23% and 54% by second and third episodes respectively. The most important cause of female infertility in developing countries like India, Pakistan, Nepal, Sri Lanka is Genital Tuberculosis. The diagnosis of genital tuberculosis is very tedious as false positive results supervene. It is one of the major cause of severe tubal damage. Genital tuberculosis shows varied clinical symptoms or no symptoms at all leading to its delayed diagnosis. Semen analysis has a very important role in male infertility diagnosis. If the semen analysis is abnormal, it should be repeated after at least 1 month by a laboratory that adheres to World Health Organization (WHO) guidelines, with a quality control program

ensuring accurate testing [6]. Uterine anomalies also leads to primary infertility, Among all congenital uterine abnormalities, septate uterus is the most common cause associated with highest reproductive failure rates [7].

Material and Method

The patients were selected from the department of obstetrics and gynecology, National Institute of Medical Sciences (NIMS) College and Hospital, Jaipur, Rajasthan. The study was conducted from September 2013 to July 2014. Only selection criteria was females with one year unprotected intercourse who could not achieve pregnancy with adequate coitus, with normal bimanual pelvic examination, normal semen analysis of husband, Age group studied were of 20-40 years. Exclusion of cases were done who had abnormal semen parameters, contraindications for the surgery, related medical disorders not allowing laproscopic surgeries or unfit for surgeries. Laparoscopy was scheduled in proliferative phase of the menstrual cycle. Thorough examinations of female patients were done by initially detailed history, followed by physical examination, hormonal profiles and endocrinological examination. Full blood count, blood urea, blood sugar estimation, urine examination, ECG, Chest X ray, Ultrasoundography

and endometrial biopsy were performed. HSG was done as preliminary test, followed by diagnostic laparoscopy with instillation of using 10-15 ml of 0.5% autoclaved methylene blue dye for tubal patency test. In males semen examination was done in patients selected for the study.

Methodology- Patients were enrolled after taking informed consent. Laparoscopy was performed under general anesthesia. Just below the umbilicus a small incision along the langers line made. Through that incision carbon dioxide gas insufflation done and pneumo peritoneum created. Trochar inserted through the incision and through it laparoscope is passed after withdrawing the canula. During the procedure pelvis is inspected along with the surfaces of the uterus, both the ovaries, fallopian tubes, uterosacral ligament and pouch of douglas. Fallopian tubes were inspected for abnormality in length and shape. In ovaries, their size, shape, thickness of peripheral follicle was done. Other pathologies like peritubal adhesions, omental adhesions, perifimbrial adhesions, fibroids, endometriosis, tubo ovarian mass, were also noted if present. Tubal patency was tested by injecting methylene blue dye through the uterine cavity and its spillage from the fimbrial end of the fallopian tube.

Result

Out of 100 infertile patients, the present study showed maximum cases i.e.45% in the age group between 26-30 years followed by 35% cases in the age group of 21-25 years [table 1]

Table1: Infertility according to age group

S NO	AGE in years	Number of cases (%)
1.	21-25	35%
2.	26-30	45%
3.	31-35	20%

Out of 100 patients of infertility maximum cases i.e. 45% were of duration 1-5 years, followed by 6-10 years. The least number of cases were from the duration 16-20 years [table 2]

Table 2: Infertility duration

S NO.	Duration of Infertility(years)	Number of cases
1.	1-5	45%
2.	6-10	35%
3.	11-15	12%
4.	16-20	8%

Out of 100 diagnostic laparoscopies, the most common pathology was tubal blockage with adhesions i.e. 15% or without adhesions i.e. 23%. This was followed by normal pelvic findings in 30% cases with tubal patency with adhesions in 7% cases and cystic ovaries, endometriosis with leiomyoma, hypoplastic uterus and genital tuberculosis 5%, 5%, 5%, 5% respectively [table 3]

Table 3: Laparoscopic Findings

S.NO.	Laparoscopy diagnosis	Cases (%)
1.	Normal pelvic organs	30%
2.	Tubal block with adhesions	15%
3.	Tubal block without adhesions	23%
4.	Tubal block with cystic ovaries	5%
5.	Tubal patency with cystic ovaries	5%
6.	Tubal patency with adhesions	7%
7.	Genital tuberculosis	5%
8.	Endometriosis with uterine leiomyoma	5%
9.	Hypoplastic uterus	5%

Tubal patency can be best found out by laparoscopy alone i.e. 58% cases followed by in combination of laparoscopy and HSG. The bilateral block is found maximum with laparoscopy with HSG i.e. 40%. (Table 4)

Table 4: Laparoscopic Findings

S. No	Tubal patency	Laparoscopy with HSG	Laparoscopy alone
1.	Both Tubes patent	50%	58%
2.	Unilateral block	10%	10%
3.	Bilateral block	40%	32%

Discussion

Pelvic inflammatory disease most commonly leads to tubal blockade which is most common cause for infertility in developing countries i.e.15-20% [2]. The study done by Kanal P [2] on 100 patients in India showed similar result as 70 patients had tubal blockade with or without adhesions, cystic ovaries, endometriosis, frozen pelvis, genital tuberculosis and hypoplastic uterus. The mean age in the study was 26 years. Aziz N [3] in study done on fifty infertile women, the most common cause found out was tubal blockage in 7 (21.9%) of primary infertility. Jayakrishnan et al [4] from India detected pelvic pathology in 26.8% cases of infertile patients by laparoscopic evaluation.

The present study shows abnormal pelvic findings in 70% cases of primary infertility. The mean age of women found out to be 27.5 years. This finding is similar to that of Dhananjay Shobha [5] who studied the same in 100 patients. Found that 50 % had duration of infertility between 4 to 6 years and the mean duration was 4.62 \pm 1.58 years. In our study, Primary infertility was noted in 79% of the women and the mean age of primary infertility women was 28.5 years. Whether operative laparoscopy improves pregnancy outcomes in a subject with unexplained or minimal/mild endometriosis is of debate, In the intervention group 29 out of 169 got pregnant by diagnostic laparoscopy in case of unexplained infertility [6] According to Boivin J [7] in 17 studies sampling 6410 women, the proportion of couples seeking medical care was, on average, 56.1% (range 42–76.3%)

in more developed countries and 51.2% (range 27–74.1%) in less developed countries. The proportion of people actually receiving care was substantially less, 22.4%. Based on these estimates and on the current world population, 72.4 million women are currently infertile; of these, 40.5 million are currently seeking infertility medical care. Nayak PK [8] studied 300 infertile patients in which, 69% women had primary infertility and the laproscopic abnormalities were more common in primary infertility group i.e. 35%. In our study, maximum number of patients (46.67%) presented with less than 6 years of infertility, this was consistent with the finding of Shetty SK [9] wherein 1-5 years of infertility duration, there were 64% of the women whereas 34% of the women had infertility of duration 6-10 years.

The most common age group was between 21-35 years with 88%. The tubal pathology was detected in 64.7% cases of primary infertility. In our study, the most common cause of infertility i.e. 43% was tubal blockage with adhesions, without adhesions and with cystic ovaries. Bilateral block is more found out by laparoscopy and HSG combined which is 40% whereas by laparoscopy alone, it is 32. Study done by Samal S [10] found that 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. The gold standard technique for diagnosing these disorders is laparoscopy. This can be used for couples with unexplained infertility.

Conclusion

The most common abnormality detected in primary infertility patients is tubal blockage with or without adhesions. Laparoscopy along with HSG is very effective method in evaluating cases of primary infertility especially tubal blockage. HSG and Laparoscopy should be considered as complimentary procedures rather than competitive procedure.

When both of these diagnostic modalities are combined, gives the best result, in cases if anyone shows doubtful result. In the days of modern gynecology, where alternative modalities like salpingoscopy, falloscopy and hysteroscopy are available for assessment of tubal patency, but laparoscopy is still the gold standard for diagnosis of infertility causes. peritubal and peri fimbrial adhesions are factors responsible for defective ovum pick up and transport.

Further studies are needed to investigate the etiologies of these abnormalities at the earliest as this could be a measure to bring down the occurrence of such conditions. Infertility affects approximately 10% of the population, one third to male, one third to female infertility and 10% are combined factors. In about 20% cases on fertility cause is unexplained. It becomes very essential to find out the main cause of infertility as long term infertility becomes tedious to treat.

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