Diagnostic Laparoscopy in Evaluation of Female Subfertility Factors: Experience in Rural Medical College

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ABSTRACT

Introduction: Infertility is defined as 'the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse' by WHO. The WHO estimates the overall prevalence of primary infertility in India to be between 3.9% and 16.8%. The study was done to assess the role of diagnostic laparoscopy in infertile patients in a rural tertiary care hospital, in southern India.

Materail and method: This is a retrospective study conducted in tertiary care hospital for a period of one year. All patients with complaints of infertility (primary and secondary) who were admitted and evaluated for infertility in OBG department of MVJ medical college, Hoskote for a period of one year were included in the study.60 patients underwent diagnostic laparoscopy .The prevalence of abnormalities were note.

Results: Sixty patients underwent diagnostic laparoscopy with chromopertubation for infertility during period of one year. Among 60 patients, 45 (76.66%) patients had primary infertility and 15(23.34%) patients had secondary infertility. The patient's age distribution was between 18 – 38 yrs. Maximum number of patients were between 20- 30 years. Among 60 patients , 26 (43.33%) patients had abnormal laparoscopic findings.Multiple abnormalities were found in most of the patients .18(30%) patients had PID and its squeal of peritubal adhesions , 11(18.3%) patients had PCOD , 4(6.66%) patients had endometriosis, 1(2.77%)patient had hypoplastic uterus, 7(11.66%) patients had uterine fibroids, 10(16.66%0 patients had tubal block on chromopertubation .

Conclusion: Diagnostic laparoscopy provides an unobstructed magnified view of the pelvic reproductive organs. Ovarian, tubal and peritoneal surface pathology can be easily identified which are missed on routine infertility work up Hence diagnostic laparoscopy is an essential investigation in the evaluation of female infertility and also helps in decision making, patient selection for IUI , IVF or natural conception and in treating infertile couples.

Keywords: Infertility, Laparoscopy, Female Subfertility, Chromopertubation, HSG

INTRODUCTION

Infertility is defined as 'the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse' by International Committee for Monitoring Assisted Reproductive Technology and the WHO , among population under the age of 60.[1] Globally, most infertile couples suffer from primary infertility. The WHO estimates the overall prevalence of primary infertility in India to be between 3.9% and 16.8%.[2] The main causes of infertility include male factor(20%), disorders of ovulation (30-40%), tubal and peritoneal factors(30-40%), cervical factors (5%), uterine factor(15%), unexplained infertility(10%).[3] The importance of diagnostic laparoscopy in female subfertility lies in patients with tubal , peritoneal factors and uterine factors which may be missed on routine clinical examination and imaging modalities . Laparoscopy can identify milder degress of distal tubal occlusive disease, pelvic and adnexal adhesions, endometriosis that may adversely affect fertility.[3] Diagnostic laparoscopy also provides the clinician an opportunity for therapeutic procedure at the time of diagnosis .The study was done to assess the role of diagnostic laparoscopy in infertile patients in a rural tertiary care hospital, in southern India.

MATERIAL AND METHODS

This was a retrospective study conducted in tertiary care hospital for a period of one year. All patients with complaints of infertility (primary and secondary) who were admitted and evaluated for infertility in OBG department of MVJ medical college, Hoskote for a period of one year were included in the study. Patients with absolute or relative contraindications for laparoscopy and patients not willing to undergo diagnostic laparoscopy were excluded from the study .Patients with husband semen analysis showing presence of azoospermia or severe oligospermia were also excluded from the study. Informed written consent was obtained.Most of diagnostic laparoscopy were carried out as day care procedure. Diagnostic Laparoscopy was performed in the preovulatory period between day 6 and 11 of the cycle under general anesthesia. Laparoscopy was performed after creating pneumoperitoneum , the pelvic organs were examined for any abnormality. Uterus was examined for size, shape , position, surface, features suggestive of endomeriosis, adenomyosis, fibroids were looked for. Fallopian tube, ovaries, pelvic peritoneum, pouch of Douglas, and peritoneal cavity were examined for any abnormality suggestive of infertility .Tubal patency was tested by chromopertubation. Methylene

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How to cite this article: Sowmya Shree Thimmappa, Sujatha N Datti. Diagnostic laparoscopy in evaluation of female subfertility factors: experience in rural medical college. International Journal of Contemporary Medical Research 2020;7(3):C1-C4.

DOI: http://dx.doi.org/10.21276/ijcmr.2020.7.3.2

blue dye was injected with a 20 ml syringe through Leech Wilkinson cannula. Spillage of the dye from the fimbrial end of bilateral fallopian tubes visualized. Any abnormality detected amenable to surgical correction was treated in the same setting. Following the procedure patient was shifted to post operative ward and discharged on the following day. Statistical analysis was performed using SPSS, software version 16. The continuous variables were expressed as mean ± SD and categorical variables as proportions.

RESULTS

Sixty patients underwent diagnostic laparoscopy for infertility during period of one year. Among 60 patients, 45 (76.66%) patients had primary infertility and 15(23.34%) patients had secondary infertility (table-1). The patient's age distribution was between 18 – 38 yrs. Maximum number of patients were in between 20- 30 yrs (table-2). While 10(18.33%) were above the age of 30 years, 10(18.33%) were below 20 years. Maximum number of patients presented after 5 years of failure to conceive and 18(30.6%) had duration of infertility of 2-5 years , while 8(12.3%) patients had failure of conception of less than 2 years (table-3). Among 60 patients, 26 (43.33%) patients had abnormal laparoscopic findings (table-4). Multiple abnormalities were found in most of the patients . 18(30%) patients had PID and its squeal of peritubal adhesions , 11(18.3%) patients had PCOD , 4(6.66%) patients had endometriosis, 1(2.77%)patient had hypoplastic uterus, 7(11.66%) patients had uterine fibroids, 10(16.66%) patients had tubal block on chrompertubation , among them 5(50%) patients had unilateral tubal block and the other half had bilateral tubal block (table-5). 6(10%) of the patients with tubal block had primary infertility and 4(6.66%) patients had secondary infertility (table-6). None of the patients had major complications. Only 1 patient had postoperative paralytic ileus and 2 patients had wound infection (table-7, 8).

Variables	No of patients :N(%)
Primary infertility	45(76.66)
Secondary infertility	15(23.34)

Table-1: Type of infertility

Age of patients (years)	No of patients : N(%)
< 20 years	10(18.33)
20- 30 years	40(66.66)
> 30 years	10(18.33)

Table-2: Age distribution of patients

Duration (years)	No of patients :N(%)
< 2	8(12.3)
2-5	18(30.6)
>5	34(57.1)

Table-3: Duration of infertility :

Procedure	Laproscopy	
	Normal (%)	Abnormal(%)
No of patients:N (%)	34(56.66)	26(43.33)

Table-4: Patients with laproscopic abnormalities

Causative factors	No of patients :N(%)
PID (peritubal adhesions)	18(30)
PCOD	11(18.3)
Tubal block	10(16.66)
Endometriosis	4(6.66)
Hypoplastic uterus	1(2.77)
Uterine fibroids	7(11.6)

Table-5: Causative factor for infertility

Tubal block	Primary infertility: N (%)	Secondary infertility:N (%)
Unilateral block	4(6.66)	1(1.66)
Bilateral block	2(3.33)	3(5)
Total	6(10)	4(6.6)

Table-6: Prevalence of tubal block on chromopertubation

Tubal block	Primary infertility (%)	Secondary infertility (%)
Unilateral block	7(11.6)	3(5)
Bilateral block	3(5)	4(6.6)
Total	10(16.6)	7(11.6)

Table-7: Prevalence of tubal block on HSG:

Complication	No of patients:N(%)
Postoperative paralytic illeus	1(0.6)
Wound infection	2(1.2)

Table-8: Complications of laparoscopy:

DISCUSSION

In our study sixty patients had diagnostic laparoscopy for infertility evaluation . Out of these 45(76.66%) had primary infertility and 15(23.34%) had secondary infertility (table-1). In our study pathology was found in 26(43.33%) patients on diagnostic laparoscopy. Maximum number of our patients had presented after prolonged period of infertility of more than 5 years which is mostly due the lack of awareness about reproductive health and the treatment options available in the rural population.

Laparoscopy is the gold standard for diagnosis of tubal and peritoneal factors. Tubal and peritoneal pathology are the most common primary diagnosis in 30-35% of infertile couples.[4] In our study patients with sequale of PID and endometriosis were not diagnosed on basic infertility evaluation by HSG and ultrasonography. Peritubal Adhesions was found in 18(30%) of patients in our study. The incidence of PID in our study was comparable to the incidence found in other studies. In study conducted by Chakraborti et al, PID was found in 39% of patients.[5] Peritubal adhesions were the common abnormality detected in two other studies.[6,7] Classic studies in women with PID diagnosed by laparoscopy have revealed that the risk of subsequent tubal infertility increases with number and severity of pelvic infections .Over all the risk is approximately 10-12% after one episode, 23-35% after two episodes and 54-75% after three episodes of acute PID.[8,9,10]

Most of the patients presenting with PID in our study had longer duration of infertility of more than 5 years. Only 34% of our patients diagnosed with PID on laparoscopy gave past history suggestive of recurrent acute PID .Evidence strongly suggests that silent ascending infection is the most likely cause in those having tubal disease or pelvic adhesions and no know prior history of infection.[11,12] Diagnostic laparoscopy in these patients helped in diagnosis of the causative factor for infertility that were otherwise diagnosed as unexplained infertility and helped in better management of these patients. Prevalence of endometriosis is 6.66% in this study . Endometriosis occurs in 7-10% of women in general population, with a prevalence of 38%(20-50%)in infertile women.[13] In study conducted by Sharma et al endometriosis was found in 6.6% of patients.[14] In study by Chakraborthy et al endometriosis was found in 4.6% of the patients.[5] Laproscopy remains the investigation of choice in diagnosis of endometriosis. Direct visualisation confirmed by histological examination especially of lesions with non classical appearance, remains the standard for diagnosing endometriosis.[15] In our study all 4 patients with endometriosis were diagnosed by diagnostic laparoscopy and guided in further management of these patients effectively.

In this study PCOD was found in 16(26.66%) of patients. Polycystic ovaries are commonly detected by ultrasound or other forms of pelvic imaging, with estimates of the prevalence in the general population being in the order of 16-33%.[16]

Tubal block was noted in 17(28.3%) patients on hysterosalphingography but only in 10(16%) patients on chromopertubation. Tubal block seen on HSG will be confirmed by laparoscopy in only 38% of the women[17] When HSG suggests that the tubes are patent, this will be confirmed at laparoscopy in 94% of the women and thus, HSG is a reliable indicator of tubal patency.[18] Performing laproscopic chromopertubation in patients with abnormal HSG showing either unilateral or bilateral block help in identifying patients who have patent fallopian tubes .in such patients the option of IUI can be considered .

One patient with secondary infertility diagnosed with uterine synechie had past history of genital tuberculosis . Patient with hypoplastic uterus had primary infertility .

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

CONCLUSION

Laparoscopy provides both panoramic view of the pelvic reproductive anatomy and a magnified view of the uterine, ovarian, tubal and peritoneal surfaces.[3] Laparoscopy is a gold standard method to test tubal patency . HSG has only moderate sensitivity but relatively high specificity in a typical infertile population.[19] The clinical implications are that when HSG reveals obstruction there is still a relatively high probability (approximately 60%) that the tube is in fact open, but when HSG demonstrate spatency there is little chance of the tube actually occluded (approximately 5%).[20] In addition laparoscopy also provides opportunity to treat the disease at the time of diagnosis. .In our study diagnostic laparoscopy led to diagnosis of causative factors in women otherwise considered as unexplained infertility on routine infertility workup. Diagnostic laparoscopy also identified patients with false positive tubal block on hysterosalphingography. Hence laparoscopy is an essential investigation in the evaluation of female infertility and also helps in decision making, patient selection for IUI , IVF or natural conception and in treating infertile couples.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 22-01-2020; **Accepted:** 15-02-2020; **Published:** 12-03-2020