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Hysterolaparoscopy in the evaluation and management of female infertility

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Abstract
Introduction: Infertility is defined by WHO as a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. The objective of this study is to evaluate the role of hysterolaparoscopy in the evaluation and management of female infertility.
Materials and Methods: A retroscpective study of the case files of patients who underwent hysterolaproscopy for evaluation of infertility between June 2017 and May 2018 were studied. The details of the patients and findings of the hysterolaproscopy were collected in a performa.
Results: 33.33% belonged to 26 – 30 years age group and 50% of the participants were married for more than 5 years. The most common laproscopic abnormality detected was tubal block and pelvic pathology. Abnormalities noted in hysteroscopy was myoma/polyp.
Conclusion: Diagnostic hysterolaproscopy is an effective diagnostic and therapeutic modality in infertility evaluation.

Keywords: infertility, hysteroscopy, laproscopy

Introduction

Infertility is defined by WHO as "a disease of the reproductive system defined by failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse". Infertility is considered to generate disability and among population under the age of 60, infertility among women was ranked the 5th highest serious global disability [1].

The prevalence of infertility in women of reproductive age group is estimated to be one in every seven couple in western world and one in four couples in the developing countries [2]. Thus it is estimated that infertility affects between 8-12% of reproductive aged couples worldwide [3].

In India, according to World Health Organisation estimates, the overall prevalence of primary infertility in India, is between 3.9% to 16.8% and it varies from state to state [4]. Of the causes of infertility, the female factor contributes in the majority of cases (40-55%), followed by the male factor (30-40%), both partners 10%, and unexplained (10%) in the remainder [5].

Although infertility is a relatively common problem nowadays, medical science has improved a lot and thus has increased the chances of the infertile couple conceiving. For proceeding with a good treatment plan, an accurate diagnosis is the first step. Routine clinical examination and basic laboratory investigations, at times, is not enough to make a diagnosis as some pelvic pathologies may go unidentified or somethimes the exact nature of pathology may be unclear.

The ability to visualise with a laproscope, the pelvic cavity, identify tubal factors, tubal morphology, patency, ovarian size, morphology, its relationship to the tubes, uterine size, shape and pathology makes its use invaluable. Similarly, using a hysteroscope to visualise the uterine cavity and identify hitherto missed cavity abnormalities has made hysteroscopy an essential part of infertility evaluation. The additional advantage of correcting a few of the identified abnormalities by operative hysterolaparoscopic procedures makes this procedure an essential step in the comprehensive work up of female infertility [6].

The present study was undertaken to understand the role of hysterolaproscopy in accurately identifying pelvic pathology in the evaluation of female infertility and to note the various patterns of pathologies that are implicated in the infertility.

Materials and Methods

This study was conducted in the Department of Obstetrics and Gynecology in a tertiary care teaching hospital in Karnataka from the records available between June 2017 to May 2018. Women between the age of 19 to 40 years with a normal ovulatory cycle and normal hormone levels as evidenced by laboratory investigations and undergoing diagnostic hysterolaproscopy for primary or secondary infertility were included for the study after obtaining a written informed consent. Couples with male infertility or abnormal hormonal profile were excluded. Thus, only 30 cases satisfying the inclusion and exclusion criteria were included for the study.

Age of the couple, duration and type of infertility, base line hormonal profile and records of male evaluation were noted in a performa. The following parameters such as tubal occlusion, peritubal, periadnexal and dense pelvic adhesions, endometriosis during laparoscopy and abnormality of cervical canal, uterine cavity, bilateral tubal ostium and endometrium during hysteroscopy were also noted.

Hysterolaparoscopy was performed under general anaesthesia in the early follicular phase of menstrual cycle. All cases of infertility underwent a tubal patency test under laparoscopic

vision by introducing 10-15 ml of 0.5% autoclaved methylene blue dye into the uterus using a Rubin's canula and spillage from fimbrial ends was noted. Wherever required, interventions were performed in the same sitting.

The data was entered in Microsoft Office Excel 2007 and IBM SPSS version 21 was used for analysis. Categorical variables were expressed as proportions.

Results

Majority of the patients (33.33%) belonged to 26 – 30 years age group followed by 30% in the age group of 36 – 40 years. Most of them (50%) were married for less than 5 years (Table 1).

Laproscopic findings were normal in 33.33% of the study subjects. 50% of the patients had adhesions and 40% of them showed a tubal block. Unliateral tubal blocks (26.66%) were more common than bilateral blocks (13.33%). Pelvic inflammatory diseases accounted for 36.6% and ovarian pathologies accounted for 33.3 %. Fibroid uterus was the least seen problem accounting for 10% (Table 2).

Hysteroscopy was normal in 76.6% of the infertile women. 13.3 % showed a myoma /polyp and 10% had synechiae (Table 3).

Table 1: General Characteristics of the Study Population

S. No.	General characteristics	No. of cases No. (%)
Age distribution		
1	19 – 25 years	6 (20%)
2	26 – 30 years	10 (33.33%)
3	31 – 35 years	5 (16.66%)
4	36 – 40 years	9 (30%)
Married life		
1	< 5 years	15 (50%)
2	5 – 10 years	8 (26.66%)
3	> 10 years	7 (23.33%)

Table 2: Laproscopy Findings in the Study Population

S. no.	Laproscopy findings	No. Of cases No. (%)
1	Normal study	10 (33.33%)
2	Tubal block	12 (40%)
	Unilateral	8 (26.66%)
	Bilateral	4 (13.33%)
3	Polycystic ovaries	4 (13.33%)
4	Pelvic inflammatory disease	11 (36.66%)
5	Adhesions	15 (50%)
6	Fibroid uterus	3 (10%)
7	Endometriosis	5 (16.66%)
8	Other ovarian pathologies	10 (33.33%)

Table 3: Hysteroscopy Findings in the Study Population

S. No.	Hysteroscopy findings	No. of cases No. (%)
1	Normal study	23 (76.66%)
2	Myoma / polyp	4 (13.33%)
3	Synechiae	3 (10%)

Discussion

In the present study, 66.66% of them had an abnormal laproscopic finding and 23.34% had an abnormal hysteroscopic picture. Hysteroscopy is a safe diagnostic and a therapeutic modality. The complications following a hysteroscopic procedure has nowadays reduced considerably because of better training, skills and anaesthetic procedures. The complications following a hysteroscopy when combined with a laproscopy is only 2.35%[7]. Even in the present study, except for minimal bleeding and mild discomfort following the procedure, no other major complications were noted.

The most commonest hysteroscopic finding was an endometrial polyp which accounted for 13.33%. The mechanism by which polyps cause infertility is not clearly understood but it is thought that mechanical interference with sperm transport, implantation of the embroyo, intrauterine inflammation or altererd endometrial receptivity factors have some role to play [8]. Study conducted by Madhuri *et al*. in Karnataka, India showed that the incidence of endometrial polyp was 10% in their study which was closer to the present study. The incidence of asymptomatic endometrial polyps varied between 10% and 30% in various studies [9, 10].

Laproscopy helps the direct visualisation of the pathology of fallopian tubes and dye instillation through the cervix ensures visualisation of tubal patency. Pelvic adhesions (50%) and tubal block (40%) were the most common abnormalities seen during the laproscopy. These can result following a previous pelvic infection, endometriosis or previous surgeries. Tubal and peritoneal pathologies account for almost 30-35% in infertile couples [11]]. This can be attributed to high prevalence of pelvic tuberculosis [12]. Laproscopy is thus a gold standard technique for evaluation of infertility and is also a predictor in spontaneous preganancy in a previously infertile couple [13].

The present study showed that bilateral tubal patency was 60% which is lower than the observation done by Ramalingappa C [14] which showed the incidence to be 86.67%. Unilateral blocks (26.66%) were more common than bilateral blocks (13.33%). Pelvic pathologies accounted for more than 50% in our study which is similar to other studies [15, 16]. Thus, diagnostic laparoscopy is the standard means of diagnosing the tubal pathology, peritoneal factors, ovarian factors and uterine factors as cause of infertility.

Conclusion

A combined hystero laproscopy helps in diagnosing pelvic pathologies which is otherwise missed during a routine pelvic examination and basic laboratory investigation. It gives an extra advantage of conducting a therapeutic procedure in the same sitting. Thus it can be concluded that combined hysterolaproscopy is one of the safe, effective and reliable method in comprehensive evaluation of infertility.

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