



ROLE OF HYSTERO-LAPAROSCOPY IN EVALUATION OF FEMALE INFERTILITY: A RETROSPECTIVE STUDY OVER FOUR YEARS

Gynaecology

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ABSTRACT

Objective: The main objective of this study was to assess the role of diagnostic hystero-laparoscopy in the evaluation of infertility in a tertiary care centre.

Material and Method: This retrospective study was conducted at Gynae-Endoscopy unit of a Multispecialty hospital in New Delhi over a period of four years from January 2014 to December 2017. Women aged 20-40 years with normal hormone profile without male factor infertility were included in the study.

Results: Out of 317 cases, 225 patients had primary infertility and 92 cases had secondary infertility. The most common laparoscopic abnormality detected in all infertile women was endometriosis (31.5%) followed by adnexal adhesion (17%) and tubal pathology (14.5%). Hysteroscopy found intrauterine septum (16.4%) as the most common abnormality followed by synechiae (15.4%) and endometrial polyp (7.2%).

Conclusion: Hystero-laparoscopy is an effective diagnostic tool for evaluation of certain significant and correctable tubo-peritoneal and intrauterine pathologies like peritoneal endometriosis, adnexal adhesions, tubal pathologies and subseptate uterus, which are usually missed by other imaging modalities.

KEYWORDS

Hysteroscopy, laparoscopy, infertility

Introduction

Infertility, according to WHO, is defined as a lack of conception after 12 months or more of regular unprotected intercourse. Infertility affects about 10-15% of reproductive age couples.¹ Female factors contribute 40-45% in aetiology of infertility. Experience has shown that majority of pelvic pathology in infertile women is frequently not well appreciated by routine pelvic examinations and the usual diagnostic procedures. The ability to see and manipulate the uterus, fallopian tubes and ovaries during laparoscopy has made it an essential part of infertility evaluation. Similarly, visualising the uterine cavity and identifying the possible pathology has made hysteroscopy an equally important tool in infertility evaluation. The question of tubal morphology and patency, ovarian morphology, any unsuspected pelvic pathology, and uterine cavity abnormalities can all be resolved with accuracy at one session by using a combined hystero-laparoscopy. Additionally, hysteroscopic guided biopsy and therapeutic procedures like polypectomy, myomectomy, septal resection, and adhesiolysis can be done in the same sitting. Currently, the gold standard of diagnosis and treatment of infertility is laparoscopy and hysteroscopy. This study was undertaken to evaluate the role of diagnostic hystero-laparoscopy in the comprehensive work up of infertility, which would help in planning appropriate management.

Material and Methods

This retrospective study was conducted at Gynae-Endoscopy unit of a Multispecialty hospital in New Delhi over a period of four years from January 2014 to December 2017. In this retrospective analysis cases of infertility that underwent both Laparoscopy and Hysteroscopy were studied and data was collected from available records. Infertile women with age group 20-45 years with either primary or secondary infertility with normal hormone profile and without male factor infertility were selected. After detailed clinical evaluation, all patients were informed regarding the procedure and written informed consent was taken. Diagnostic Hystero-laparoscopy along with chromoperturbation was carried out in infertile patients in early follicular phase. Various fertility enhancing surgeries were simultaneously performed as indicated. First diagnostic hysteroscopy was performed in all patients. Corrective procedure if required was done. This was followed by diagnostic laparoscopy and simultaneous operative procedure was done wherever required. The instruments for Hystero-laparoscopy were of KARL STORZ, Germany.

Statistical analysis

Results of the study were based on descriptive statistics like percentages. Microsoft office 2007 was used for making tables and statistical analysis.

Results

Of the 317 infertile cases included in our study, 225 women had primary infertility and rest 92 had secondary infertility. The majority of

cases belonged to the age group of 20-30 years in both the groups, 72.5% in primary infertility group and 60% in secondary infertility group (Table 1).

Table 1: Distribution of infertile cases according to age

Age (years)	Primary Infertility (225)	Secondary infertility (92)	Total (317)
20-30	163 (72.5%)	55 (60%)	218 (68.8%)
31-45	62 (27.5%)	37 (40%)	99 (31.2%)

As shown in table 2, 15% of primary infertility and 36% of secondary infertility cases did not have any abnormality detected on laparoscopy. Endometriosis was found to be the most common abnormality found among all infertile cases (31.5%). Next common pathologies detected were peritoneal adhesions (17%) and tubal pathology (14.5%). Tubal pathology was more common in primary infertility (16%) and peritoneal adhesions were more seen in secondary infertility (20.6%), table 2.

Table 2: Laparoscopic findings

Findings	Primary infertility (225)	Secondary infertility (92)	Total (317)
Normal	34 (15%)	33 (36%)	67 (21%)
Endometriosis	80 (35.5%)	20 (21.7%)	100 (31.5%)
Tubal Pathology	36 (16%)	10 (10.8%)	46 (14.5%)
Myoma	30 (13.3%)	5 (5.4%)	35 (11%)
PCOS	25 (11.1%)	9 (9.8%)	34 (10.7%)
Adhesions	35 (15.5%)	19 (20.6%)	54 (17%)
Anomalous uterus	5 (2.2%)	3 (3.3%)	8 (2.5%)
Adenomyosis	7 (3%)	1 (1%)	8 (2.5%)

As depicted in table 3, 61% of primary infertility and 44.5% of secondary infertility cases had normal study on hysteroscopy. The most common intrauterine pathology was uterine septum (17.3%). This was followed by synechiae seen in 15.4% cases

Table 3: Hysteroscopic Findings

Findings	Primary infertility (225)	Secondary infertility (92)	Total (317)
Normal	138 (61.3%)	41 (44.5%)	179 (56.4%)
Septum	35 (15.5%)	20 (21.7%)	55 (17.3%)
Polyp	18 (8%)	5 (5.4%)	23 (7.27%)
Myoma	3 (1.3%)	0	3 (0.9%)
Synechiae	24 (10.7%)	25 (27.2%)	49 (15.4%)
Foreign body	0	1 (1%)	1 (0.3%)
Osteal fibrosis	4 (1.8%)	2 (2.2%)	6 (1.9%)

Table 4 shows the prevalence of unilateral and bilateral tubal block in both the group of cases in our study.

Table 4: Prevalance of tubal block (Chromopertubation Test)

Findings	Primary infertility(225)	Secondary infertility(92)	Total(317)
Unilateral	15(6.6%)	6(6.5%)	21(6.6%)
Bilateral	22(9.8%)	5(5.4%)	27(8.5%)

Discussion

Hystero-laparoscopy is minimally invasive techniques reaching new horizons in management of infertile patients. Direct visualization with optical magnification has an added advantage of diagnosing pathologies which cannot be picked up in ultrasound and other radiological tests.

Laparoscopic findings were normal in 21% cases and abnormal in 79% cases in our study. Tsuji *et al* study reported normal findings in 22% of cases and abnormal in 78% of cases²

In our study, 71% of women had primary infertility and 29% of women had secondary infertility. Similar results were seen in Nayak *et al.*'s study, 69% had primary infertility and 31% had secondary infertility.³ Another study by Shetty SK showed 68% cases had primary infertility and 32% cases had secondary infertility.⁴

In our study 68.8% women were in the age group of 20-30 years while 31.2% infertile women were more than 30 years of age. Samipa J Shah *et al* in their study found that 63% patients were among 20-30 years of age group with mean age of 26.5 years.⁵ Other studies also revealed similar findings.^{6,7}

In our study the most common abnormality detected on laparoscopy was endometriosis found in 31.5% of cases. This was followed by peritoneal adhesions found in 17% and tubal pathology found in 14.5%. Peritoneal adhesions can occur due to previous pelvic infection, surgery or endometriosis. Endometriosis and peritoneal adhesions distort the tubo-ovarian relationship and prevent the ovum pickup even though the tubes are normal. Laparoscopy is the gold standard for diagnosis of these disorders and has an advantage of performing corrective surgery in the same sitting.

Endometriosis, peritoneal adhesions and tubal pathology account for the primary diagnosis in majority of infertile couples in our study. Similar results were found in previous studies.

Poncelet *et al.* found, in a similar study, that laparoscopy revealed pelvic pathology in 95 out of 114 patients. Of those, 72 had endometriosis, 46 pelvic adhesions, and 24 tubal diseases.⁸

In a retrospective study, Capelo *et al.* performed diagnostic laparoscopy in 92 patients after four failed cycles of ovulation induction treatment with clomiphene citrate. Laparoscopic findings were strictly normal in only 36% of cases, whereas endometriosis and/or pelvic adhesions were observed in 50% and 33%, respectively.⁹ Several other studies also reported endometriosis, adnexal adhesion and tubal disease as the major pathologies among infertile patients similar to our study.^{2,3,10,11,12,13}

Evaluation of uterine cavity is one of the most important steps in the work up of infertile couple. Hysteroscopy is nowadays considered as the most definite technique for evaluation of uterine cavity in infertile women since it aids not only in diagnosing the pathology but also its simultaneous management.¹⁴

The most common intrauterine pathology found in our study was uterine septum (17.3%) which was undiagnosed by prior ultrasound. Previous studies also showed intrauterine septum as the most common intrauterine pathology detected in infertile women.^{3,15,16} Among all congenital uterine abnormalities, septate uterus is the most common cause associated with highest reproductive failure rates.^{17,18} Although a diagnosis of septate uterus *per se* is not an indication for septoplasty, the reproductive performance of women with an uncorrected septum is rather poor with most losses occurring in the first trimester. Pregnancy outcomes dramatically improve after surgical correction.¹⁷ Previously, surgical correction of septate uterus was requiring an abdominal metroplasty, which was associated with increased morbidity and future pregnancy complications due to scarred uterus. Currently, the modern

operative hysteroscopic techniques have made it a relatively easy and brief day care procedure with low morbidity and prompt recovery. Therefore, septal resection is recommended more liberally nowadays. Intrauterine synechiae was the second most common cause of infertility found in our study seen in 15.4% of infertile females with higher incidence in secondary infertile cases. The reason for higher incidence of synechiae formation in secondary infertility may be because this group had previous history of interventions like dilatation and curettage.¹⁹ A study by Sandeep S *et al* also reported uterine synechiae as the most common finding detected in secondary infertility.¹⁵ Various other studies showed incidence of intrauterine synechiae ranging from 3-10%.^{20,21,22}

The third most common pathology found in infertile women in our study was endometrial polyp (7.2%). The incidence of asymptomatic endometrial polyps in women with infertility has been reported to range from 10% to 32%.^{23,24} Shokeir TA *et al* did a study to determine incidence of endometrial polyps on hysteroscopy in an infertile eumenorrheic population. Out of 244 women who underwent hysteroscopy, endometrial polyp was found in 36 (13.53%) patients. Also it was found that 50% pregnancy rate was achieved by Hysteroscopic polypectomy. Similar observation were made in other studies also.⁵ Hence it was concluded that Diagnostic hysteroscopy should be used routinely in the work-up of infertile woman and persistent functional endometrial polyps, even if small, are likely to impair fertility so removal of such lesions should be done to improve subsequent reproductive performance.

Conclusion

Diagnostic hystero-laparoscopy is a very safe and effective tool for the evaluation of infertility particularly for detection of conditions like endometriosis, tubal adhesions, and intrauterine septum. These abnormalities can be corrected but are unfortunately missed during routine pelvic examination and usual imaging procedures. Hystero-laparoscopy if done with proper selection of cases and in experience hands can be considered as the most effective tool for evaluation of infertility. This helps in formulating specific management plan.

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