

Role of diagnostic hystero-laparoscopy in the evaluation of infertility: A retrospective study of 300 patients

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ABSTRACT

OBJECTIVE: To determine the role of diagnostic hysterolaparoscopy in the evaluation of infertility in tertiary care centres. **MATERIALS AND METHODS:** This retrospective study was conducted at two tertiary care centres (the infertility clinics of Sriram Chandra Bhanj Medical College and Prachi hospital at Cuttack, Odisha) throughout the year in 2008. Women aged 20-40 years with normal hormone profile without male factor infertility were included. **RESULTS:** Out of 300 cases, 206 (69%) patients had primary infertility. While laparoscopy detected abnormalities in 34% of the cases, significant hysteroscopy findings were noted in 18% of cases. Together, diagnostic hysterolaparoscopy detected abnormalities in 26% of the infertile patients in both groups. While the most common laparoscopic abnormality was endometriosis (14%) and adnexal adhesion (12%) in primary and secondary infertile patients, respectively, hysteroscopy found intrauterine septum as the most common abnormality in both groups. **CONCLUSIONS:** Hysterolaparoscopy is an effective diagnostic tool for evaluation of certain significant and correctable tubo-peritoneal and intrauterine pathologies like peritoneal endometriosis, adnexal adhesions, and subseptate uterus, which are usually missed by other imaging modalities.

KEY WORDS: Hysteroscopy, infertility, laparoscopy

INTRODUCTION

Infertility affects about 10-15% of reproductive age couples.^[1] The diagnosis and treatment of this disorder stands out as one of the most rapidly evolving area in medicine. 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. Additionally, hysteroscopic guided biopsy and therapeutic procedures like polypectomy, myomectomy, septal resection,

and adhesiolysis can be done in the same sitting.

This study was undertaken to evaluate the role of diagnostic hystero-laparoscopy (DHL) in the comprehensive work up of infertility, which would help in planning appropriate management.

MATERIALS AND METHODS

This retrospective study was conducted at two tertiary care centres (the infertility clinics of Sriram Chandra Bhanj Medical College and Prachi hospital at Cuttack, Odisha) from January to December in 2008. Patients between 20 and 40 years of age with either primary or secondary infertility of more than 1 year duration were included in the study. Primary infertility patients were those who had never conceived before, while secondary infertile patients had at least one prior conception, irrespective of the outcome. Hormonal abnormalities known to cause

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anovulation like thyroid dysfunction, hyperprolactinemia, and polycystic ovarian syndrome were excluded. Couples with abnormal semen analysis were also not included in this study.^[2] DHL with chromopertubation test was performed in early follicular phase in all the patients. The instruments used were those of KARL STORZ, Tuttlingen, Germany.

Statistical analysis was done using SPSS software version 16. The continuous variables were expressed as mean \pm SD and categorical variables as proportions. The Student's *t*-test was used for comparison of continuous variables and Chi-square test for proportions.

RESULTS

Out of 300 patients, 206 (69%) women had primary infertility and the rest (31%) had secondary infertility. The patients in secondary infertility group were slightly elder compared to primary group (28.8 ± 3.7 vs. 31.1 ± 4.5 years, $P < 0.0001$). But there was no difference in duration of infertility in two groups (4.8 ± 3.2 vs. 4.5 ± 2.9 years).

In primary infertility group, laparoscopic abnormalities were more common [Table 1] than hysteroscopy (35% vs. 17%, $P < 0.0001$). Endometriosis and adnexal adhesions were the most common abnormalities detected in laparoscopy in primary and secondary infertility groups respectively [Table 2]. The most common intrauterine pathology in both the groups was uterine septum [Table 3]. The septate uterus had large fibrous midline septum in its cavity. The septum was extending upto the internal os of the cervix or beyond in complete septum. Out of 29 patients having septate uterus, only one had complete septum in primary infertility group. Multiple abnormalities were also detected; laparoscopically in 17 patients and hysteroscopically in 6 patients. The prevalence of unilateral and bilateral tubal block was equal in both the groups [Table 4]. Other than mild abdominal pain, there was no major surgical or anesthetic complication in any of our patients.

DISCUSSION

Tubal and peritoneal pathology account for the primary diagnosis in approximately 30 to 35% of infertile couples.^[3] The gold standard technique for diagnosing these disorders is laparoscopy, which is a better predictor of future spontaneous pregnancy in infertile couples with unexplained infertility.^[4] Jayakrishnan *et al.*,^[5] from India detected pelvic pathology in 26.8% cases of infertile patients by laparoscopic evaluation. We got similar result (pelvic pathology: 30%) in our study. In addition, endometriosis and adnexal adhesions were the two major abnormalities found among infertile patients in different studies similar to our findings.^[6,7] In contrast to the Study by Godinjak *et al.*,^[6] we got equal prevalence of tubal block in both groups of infertility patients.

Table 1: Prevalence of hysteroscopy and laparoscopy abnormalities

Procedures	Primary (206)		Secondary (94)	
	Normal (%)	Abnormal (%)	Normal (%)	Abnormal (%)
Laparoscopy	133 (65)	73 (35)	66 (70)	28 (30)
Hysteroscopy	171 (83)	35 (17)	73 (78)	21 (22)
Total	304 (74)	108 (26)	139 (74)	49 (26)

Table 2: Laparoscopy findings

Findings	Primary (206) (%)	Secondary (94) (%)	Total (300) (%)
Myoma	10 (05)	05 (05)	15 (05)
Endometriosis	29 (14)	08 (08)	37 (12)
Adnexal adhesions	15 (07)	11 (12)	26 (08)
Adenomyosis	04 (02)	03 (03)	07 (02)
Tubal pathology	13 (06)	08 (08)	21 (07)
Ovarian pathology	17 (08)	05 (05)	22 (07)
Uterine anomaly	03 (01)	00	03 (01)

Table 3: Hysteroscopy findings

Findings	Primary (206) (%)	Secondary (94) (%)	Total (300) (%)
Myoma	06 (03)	02 (02)	08 (03)
Polyp	11 (05)	05 (05)	16 (05)
Septum	18 (09)	11 (12)	29 (10)
Synechiae	00	01 (01)	01 (<01)
Foreign body	02 (01)	04 (04)	06 (02)

Table 4: Prevalence of complete tubal block (chromopertubation test)

Findings	Primary (206) (%)	Secondary (94) (%)	Total (300) (%)
Unilateral	21 (10)	09 (10)	30 (10)
Bilateral	19 (09)	12 (13)	31 (10)

Uterine pathologies are the cause of infertility in as many as 15% of couples seeking treatment^[8] and are diagnosed in as many as 50% of infertile patients.^[9-11] Developmental uterine anomalies have long been associated with pregnancy loss and obstetric complications, but the ability to conceive is generally not affected. Septate uterus was the most common intrauterine abnormality in our study, which was undiagnosed by prior ultrasonography. The pooled data suggest that the prevalence of septate uterus is similar in infertile and fertile women (approximately 1%), but is significantly higher in women with recurrent pregnancy loss (approximately 3.5%).^[12] Among all congenital uterine abnormalities, septate uterus is the most common cause associated with highest reproductive failure rates.^[12,13] 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 (80% pregnancy loss, 10% preterm delivery, 10% term delivery) with most losses occurring in the first trimester (approximately 65%). Pregnancy outcomes dramatically improved after surgical correction (80% term delivery, 5% preterm delivery, 15% pregnancy loss).^[12] 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.

Other than septate uterus, the major hysteroscopy abnormalities in our study were myomas and polyps similar to another study.^[14] The evidence to suggest that uterine myomas decrease fertility is inferential and relatively weak; the bulk of it is derived from studies that had compared the prevalence of myomas in fertile and infertile women or the reproductive performance of women with otherwise unexplained infertility before and after myomectomy.^[15,16] Proposed mechanisms by which myomas might adversely affect fertility include cornual myomas that involve or compress the interstitial segment of the tube, dysfunctional uterine contractility interfering with ovum or sperm transport or embryo implantation, and poor regional blood flow resulting in focal endometrial attenuation or ulceration.^[17] The incidence of asymptomatic endometrial polyps in women with infertility has been reported to range from 10% to 32%.^[18,19] A prospective study of 224 infertile women who underwent hysteroscopy observed a 50% pregnancy rate after polypectomy.^[20]

Diagnostic hystero-laparoscopy is a very safe procedure. Other than mild abdominal pain, there were no major surgical or anesthetic complications in any of our patients.

CONCLUSION

Diagnostic hysterolaparoscopy is an effective and safe tool in comprehensive evaluation of infertility, particularly for detecting peritoneal endometriosis, adnexal adhesions, and septum in the uterus. These are correctable abnormalities that are unfortunately missed by routine pelvic examination and usual imaging procedures. Needless to emphasize that, it is a very useful tool that can detect various structural abnormalities in multiple sites like pelvis, tubes, and the uterus in the same sitting in patients with normal ovulation and seminogram. When done by experienced hands and with proper selection of patients, hystero-laparoscopy can be considered as a definitive investigative daycare procedure for evaluation of female infertility. This helps in formulating specific plan of management.

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