



## ROLE OF DIAGNOSTIC HYSTERO-LAPAROSCOPY IN THE EVALUATION OF INFERTILITY IN PATIENTS WITH NORMAL HYSTEOSALPINGOGRAPHY REPORT

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### ABSTRACT

**OBJECTIVE:** To determine the role of diagnostic hysterolaparoscopy in the evaluation of infertility in tertiary care teaching hospital.

**MATERIALS AND METHODS:** This retrospective study was conducted at index medical college hospital and research centre, indore for 2 years from January 2020 to December 2021. Women aged 20-40 years with normal hormone profile and normal hysterosalpingography report without male factor infertility were included.

**RESULTS:** Out of 100 cases, 84 patients had primary infertility. While laparoscopy detected abnormalities in 91% of the cases, significant hysteroscopy findings were noted in 49% of cases. Most common laparoscopic abnormality was endometriosis and Fibroids (19%) and tubal pathology (19%) in primary and secondary infertile patients, respectively. Hysteroscopy found arcuate uterus as the most common abnormality in primary infertility patients and uterine synechiae in secondary infertility patients.

**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 arcuate and subseptate uterus, which are usually missed by other imaging modalities.

**KEYWORDS :** Hysteroscopy, infertility, laparoscopy

### INTRODUCTION

Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse. (1) Infertility affects millions of people of reproductive age worldwide – and has an impact on their families and communities. Estimates suggest that between 48 million couples and 186 million individuals live with infertility globally. (2, 3, 4) In the male reproductive system, infertility is most commonly caused by problems in the ejection of semen (1), absence or low levels of sperm, or abnormal shape (morphology) and movement (motility) of the sperm. In the female reproductive system, infertility may be caused by a range of abnormalities of the ovaries, uterus, fallopian tubes, and the endocrine system, among others. Infertility can be primary or secondary.

Diagnostic hysterolaparoscopy (DHL) has emerged as the essential tool for the evaluation of female infertility and is the gold standard investigation for tubal patency. The importance of DHL lies in the fact that it gives a detailed, direct visualization and analysis of the uterine cavity, endometrium, tubal morphology and patency, uterine, ovarian, and adnexal pathology. These pathology findings are often missed in routine clinical examination and ultrasound scan. In addition to diagnosis, DHL also provides the additional benefit of therapeutic interventions in few conditions.

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 tertiary care teaching centre (index Medical College & hospital at Indore, Madhya Pradesh) from January 2020 to December 2021. 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 infertility patients had at least one prior conception, irrespective of the outcome. Hormonal abnormalities known to cause anovulation like thyroid dysfunction, hyperprolactinemia, and polycystic ovarian syndrome were excluded. Couples with abnormal semen analysis were not included in this study. [2]

Patients with normal hysterosalpingography were also not included in the study. DHL with chromoperturbation test was performed in early follicular phase in all the patients. Statistical analysis was done using SPSS software.

### RESULTS

Out of 100 patients, 84 women had primary infertility and the rest 16 had secondary infertility.

In primary infertility group, laparoscopic abnormalities were more common (Table 1) than hysteroscopy. Endometriosis and fibroid were the most common abnormalities detected in laparoscopy in primary and secondary infertility groups respectively (Table 2). The most common intrauterine pathology in primary infertility group was arcuate uterus and in secondary infertility group was uterine synechiae (Table 3). More than one abnormalities were also detected; laparoscopically and hysteroscopically in both groups. The prevalence of unilateral tubal block in primary infertility group was 59% and in secondary infertility group was 66%. Bilateral tubal block was found to be more common in secondary infertility group (Table 4). Other than mild abdominal pain, there was no major surgical or anesthetic complication noted post operatively.

**Table 1** Prevalence of hysteroscopy and laparoscopy abnormalities

Procedure	Primary (84)		Secondary (16)	
	Normal (%)	Abnormal (%)	Normal (%)	Abnormal (%)
Laparoscopy	08 (9)	76 (91)	06 (38)	10 (62)
Hysteroscopy	43 (51)	41 (49)	08 (50)	08 (50)
Total	51	117	14	18

**Table 2** Laparoscopy findings (fig A)

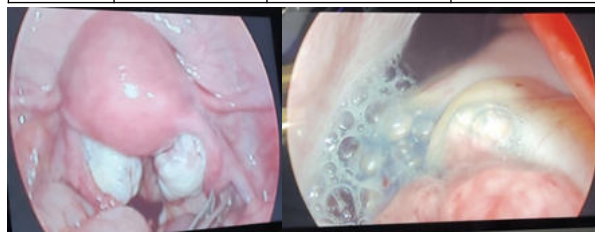
Findings	Primary (%)	Secondary (%)	Total (%)
Fibroid	16 (19)	02 (12)	18
Endometriosis	16 (19)	03 (19)	19
Adnexal adhesions	15 (18)	01 (06)	16
Ovarian pathology	07 (08)	01 (06)	08
Uterine anomaly	05 (06)	00 (00)	05
Tubal pathology	10 (12)	03 (19)	13
Adenomyosis	07 (08)	00 (00)	07
No pathology found	08 (10)	06 (38)	14
Total	84	16	100

**Table 3 Hysteroscopy findings (fig C)**

Findings	Primary (%)	Secondary (%)	Total (%)
Fibroid	07 (08)	02 (12)	09
Polyp	05 (06)	02 (12)	07
Septum	04 (05)	01 (07)	05
Synechiae	10 (12)	03 (19)	13
Foreign body	01 (01)	00 (00)	01
Arcuate uterus	14 (16)	00 (00)	14
Normal Cavity (No pathology found)	43 (52)	08 (50)	51
Total	84	16	100

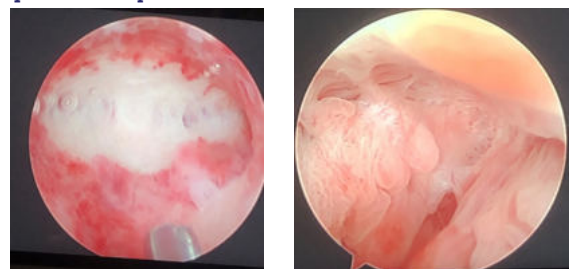
**Table 4 Prevalence of complete tubal block (chromoper tubation test) (fig B)**

Findings	Primary (84)(%)	Secondary (16) (%)	Total (100) (%)
Unilateral	16 (59)	06 (66)	22 (61)
Bilateral	11 (41)	03 (34)	14 (39)
Total	27 (32)	09 (56)	36 (100)



(A) (B)

**Fig : (A) Laparoscopic view of pelvic organ (B) Spillage of dye in chromopertubation**



(C) (D)

**Fig : (C) Hysteroscopic view of uterus showing fibrous band (D) Uterine synechiae**

**DISCUSSION**

Ovulatory infertile women with normal seminograms, pelvic ultrasound findings, hysterosalpingography report and hormonal profiles have higher possibility of having tuboperitoneal and endometrial pathologies. Performing hysteroscopy as 'one step procedure' straightaway in these women may be more fruitful. At first glance, hysteroscopy may appear to be costlier, invasive and it may require anaesthesia, but in the long run, it may become more beneficial, as therapeutic interventions can be done at the same sitting, as well as decisions for artificial reproductive technique can be taken. (5-9).

According to study done by Amrita et al. (10) out of 200 cases, 118(59%) patients had primary infertility and 82(41%) had secondary infertility. While laparoscopy detected abnormalities in 49% of the cases, significant hysteroscopy findings were noted in only 23.5% of cases. The most common laparoscopic abnormalities were endometriosis (32%) and unilateral tubal lockage (24%). On hysteroscopy, periosteal adhesions were the commonest abnormality in both the groups. Similar findings also noted in our study where most common laparoscopic abnormality was endometriosis and fibroids and on hysteroscopy arcuate uterus was the most common finding followed by uterine synechiae. (fig D)

Tubal and peritoneal pathology account for the primary diagnosis in approximately 30 to 35% of infertile couples. (11) 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.(12) Jayakrishnan et al. (13) from India detected pelvic pathology in 26.8% cases of infertile patients by laparoscopic evaluation. We got similar results in our study. In addition, endometriosis, adnexal adhesions and fibroids were the major abnormalities found among infertile patients in different studies similar to our findings. (14, 15) In contrast to the Study by Godinjak et al.,(14) we got equal prevalence of tubal block in both groups of infertility patients.

Currently, the modern operative hysteroscopic techniques have made septate uterus surgery relatively easy and brief day care procedure with low morbidity and prompt recovery. Therefore, septal resection is recommended more liberally nowadays.

Other than Arcuat uterus, the major hysteroscopy abnormalities in our study were septate uterus , myomas and polyps similar to another study.(16) The evidence to suggest that uterine myomas decrease fertility . The prevalence of myomas in fertile and infertile women or the reproductive performance of women with otherwise unexplained infertility before and after myomectomy. (17,18) 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. (19) The incidence of asymptomatic endometrial polyps in women with infertility has been reported to range from 10% to 32%. (20,21) A prospective study of 224 infertile women who underwent hysteroscopy observed a 50% pregnancy rate after polypectomy. (22)

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 hystero-laparoscopy is a safe and cost-effective method and can also be considered when there are normal HSG results, a past history of pelvic infection, pelvic surgery and / or unexplained secondary infertility. Evaluation of certain significant and correctable tubo-peritoneal and intrauterine pathologies which are usually missed by other imaging modalities, can be diagnosed as well as managed in some cases by hystero-laparoscopy. It is also 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. 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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