

To Assess Role of Hystero-Laparoscopy as A Diagnostic Modality in Patients of Primary Infertility

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Abstract

Context: Infertility is defined as failure of a couple to conceive for at least 1 year after regular and unprotected intercourse. Infertility affects about 10-15% of reproductive age couples. The prevalence of infertile individuals is increasing globally. Experience has shown that routine examination and diagnostic procedures is not enough to evaluate pelvic pathology of infertile women. The present study aimed at evaluating role of diagnostic hystero-laparoscopy in primary infertility cases. *Aims:* To identify the incidence of various pathological condition in female reproductive tract leading to infertility and to evaluate the role of diagnostic hystero-laparoscopy in comprehensive work up of primary infertility and to help in planning appropriate management. *Materials and Methods:* A retrospective hospital based study was conducted among 84 cases of primary infertility that underwent diagnostic hystero-laparoscopy. Infertile women who had no significant clinical/ultrasonography findings were included in the study and incidence of various pathological conditions in the female reproductive tract leading to infertility was calculated. *Results:* Out of 84 study subjects, majority of infertility cases were between the age group of 21 – 30 years. We observed that 33.33% cases were reported abnormal by laparoscopy while 14.28% cases

were reported abnormal by hysteroscopy. The commonest abnormalities reported in laparoscopy were tubal pathology. *Conclusions:* Tubal pathology accounted for the highest incidence among the laparoscopic abnormalities followed by endometriosis and ovarian pathology.

Keywords: Primary Infertility; Hysteroscopy; Laparoscopy; Tubal Pathology; Tubal Block; Endometriosis.

Introduction

Infertility is defined as failure of a couple to conceive for at least 1 year after regular and unprotected intercourse. Infertility can be primary and secondary. There are many causes of infertility among which tubo-peritoneal pathology is responsible for infertility in 30 to 40% of the cases, whereas uterine pathology accounts for 15% of cases. Other factors include ovulatory dysfunction (20-40%). In 20 to 40% cases, infertility is due to male factor [1]. In developed countries, tubal obstruction was found in 36% of infertile women; however, in Asia this percentage reached 39%, in Latin America 44%, and in Africa 85% [2]. Infertility affects about 10-15% of reproductive age couples. The prevalence of infertile individuals is increasing globally. Experience has shown that routine examination and diagnostic procedures is not enough to evaluate pelvic pathology of infertile women. The ability to observe and treat the pathology during laparoscopy has made it a gold standard to evaluate pelvic pathology [3]. Similarly, visualizing the uterine cavity and identifying the possible pathology has made hysteroscopy an essential part of infertility evaluation.

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Diagnostic laparoscopy, which is often combined with hysteroscopy, therefore, is frequently a standard procedure performed as the final test in the infertility work up in many clinics before the couple progresses to infertility treatment [4]. Laparoscopy is considered to be the gold standard for the evaluation of the pelvis and is considered a safe procedure. It may improve pregnancy rates and quality of life [4]. The abnormalities of pelvic and uterus can be resolved in combined hystero-laparoscopy at the same time. The purpose of the present study was to identify the incidence of various pathological conditions in female reproductive tract leading to infertility and hence to evaluate the role of diagnostic hystero-laparoscopy in comprehensive work up of primary infertility and to help in planning appropriate management.

Aims and Objectives

1. To identify the incidence of various pathological conditions in female reproductive tract leading to infertility.
2. To evaluate the role of diagnostic hystero-laparoscopy in comprehensive work up of primary infertility and to help in planning appropriate management.

Materials and Methods

A retrospective hospital based study was conducted among 84 cases of primary infertility that underwent diagnostic hystero-laparoscopy between January 2016 to December 2016 in the department of Obstetrics and Gynecology, in a tertiary healthcare teaching institute in Northern Maharashtra. Infertile women who had no significant clinical/ultrasonography findings were included in the study and incidence of various pathological conditions in the female reproductive tract leading to infertility was calculated. Male partner's seminal fluid examination was done and was normal. Ultrasound and basic investigations were done and normal. Each patient was admitted a day prior to the procedure. All the patients were kept nil by mouth after 10 pm a day

before surgery. After taking written informed consent, laparoscopy was performed during the post menstrual phase on 7th, 8th and 9th day of cycle. The hysteroscope was introduced into the cervical canal under vision. The uterine cavity was distended with 0.9% normal saline and examined. Laparoscopy was performed, pelvic organs were examined and then whole peritoneal cavity was examined. After the procedure, patient was transferred to post-operative ward and was discharged next day.

Inclusion Criteria

1. Patients between 18 to 40 years of age with primary infertility
2. With normal hormonal assays and semen analysis report

Exclusion Criteria

1. Patients with abnormal husband semen analysis.
2. Patients with active genital infections
3. Any other contraindication to operation (severe cardiac/ respiratory disorder, acute generalised peritonitis, anaesthetic problems, uncontrolled diabetes mellitus, severe anaemia and severe urinary tract infection)
4. Patients not willing for surgery were excluded.

The data was collected and entered using Microsoft excel software and presented using suitable graphs and Table. Frequencies were noted down and compared.

Results and Observations

We enrolled total 84 cases of primary infertility in the present study. Out of 84 study subjects, majority of infertility cases were between the age group of 21 – 30 years (Table 1). All the cases of primary infertility were investigated with the help of combined hysteroscopy and laparoscopy. We observed that 33.33% cases were reported abnormal by laparoscopy while 14.28% cases were reported abnormal by

Table 1: Distribution of infertility cases according to their age groups

Age in years	No. of Cases	Percentage
18-20	03	3.57 %
21-25	36	42.85 %
26-30	31	36.9 %
31-35	12	14.18 %
36-40	02	2.38 %

hysteroscopy (Table 2). Among the 28 abnormal reported cases, 23 cases had abnormal laparoscopic findings only while 5 cases had abnormal findings in both hysteroscopy and laparoscopy. 7 cases had abnormal findings in hysteroscopy only. (Figure 1). The commonest abnormalities reported in laparoscopy were tubal pathology (14.28%), endometriosis, ovarian pathology, myoma and

adhesions etc (Table 3). The commonest abnormalities reported in hysteroscopy were septum (8.33%), polyp (4.76) and myoma (1.19%) (Table 4). Chromoper-tubation test was performed for diagnosis of tubal blockage, we observed that 63% cases of complete tubal blockage were unilateral, while 37% cases of complete tubal blockage were bilateral (Figure 1).

Table 2: Distribution of infertility cases according to diagnostic procedures performed

Diagnostic Tests	Normal	Abnormal	Percentages
Laparoscopy	56	28	33.33 %
Hysteroscopy	72	12	14.28 %

Table 3: Distribution of cases according to frequency of abnormal findings reported in laparoscopy

Laparoscopy findings	Number of cases	Percentages
Myoma	3	3.57 %
Tubal pathology	12	14.28 %
Endometriosis	5	5.95 %
Ovarian pathology	5	5.95 %
Adnexal adhesions	2	2.38 %
Adenomyosis	1	1.19 %

Table 4: Distribution of cases according to frequency of abnormal findings reported in hysteroscopy

Hysteroscopy findings	Number of cases	Percentages
Myoma	1	1.19 %
Polyp	4	4.76 %
Septum	7	8.33 %
Synechiae	0	0
Foreign body	0	0

Table 5: Factors associated with primary infertility observed by various authors

Sr. No.	Variables	Authors	Observations
1	Hysteroscopic findings	Present study	Normal: 85.71%, Abnormal: 14.28% Abnormal: 17.88% Normal: 74% Normal: 83%
		Ahmed M et al	
		Nandhini et al	
		Nayak et al	
2	Prevalence of tubal factors	Present study	14.28%
		Nayak et al	6%
		Ramesh B et al	10.4%
3	Prevalence of endometriosis	Present study	5.95%
		Nandhini et al	2%
		Ramesh B et al	22.4%
		Kabadi et al	12%
		Nayak et al	14%
4	Presence of adnexal adhesions	Present study	2.38%
		Nandhini et al	8%
		Ramesh B et al	22.4%
		Kabadi et al	19.7%
		Nayak et al	7%
5	Prevalence of ovarian pathology	Present study	5.95%
		Nandhini et al	40%
		Ramesh B et al	14.4%
		Dawle et al	3%
		Nayak et al	8%

6	Intra-uterine septum	Present study Nandhini et al Ramesh B et al Nayak et al	8.33% 2% 13.7% 9%
7	Adenomyosis	Present study Nandhini et al Ramesh B et al	1.19% 4% 5.6%
8	Tubal block	Present study Nandhini et al Ramesh B et al Nayak et al	Unilateral: 8.33%, Bilateral: 4.76% Unilateral: 10% , Bilateral: 10% Unilateral: 14.4%, Bilateral: 13.6% Unilateral: 10% , Bilateral: 9%
9.	Polyp and myoma	Present study Dawle et al Shobha et al Sharma et al	Polyp: 4.76% , Myoma: 1.19% Myoma: 3.1% Polyp: 2.56% Polyp: 6.25% , Myoma: 4.69%

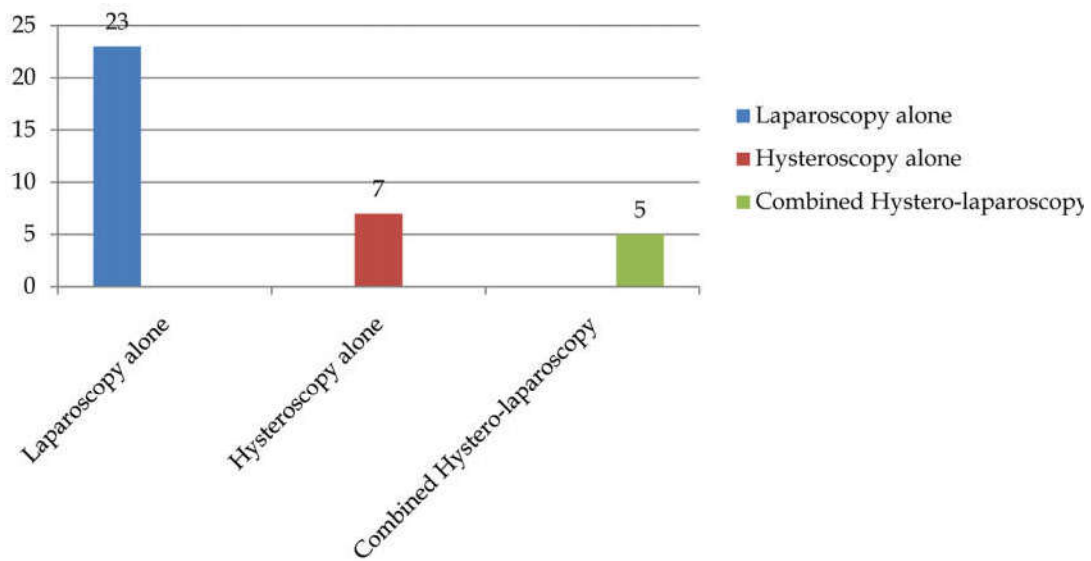


Fig. 1: Distribution of infertility cases according to abnormal results of different tests

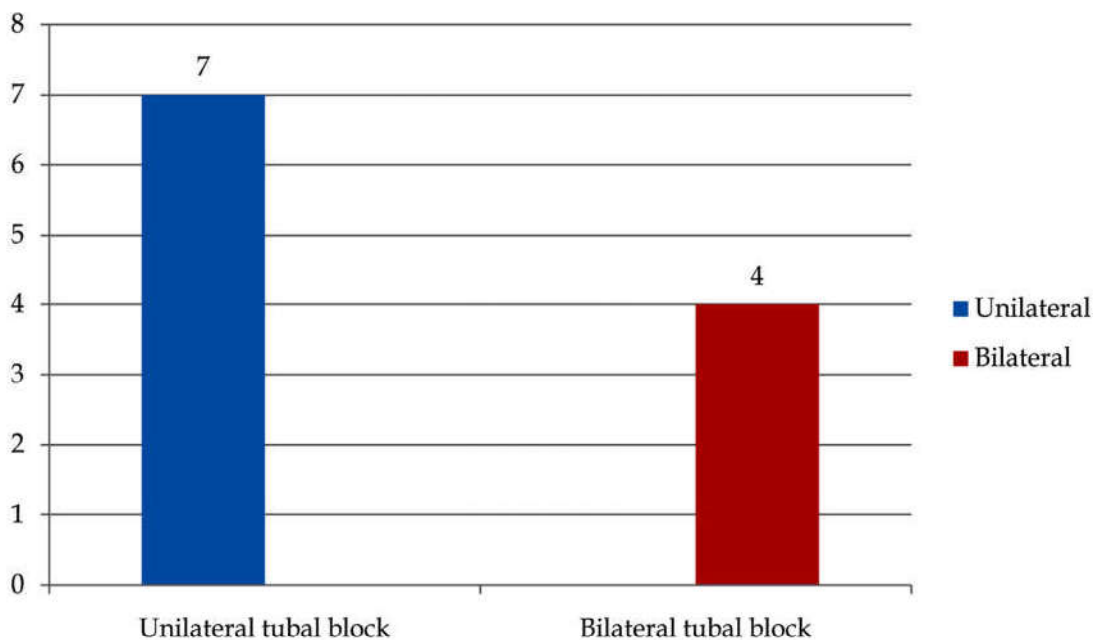


Fig. 2: Prevalence of complete tubal block (chromopertubation test)

Discussion

The present study was conducted among 84 primary infertility cases admitted under department of obstetrics and gynaecology. The commonest age group of cases presented with primary infertility was 21–30 years. Our study reported 14.28% cases abnormal in hysteroscopic examination, and normal findings in 85.71%. Table 5 shows findings observed by various authors in their studies. The present study reports 14.28% prevalence of tubal factors associated with primary infertility. Studies conducted by various authors show relatively lesser number of prevalence of tubal factors in their studies (Table 5). Our study report lower prevalence of endometriosis (5.95%) as an associated factor with primary infertility as compared to various studies mentioned (Table 5). The prevalence of adnexal adhesions was found 2.38% in our study. Similar findings were observed by Nandhini et al [6] and Nayak et al [3], however Kabadi et al and Ramesh B et al found higher prevalence of adnexal adhesions in their study [7,8]. In the present study, ovarian pathology was seen as underlying cause of primary infertility in 5.95% patients. Similar findings were observed by Dawle et al [9] and Nayak et al [3]. However higher prevalence of ovarian pathology was seen in studies conducted by Ramesh B et al [7] and Nandhini et al [6] (Table 5). In our study the most common intrauterine pathology was intrauterine septum accounting for 8.33%. Similar findings were reported in study conducted by Nayak et al (9%) [3]. While it was found to be lower in the study by Nandhini et al. Adenomyosis was found in 1.19% patients in our study while it is found relatively higher in the study by Nandhini et al and Ramesh B et al [6,7]. The incidence of unilateral tubal block was found to be 8.33% while it was observed relatively higher in the study conducted by Nandhini et al, Nayak et al and Ramesh B et al (Table 5). The incidence of bilateral tubal block was 4.76% in our study as compared to 10% in the study by Nandhini et al, 13.6% in the study by Ramesh B et al and 9% in the study by Nayak et al [3]. The next most common hysteroscopic abnormalities in our study were polyps and myomas similar to other studies. The present study reports relatively lower prevalence of myoma as compared to other studies as mentioned in table 5. The evidence to suggest that 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. The incidence of polyp is 4.76% in our study. Similar findings were observed by Shobha et

al [11] and Sharma et al [10]. the incidence of polyp and myoma was found relatively higher in the study conducted by Kabadi et al [8]. Synechiae and foreign body were not found in any of the patients hysteroscopically.

Hence, diagnostic combined hystero-laparoscopy appears to be effective diagnostic tool in detecting most of the missed pelvic abnormalities leading to primary infertility in patients with normal hormonal assays and husband semen analysis.

Conclusions

Tubal pathology accounted for the highest incidence among the laparoscopic abnormalities followed by endometriosis and ovarian pathology. Among the hysteroscopic abnormalities there was highest incidence of septate uterus followed by polyp.

Diagnostic hystero-laparoscopy is an effective tool in comprehensive evaluation of infertility. Correctable structural abnormalities in pelvis may be unfortunately missed by routine pelvic examination and imaging modalities. It is very useful in detecting these missed pelvic abnormalities in patients with normal hormonal assay and husband semen analysis. It can be considered as a definitive day care procedure for evaluation of female infertility. It will also help us to take decision regarding the need for ART (Assisted Reproductive Technology) in required patients, thus avoiding further emotional and financial trauma to the patients. So it helps in formulating an appropriate plan of management in patients of infertility.

Acknowledgement

None

Conflict of Interest: None

Key Message

Diagnostic hystero-laparoscopy is an effective and safe tool in comprehensive evaluation of infertility.

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