

## Role of hysterolaparoscopy in evaluation of female infertility in a tertiary care centre of Tamil Nadu

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### Abstract

**Introduction:** Diagnostic laparoscopy is a minimally invasive technique that provides information on the state of the uterus, ovaries, Fallopian tubes. It is considered as gold standard for diagnosing tubal and peritoneal diseases. Hysteroscopy helps in visualizing the uterine cavity and identifying the possible pathology in infertility. In combined hysterolaparoscopy complete evaluation and treatment is possible in the same sitting.

**Objective:** To study the role of combined diagnostic hystero-laparoscopy in evaluation of female infertility.

**Materials and Methods:** This retrospective study was conducted in the Department of Obstetrics and gynaecology in a tertiary care centre in Chennai, Tamil Nadu from January 2017 to December 2017. Women aged 20-40 years with primary or secondary infertility with normal hormonal profile and without male factor infertility were included.

**Results:** In our study primary infertility was found in 75% of the 100 patients and secondary infertility in 25% of cases. Majority of patients of primary infertility (46%) and secondary infertility (44%) belonged to the age group of 25-30 years. The analysis of the duration of infertility showed that 66% of primary infertility cases had history of infertility between 1-5 years, 28% had infertility of 6-10 years. Among secondary infertility cases 64% had infertility between 1-5 years, 32% between 6-10 years. Abnormal laparoscopic findings were noted in 55% of cases of primary infertility and 52% in secondary infertility. Abnormal hysteroscopic findings were noted in 18% of primary infertility cases and 16% of secondary infertility. The most common laparoscopic findings in secondary infertility cases were adnexal adhesions (20%) and myoma (12%) and polycystic ovaries in primary infertility. In our study on chromopertubation 12% of primary infertility and 20% of secondary infertility patients had unilateral tubal block and 16% of primary infertility and 12% of secondary infertility patients had bilateral tubal block.

**Conclusion:** Hysterolaparoscopy is a minimally invasive, safe and effective procedure in comprehensive evaluation of female infertility as it helps in detecting tubal, peritoneal factors, endometriosis, adnexal adhesions and septate uterus. The above correctable abnormalities are missed by imaging procedures. Hysterolaparoscopy helps in formulating specific planning of management. While investigating the causes of female infertility combined simultaneous diagnostic laparoscopy & hysteroscopy should be performed in all infertile patients.

**Keywords:** Infertility, hysterolaparoscopy

## Introduction

Infertility affects about 10-15% of reproductive age couples. Infertility, according to WHO, is defined as inability to conceive after one year of unprotected sexual intercourse of reasonable frequency<sup>[1]</sup>. Female factors contribute 40-45% in etiology of infertility<sup>[1]</sup>.

It is further subdivided into Primary and secondary infertility. Primary infertility patients are those who have never conceived before while secondary infertility patients are those who had at least one conception irrespective of the outcome<sup>[2]</sup>.

## Etiology of infertility<sup>[3]</sup>:

Tuboperitoneal pathology - 30-40%

Uterine pathology -15%

Ovulatory dysfunction - 20-40%

Male factor - 20-40%.

The assessment of infertile couple starts with investigations like hormonal study to rule out hormonal abnormalities known to cause anovulation like thyroid dysfunction, hyperprolactinemia and polycystic ovarian syndrome<sup>[2]</sup>. Other investigations include ultrasonography and semen analysis of husband<sup>[4]</sup>.

Laparoscopy is considered gold standard for diagnosing tubal and peritoneal disease, it helps in direct visualization of pelvic organs and the peritubal adhesions. Laparoscopy has become an essential part of infertility evaluation by virtue of its ability to visualize and manipulate the uterus, fallopian tubes and the ovaries. Hysteroscopy is gold standard for diagnosis of intrauterine abnormalities like polyps, submucous myoma and adhesions. Hysteroscopy is a minimally invasive procedure that permits the visualization of the endocervical canal, uterine cavity, endometrium, and tubal ostia<sup>[5]</sup>.

Hysteroscopy is effective and safe tool in comprehensive evaluation of infertile patients<sup>[5]</sup>.

Additionally hysteroscopic guided biopsy and therapeutic procedures like polypectomy, myomectomy, septal resection and adhesiolysis can be done in the same sitting<sup>[2]</sup>.

## Materials and Methods

This was a retrospective study which was conducted in the Department of Obstetrics & Gynaecology in a tertiary care centre in Chennai from January 2017 to December 2017. Patients between 20 to 40 years of age with either primary or secondary infertility of more than 1 year duration were included in the study. Study data was processed using MS Office 365 and relevant tools.

Primary infertility patients were those who had never conceived before, whereas secondary infertile patients had at least one prior conception, irrespective of the outcome of the conception. Patients with active genital infection were excluded. Couples presenting with abnormal semen analysis report were also excluded from our study.

## Inclusion Criteria

- Women between 20-40 years with primary and secondary infertility.
- Women with normal hormonal assay.
- Normal seminal analysis in male partner

## Exclusion Criteria

- Medical disorders are a contraindication for anaesthesia.
- Active pelvic infection.
- Male factors responsible for infertility
- Hormonal abnormalities are known to cause anovulation such as thyroid dysfunction and hyperprolactinemia.

Diagnostic hystero laparoscopy with chromo pertubation test was performed in the early

follicular phase in all the patients.

### Results

Of the 100 patients, 75% women had primary infertility and the rest 25% had secondary infertility. Majority of the infertility patients were between 20 - 30 years (primary infertility 77%, secondary 76%).

Abnormalities detected by laparoscopy were more common than those by hysteroscopy, both in the primary (55% vs 18%) and secondary (52% vs 16%) infertility groups.

**Table 1:** Distribution of infertility cases according to age

Sr. No.	Age in years	Primary infertility cases (75)	Percentage (%)	Secondary infertility cases (25)	Percentage (%)	Total cases (100)	Percentage (%)
1	20-25	23	30.6	7	28	30	30
2	26-30	35	46.6	11	44	46	46
3	31-35	13	17.3	6	24	19	19
4	36-40	4	5.3	1	4	5	5

**Table 2:** Prevalence of abnormalities in primary infertility group

Procedure	Primary (n=75)	
	Normal	Abnormal
Laparoscopy	34 (45%)	41 (55%)
Hysteroscopy	62 (82%)	13 (18%)

**Table 3:** Prevalence of abnormalities in secondary infertility group

Procedure	Secondary (n=25)	
	Normal	Abnormal
Laparoscopy	12 (48%)	13 (52%)
Hysteroscopy	21 (84%)	4 (16%)

**Table 4:** Duration of infertility

Duration in years	Primary (n=75)	Secondary (n=25)
1 – 5	50 (66.6%)	16 (64%)
6 – 10	21 (28%)	8 (32%)
11 – 15	4 (5.3%)	1 (4%)

The analysis of the duration of infertility showed that 66% of primary infertility cases had history of infertility between 1 to 5 years, 28% had infertility of 6-10 years and 5% had infertility more than 10 years. Among secondary infertility cases 64% had infertility between 1-5 years, 32% between 6-10 years and 4% more than 10 years.

**Table 5:** Laparoscopy findings.

Findings	Primary(n=75)	Secondary(n=25)	Total (n=100)
Normal	34(45%)	12(48%)	46(46%)
Myoma	8(10.6%)	3(12%)	11(11%)
Endometriosis	6(8%)	1(4%)	7(7%)
Adnexal adhesions	2(2.6%)	5(20%)	7(7%)
Tubal pathology	6(8%)	1(4%)	7(7%)
Uterine anomaly	2(2.6%)	--	2(2%)
Polycystic ovaries	14(18.6%)	2(8%)	16(16%)
Fimbrial cyst	3(4%)	1(4%)	4(4%)

The most common abnormalities detected by laparoscopy in primary infertility case were polycystic ovaries 18%, myoma in 10% and in secondary infertility it was adnexal adhesions

(20%) and Myoma (12%).

**Table 6:** Hysteroscopic findings.

Findings	Primary (n=75)	Secondary(n=25)	Total (n=100)
Normal	62(82%)	21(84%)	83(83%)
Polyp	5(6.6%)	1(4%)	6(6%)
Septum	2(2.66%)	-	2(2%)
Myoma	3(4%)	-	3(3%)
Ostial block	1(1.3%)	3(12%)	4(4%)
Uterine anamoly	2(2.66%)	-	2(2%)

The most common abnormality detected by hysteroscopy in primary infertility was polyp and ostial block in secondary infertility.

**Table 7:** Chromopertubation findings.

Findings	Primary(n=75)	Secondary(n=25)	Total(n=100)
Unilateral block	9(12%)	5(20%)	14(14%)
Bilateral block	12(16%)	3(12%)	15(15%)
No block	54(72%)	17(68%)	71(71%)

On analysis of findings of chromopertubation bilateral block was more in primary infertility compared to secondary infertility where unilateral block was common.

## Discussion

Laparoscopy is considered gold standard for diagnosing tubal and peritoneal disease, it helps in direct visualization of pelvic organs and the peritubal adhesions. Laparoscopy has become an essential part of infertility evaluation by virtue of its ability to visualize and manipulate the uterus, fallopian tubes and the ovaries. Hysteroscopy is gold standard for diagnosis of intrauterine abnormalities like polyps, submucous myoma and adhesions. Hysteroscopy is a minimally invasive procedure that permits the visualization of the endocervical canal, uterine cavity, endometrium, and tubal ostia<sup>[5]</sup>.

In the present study, incidence of primary infertility was 75% and that of secondary infertility was 25%. It correlates with the studies by Sandeep *et al*,<sup>[6]</sup>, Madhuri N *et al*,<sup>[7]</sup> and Virupakshi *et al*,<sup>[5]</sup>.

In this study, majority of patients of primary infertility (46%) and secondary infertility (44%) belonged to the age group of 25-30 years (Table 1).

Regarding the duration of infertility in primary group, it was 1-5 years in 66% and 6-10 years in 28% and in secondary infertility it was 64% for 1-5 years and 32% for 6-10 years where as study by Devarasetti Anurupa *et al*,<sup>[8]</sup> showed duration of infertility of 1-5 years in 29% and 6-10 years in 50% of the cases.

Abnormal laparoscopic findings were noted in 55% of cases of primary infertility and 52% in secondary infertility which is similar to study by Madhuri N *et al*,<sup>[7]</sup>.

The analysis of patients on the basis of laparoscopic findings showed that most of the common pathology seen in primary infertility were polycystic ovaries in 19% and myoma in 10% of cases. This is similar to the study by Devarasetti Anurupa *et al*,<sup>[8]</sup>. The most common laparoscopic findings in secondary infertility cases adnexal adhesions (20%) and myoma (12%), similar observation was made by study by Madhuri N *et al*,<sup>[7]</sup>.

Abnormal hysteroscopic findings were noted in 18% of primary infertility cases and 16% of secondary infertility cases similar to observation by Nayak *et al*,<sup>[2]</sup>, sonal patil *et al*,<sup>[3]</sup>.

On analysis based on hysteroscopic findings the commonest findings in primary infertility cases were polyp 6.6%, myoma 4%, uterine anamoly 2.66% and septum 2.66%. Study by Keya vaid *et al*,<sup>[9]</sup> and Nandini *et al*,<sup>[10]</sup> also showed septal abnormality in 2% of cases. Study by Nayak *et al*,<sup>[2]</sup> showed similar findings of Myoma (3%) and polyp (5%).

In our study on chromopertubation 12% of primary infertility and 20% of secondary infertility patients had unilateral tubal block and 16% of primary infertility and 12% of secondary infertility patients had bilateral tubal block, this correlates with study by Apurba mandal *et al*,<sup>[4]</sup>, Anurupa *et al*,<sup>[8]</sup>.

### Conclusion

Hysterolaparoscopy is a minimally invasive, safe and effective procedure in comprehensive evaluation of female infertility as it helps in detecting endometriosis, adnexal adhesions and septate uterus. The above correctable abnormalities are missed by imaging procedures. On hysteroscopy adhesiolysis for uterine synechiae and proximal tubal cannulation for tubal block patients can be done in the same setting.

Hysterolaparoscopy helps in formulating specific planning of management. Based on results of this study it can be concluded that while investigating the causes of female infertility combined simultaneous diagnostic laparoscopy & hysteroscopy should be performed in all infertile patients.

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