



## Evaluation of infertile female by one step laparoscopic and hysteroscopic examination

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### Introduction

Infertility is much investigated and widely studied subject in the field of gynaecology. The reason for this lies in the innate desire of a woman to procreate.

Being labeled 'infertile is devastating to the couple. In the words of one couple, "it feels like being sentenced for a crime you have not committed". For the vast majority of patients infertility is totally unexpected. They look, feel and act normally and everything appears to be functioning well. Suddenly, a young and healthy couple has a medical label, a stigma thrust upon them.

Infertility is the failure of a couple to become pregnant after one year of regular, unprotected intercourse. In both men women the fertility process is complex. About 10% of couples fall in this category.

### Incidence

- 80-85% of couple achieve pregnancy if they so desire, within one year of having regular, unprotected intercourse with adequate frequency.
- Another 10% will achieve the objective by the end of the second year.
- As such, 5-10% remain without a child by

the end of second year.

The increase in demand for infertility services across the world is probably due to the following factors.

1. The tendency of woman to delay child bearing because of their work so that desired reproduction is condensed into a shorter interval than before and at a more advanced age (i.e. 30> or even >35 year), which by itself is a negative prognostic factor for the woman's fecund ability.
2. An increase of effective treatments by assisted reproductive techniques (ARTS)
3. An increased awareness of such treatments.

### Causes of infertility

- Ovulation problems
- Tubal factor & Peritoneal factors
- Uterine factors
- Cervical factor
- Vaginal factors
- Unexplained infertility
- Male infertility

Conventional methods of investigations in female include:

- Routine blood tests including hormonal assays. Ultrasound.

- Hysterosalpingography
- Endometrial biopsy.

But none of the above mentioned investigations are decisive regarding the diagnosis and final treatment of the patients. HSG, though gives an idea about the tubal patency and uterine interior but is associated with false positive and false negative results.

As a diagnostic tool, a combined laparoscopic and hysteroscopic examination is optimum means of evaluating infertility. Done at one sitting they offer therapeutic advantage over diagnostic aid.

Laparoscopy permits direct visualization of uterus, adnexas, anterior and posterior pouches, peritubal adhesions and endometriosis if present. Instillation of dye methylene blue through a cannula in the cervix permits direct visualization of its path through tubes and the exact site of block if any. Hysteroscopy permits the inspection of the cervical canal, uterine cavity and evaluation of the tubal ostium and the proximal intramural segment of the fallopian tubes. Hysteroscopy accurately defines lesions such as submucous fibroids, polyps and synechiae.

Gynaecological endoscopic surgeries thus have changed and improved the results of infertility evaluation and treatment.

### Aims and Objective

The major goals involved in the evaluation of infertile female by one step laparoscopic and hysteroscopic examination are:

1. To observe various abnormalities on laparoscopic and hysteroscopic evaluation of infertile female.
2. Identification of the cause contributing to

the infertile state.

3. Correlation of the causes of infertility if possible.
4. Providing accurate information, education & counseling to both the partners, explain the nature of therapy.

### Material and Methods

The present study included cases of primary and secondary infertility attending the outpatient department of Obstetrics and Gynaecology at Mahatma Medical College & Hospital, Jaipur, evaluated by one step laparoscopic and hysteroscopic examination. The study was conducted from May 2017 to April 2018.

**Design:** Prospective study

**Patients:** 200 cases.

### Inclusion Criteria

1. Infertility, primary or secondary.
2. Normal hormonal profile.
3. Normal malefactor.
4. No obvious pelvic pathology.

### Exclusion Criteria

1. Contraindications to laparoscopy/hysteroscopy
2. Contra indications to general anaesthesia.
3. Marital life < 2years.

### Observation and Results

#### Observation

A total of 200 Laparoscopies and hysteroscopies were done.

#### Division of patients

All patients were divided in to two groups: Group I – 150 patients with primary infertility Group II – 50 patients with secondary infertility

**Table No. 1** Distribution according to age group

Age group (In Yrs)	Primary infertility		Secondary Infertility		Both	
	No.	%	No.	%	No.	%
20-24	47	31.33	10	20.00	57	28.50
25-29	84	56.00	27	13.50	111	55.50
30-34	16	10.67	10	20.00	26	13.00
≥ 35	3	2.00	3	1.50	6	3.00
Total	150	100.00	50	100.00	200	100.00

The age of the patients ranged from 21 to 38 years. The youngest was 21 years and the oldest was 38 years in both groups. Mean age at primary

infertility group was  $26.30 \pm 3.10$  & secondary infertility  $27.72 \pm 3.75$  years.

**Table No. 2** Distribution according to religion, Area & Socio-economic status

Religion	Primary infertility		Secondary Infertility		Both	
	No.	%	No.	%	No.	%
Hindu	140	93.33	48	96.00	188	94.00
Muslim	10	6.67	2	4.00	12	6.00
Total	150	100.00	50	100.00	200	100.00
<b>Area</b>						
Rural	93	62.00	41	82.00	134	67.00
Urban	57	38.00	9	18.00	66	33.00
Total	150	100.00	50	100.00	200	100.00
<b>Socio –economic status</b>						
Class I Upper	6	4.00	00	00.00	6	3.00
Class II Upper Middle	45	30.00	12	24.00	57	28.50
Class III Lower Middle	91	60.67	30	60.00	121	60.50
Class I Upper Lower	8	5.33	08	16.00	16	08.00
Total	150	100.00	50	100.00	200	100.00

$\chi^2=0.118$  d.f.=1 P> .05 NS

**Table No. 3** Distribution according to Associated Complained

	Group I (%)	Group II (%)
Pain in abdomen	12	15
White discharge PV	5	7
Backache	2	4
AUB	22	24

**Table No. 4** Distribution of various Laparoscopic abnormalities of female

Type of Pathology	Infertility		Total	$\chi^2$	d.f	P-value	Significance
	Primary	Secondary					
Pelvic adhesions	54 (36.00)	20 (40.00)	74 (37.00)	0.382	1	> .05	NS
Tubercles	50 (33.33)	20 (40.00)	70 (35.00)	0.732	1	> .05	NS
PID	36 (24.00)	14 (28.00)	50 (25.00)	0.320	1	> .05	NS
Endometriosis	26 (17.33)	2 (4.00)	28 (14.00)	4.485	1	< .05	Sig
PCOD	22 (14.67)	4 (8.00)	26 (13.00)	5.990	1	< .02	Sig
To mass	14 (9.33)	6 (12.00)	20 (10.00)	0.296	1	> .05	NS
Fibroids	10 (6.67)	2 (4.00)	12 (6.00)	0.118	1	> .05	NS
Fimbrial cyst	4 (2.67)	0 (0.00)	4 (2.00)	-			
No abnormalities	19 (12.67)	9 (18.00)	28 (14.00)	0.886	1	> .05	NS

**Table No. 5** Distribution according to CPT in female

CPT	Type of Infertility		Total
	Primary	Secondary	
Bilateral positive	100 (66.67)	34 (68.00)	134 (67.00)
Negative in right tube	12 (8.00)	2 (4.00)	14 (7.00)
Negative in left tube	8 (5.33)	2 (4.00)	10 (5.00)
Bilateral negative	30 (20.00)	12 (24.00)	42 (21.00)
Total	150 (100.00)	50 (100.00)	200 (100.00)

66.67% patients in group I and 68% of group II showed bilateral free spill on chromopertubation. 20% of group I and 24% patients of group II did

not show free spill either unilaterally or bilaterally.

**Table No. 6** Various hysteroscopic abnormalities of female

Hysteroscopic abnormalities	Infertility		Total	X <sup>2</sup>	d.f	P-value	Significance
	Primary	Secondary					
No abnormalities	76 (50.67)	24 (48.00)	100 (50.00)	0.107	1	> .05	NS
Intrauterine adhesions	44 (29.33)	16 (32.00)	60 (30.00)	0.127	1	> .05	NS
Stenosed internal OS	20 (13.33)	10 (20.00)	30 (15.00)	1.307	1	> .05	NS
Congestion	22 (14.67)	6 (12.00)	28 (14.00)	0.221	1	> .05	NS
Tubercles	16 (10.67)	4 (8.00)	22 (11.00)	0.074	1	> .05	NS
Polypoidal endometrium	10 (6.67)	2 (4.00)	12 (6.00)	0.118	1	> .05	NS
Left ostia fibrosed	2 (1.33)	4 (8.00)	6 (3.00)	0.009	1	> .05	NS
Right ostia fibrosed	6 (4.00)	2 (4.00)	8 (4.00)	0.000	1	> .05	NS
B/L ostia not seen	6 (4.00)	4 (8.00)	10 (5.00)	0.561	1	> .05	NS
Incomplete septum	2 (1.33)	0 (0.00)	2 (1.00)	-			

No abnormality was detected in 50.6% of group I and 48% of group II. Most common finding in both groups was intrauterine adhesion, 29.33% in

group I and 32% in group II. The p-values for various abnormalities were >0.05, which is not significant.

**Table No. 7** Procedure performed

Procedure	Type of Infertility		Total
	Primary	Secondary	
Laparoscopic adhesiolysis	52 (34.67)	18 (36.00)	70 (35.00)
Intrauterine adhesiolysis	36 (24.00)	14 (28.00)	50 (25.00)
LOD	22 (14.67)	4 (8.00)	26 (13.00)
Cystectomy	20 (13.33)	0 (0.00)	20 (10.00)
Myomectomy	8 (5.33)	2 (4.00)	10 (5.00)
Polypectomy	8 (5.33)	2 (4.00)	10 (5.00)
Excision Septa	2 (1.33)	0 (0.00)	2 (1.00)

## Discussion

Problem of infertility is on a rising trend. Endoscopic evaluation of the pelvic and intrauterine factors is indispensable for infertility evaluation. It helps in diagnosis as well as treatment at the same sitting. We observed various

abnormalities on laparoscopy. Tuberculosis, PID, Endometriosis, PCOD and Pelvic adhesions were the major one.

### A) Tuberculosis

1. In our study, the incidence of tuberculosis was 35% (primary 33.3%, secondary

40%). Various findings observed are presence of tubercles on tubes, peritoneum, uterus, gut and endometrium, caseation granuloma, adhesions, beaded tube, blocked tube, hydrosalpinx, TO mass, pelvic congestion and fluid in peritoneal cavity.

2. Tuberculosis is a major cause of infertility especially in South East Asian countries. The incidence of genital tuberculosis in India is 19%.<sup>46</sup> Female genital TB is typically understood as a disease of young women with 80-90% of cases diagnosed in a patient of 20-40 yearsold.
3. Infertility is the commonest presentation of genital TB with reported incidence of infertility being between 40-80%.
4. In our study the high incidence of tuberculosis was found because patients in India living in an environment where pulmonary tuberculosis is rampant. Further % of low socio economic group and less educated patients were more and most of the patients belonging to rural area in ourstudy.

### **B) PID**

1. Data from industrialized countries indicate that 10-40% of women with untreated chlamydial or gonococcal infection develop symptomatic PID and that up to one quarter of these with PID will become infertile.
2. In the pre antibiotic era the post PID infertility rates were as high as 60-70%.<sup>61</sup>
3. After one episode of laparoscopically proven PID 8% women develop infertility. The figure rises to 40% after 3 episodes.<sup>62</sup>
4. Incidence of PID in our study was 25% (primary 24%, secondary 28%).
5. Most common pathogens causing PID are Chlamydia trachomatis, Neisseria gonorrhoeae
6. In our study incidence of PID is high. It can be explained by most of the patients belonging to low SES group.

**C) Endometriosis** – In our study the incidence of endometriosis was 14% (primary 17.33%, secondary 4%). This includes all the stages of endometriosis ranging from mild, moderate to severe. The commonest site was found to be the ovaries, uterosacral ligaments and POD.

Kichukova D et al. in 2005 established endometriosis is an unexpected finding during laparoscopy on sterile women.<sup>65</sup> His study was retrospective and included 20 years period of time (1976-1996) 912 patients were evaluated on whom laparoscopy was performed. Cases with endometriosis were 25%. He concluded that diagnosis of endometriosis by laparoscopy effectively helps in further treatment of sterile women.

Godinjak Z, Idrizbegovic E 2008 conducted a retrospective study in 360 infertile women who underwent combined diagnostic laparoscopy & hysteroscopy. In his study endometriosis was found in 14.16%. This matches with our results.

**D) PCOS** is a well established cause of infertility. It results in anovulation and thus affects fertility. Incidence of PCOD in our study was 13% (primary 14.67%, secondary 8%).

SAK Amar in 2004 did a study on LOD in women with PCOS. In his study 57% ovulated without induction drugs.

Li et al. reported a cumulative pregnancy rate of 54% at 12 months follow up after LOD.<sup>68</sup>

**E) Fibroid** In our study % of fibroid uterus was 5% (primary 5.33%, secondary 4%). All were subserous fibroid.

Godinjak Z, Idrizbegovic E found myoma in his study in 11.65%.

### **Hysteroscopic Abnormalities**

There were numerous abnormalities encountered on hysteroscopy. Intrauterine adhesion, polypoidal endometrium, ostial fibrosis, congestion & tubercles were the major one.

- 1) Incidence of intrauterine adhesions 30% (primary 29.33%, secondary 32%).
- 2) According to study by Josef Shalev et al.

intrauterine adhesions were seen in 13.8% of infertile women by hysteroscopy.

- 3) Study by Neena Malhotra & Maya Sood showed 25% of their patients to have adhesions on hysteroscopy.
- 4) Tiufekchieva E et al. 2006 found intrauterine adhesions in 50% patients.<sup>3</sup>
- 5) In our study incidence of Polypoidal endometrium was 6% (primary 6.67%, secondary 4%).
- 6) Sergio Reis et al. evaluated 65 patients by hysteroscopy and showed endometrial Polyp in 10% of his patients.<sup>71</sup>
- 7) Godinjak Z et al. in 2008 found polypoidal endometrium in 7.22%.<sup>66</sup>

### Conclusion

This study one step laparoscopic and hysteroscopic evaluation in infertility, was carried out in the department of Obstetrics and Gynaecology of Mahatma Gandhi Medical College & Hospital, from May 2017 to April 2018.

- Maximum patients were in 25 to 29 years of age group.
- Mean age of patients in two groups varied between 26.3 to 27.72years.
- 94% were Hindus and 6% were Muslims.
- 67% patients were from rural area.
- 60.5% patients were from class III (lower middle) socioeconomic status.
- Duration of infertility in both groups was ranging from 2.5 to 16years.
- Mean duration of infertility varied between 6.05 to 6.18years.
- Normal menstrual history was present in 77% of cases.
- Past history of tuberculosis was present in 6% patients. Previous surgery (left salpingoophorectomy) for chocolate cyst in two patients of group I. Past history of puerperal sepsis was found in two patients of group II.

### Laparoscopic Abnormalities

- Common findings obtained on laparoscopy

were pelvic adhesions, tuberculosis. PID, endometriosis and PCOS.

- Normal pelvic findings were seen in 14%.
- Tuberculosis was present in 35%. Various findings like tubercles, extensive pelvic adhesions, hydrosalpinx were found.
- PID was found in 25% of cases.
- Pelvic adhesions were found in 37%.
- Endometriosis of varying degree was found in 14%.
- PCOS was found in 13%.
- Fibroid (subserous) were present in 5%.
- On chromopertubation (CPT) in 67%, bilateral spill was seen. CPT was negative unilaterally in 12%. Bilateral negative CPT was found 21%.

### Hysteroscopic Abnormality

- Findings were normal in 50% cases.
- Major hysteroscopic abnormality were intrauterine adhesions, stenosed internal os, ostial fibrosis, tubercles and polypoidal endometrium.
- 30% had intrauterine adhesions.
- 15% had stenosed internal os.
- In 83% patients bilateral ostia seen. In rest of the patients either unilateral or bilateral ostia fibrosed or could not be seen due to adhesions.
- 14% had congestion in endometrium.
- 11% had scanty endometrium.
- 11% had tubercles.
- 6% had polypoid endometrium.
- 1% had partial septa.
- Various procedures done were laparoscopic and hysteroscopic adhesiolysis, ovarian drilling, cystectomy, myomectomy, polypectomy and excision of septa
- Plan of management was in various forms like AKT, long term antibiotics, ovulation induction/IUI/IVF as per requirement, GnRh/OCPs, myomectomy, polypectomy, excision of septa.

Thus we can say that one steps laparoscopic and hysteroscopic evaluation in female infertility has a diagnostic as well as therapeutic edge over other investigations.

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