

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20195317>

Original Research Article

## A prospective study on the role of Hysterolaparoscopy in the evaluation of infertility

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**Received:** 18 September 2019

**Revised:** 13 October 2019

**Accepted:** 06 November 2019

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### ABSTRACT

**Background:** Infertility affects about 10-15% of couples of reproductive age groups. The current evidence indicates a 9% prevalence of infertility with 56% of couples seeking medical care. Hysterolaparoscopy provides a comprehensive investigative procedure in which various factors causing female infertility can be assessed at one sitting.

**Methods:** A total 100 infertile women between 20-40 years of age including primary and secondary infertility were evaluated. Patients would be investigated thoroughly for infertility and in preparation for anaesthesia. Tests include follicular study, Ultrasound pelvis. Hysterolaparoscopy was performed in the pre ovulatory period between days 6-10 of the cycle for infertility evaluation.

**Results:** In the present study out of 100 cases for infertility evaluated, primary infertility were 57(57%) and secondary infertility were 43(43%). In our study out of 100 patients, Hysterolaparoscopy showed tuberculosis in 24 (24%) patients, remaining were endometriosis, polycystic ovarian syndrome, congestion, intra-pelvic adhesions, hydro-salpinx.

**Conclusions:** It is concluded that while treating the causes of female infertility combined simultaneous diagnostic laparoscopy and hysteroscopy should be performed in all infertile patients as "seeing is believing" and if any pathologies found to be operable the gynaecologist can perform operative hystero-laparoscopy at that time, hence anticipating the pathologies after pre-operative work up is very important.

**Keywords:** Follicular study, Hysteroscopy, Infertility, Laparoscopy

### INTRODUCTION

Infertility is defined as failure to conceive during one year of unprotected frequent intercourse. It affects approximately 10-15% of couples. Leading cause of infertility includes tuboperitoneal disease (40-50%), ovulatory disorders (30-40%), uterine factor (15-20%), male factor 30-40%, and unexplained.

Hysterolaparoscopy is an effective and safe tool in comprehensive evaluation of infertility for diagnosis and

further treatment of the lesions involving the pelvic structures. Treatment modalities at the time of laparoscopy comprised of adhesiolysis, ablation of endometriosis, ovarian drilling, and ovarian cystectomy. Hysteroscopic interventions were proximal tubal cannulation, septoplasty, synecolysis and myomectomy.<sup>1</sup>

Diagnostic hysterolaparoscopy is an effective diagnostic and therapeutic modality for certain significant and correctable abnormalities in pelvis, tubes and uterus which are missed by other imaging modalities.<sup>2</sup>

Diagnostic laparoscopy is the gold standard for diagnosing the tubal pathology, peritoneal factors, ovarian factors and uterine factors as cause of infertility. Laparoscopic abnormalities are more common than hysteroscopic abnormalities both in primary infertility group and secondary infertility group.<sup>3</sup> The prevalence of primary infertility was higher among women aged 20-24 years than among older women.<sup>4</sup> Injuries can occur during the insertion of various instruments through the abdominal wall or during operative treatment. Conditions may increase the risk of serious complications; include previous abdominal surgery, adhesions, pelvic infections, obesity, or excessive thinness. Hysterolaparoscopy is the better choice for diagnosing the causative factor as well as treating the possible aetiologies.

## METHODS

Women between 20-40 years of age, presenting with infertility from May-2016 to June 2018 were included in the study. The study was conducted after obtaining ethical clearance and after fulfilling the exclusion and inclusion criteria. Informed written consent was obtained from them. A detailed history was taken, and a thorough clinical examination was done.

This study was performed in a tertiary care teaching hospital, where well-established peri-operative prophylactic measures are rigorously followed. Detailed history would be taken from all patients complaining of infertility. Patient's husband's history in relation to occupation, significant medical or surgical history, any addictions, and coital history would be elicited.

Patients would be investigated thoroughly for infertility and in preparation for anaesthesia. Tests include complete blood count, liver function test, Renal function test; serum FSH, LH, PROLACTIN, TSH, follicular study, Ultrasound pelvis. Hysterolaparoscopy was performed in the pre ovulatory period between days 6-10 of the cycle for infertility evaluation. Pre-anaesthetic check up to be done prior to the procedure

On Hysteroscopy, uterine cavity would be examined for the presence of septum, any congenital malformation, fibrotic bands, polyps, myomas, endometrial appearance, thickness and color. Endocervical canal was visualized for any growth or polyps. Both the tubal ostia were visualized.

On Laparoscopy, pelvic cavity and organs were inspected. Uterus was inspected for its shape, size, position and surface. Cul-de-sac was examined for any adhesions, obliteration, endometriotic nodules or fluid. Ovaries were viewed for size, shape, surface, color, presence of cysts and relation with tubes. Fallopian tubes were inspected carefully for size, shape, surface, kinking, dilatation, stricture or hydrosalpinx. Laparoscopic chromopertubation was performed for testing tubal patency in which methylene blue dye will be injected

with a 20 ml syringe via Leech Wilkinson cannula and spillage of dye from the fimbrial end of tube visualized. The data of all the patients were statistically analysed at the end of the study, with respect to various parameters as detailed in the proforma.

### Inclusion criteria

- All cases including primary and secondary infertility and who will give consent for surgery and who agree to participate in the study.

### Exclusion criteria

- Infertile women with less than 20 years or more 40 years of age
- Patient who has associated male factor
- Patients who refuse surgery.

## RESULTS

Out of 100 infertile patients 19 (19%) patients were aged between 20-24 years, 42 (42%) patients were aged were 25-29 years, 29 (29%) patients were 30-34 years, 10 (10%) patients were more than 35 years (Table 1).

Out of total 100 cases for infertility evaluated, primary infertility was 57 (57%) and secondary infertility was 43 (43%) (Table 2).

**Table 1: Distribution of age among infertile patients.**

Age (Years)	No.	Percentage
20 to 24	19	19.0%
25 to 29	42	42.0%
30 to 34	29	29.0%
35 and more	10	10.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 2: Distribution among the cases type of infertility.**

Type of infertility	No.	Percentage
Primary	57	57.0%
Secondary	43	43.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 3: Distribution among the cases of duration of infertility (years).**

Duration of infertility (Years)	No.	Percentage
< 5	34	34.0%
5 to 9	50	50.0%
10 to 14	13	13.0%
15 and more	3	3.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Out of 100 patients 50 (50%) patient infertile since 5-9 years, 13 (13%) patients since 10-14 years, 34 (34%)

patient less than 5 years, 3 (3%) patients was infertile since 15 or more than 15 years (Table 3).

**Table 4: Distribution among the cases of menstrual history.**

Menstrual history	No.	Percentage
Irregular	32	32.0%
Regular	68	68.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Out of 100 infertile patients 68 (68%) patients had regular menstrual cycle, 32 (32%) patients had irregular cycles (Table 4).

**Table 5: Distribution among the cases of significant obstetric history.**

Significant obstetric history	No.	Percentage
Previous curettage	22	22.0%
Previous live birth	7	7.0%
Medical abortion	6	6.0%
Previous curratage, IUD, medical abortion	2	2.0%
Previous curratage, medical abortion	2	2.0%
Ectopic pregnancy	1	1.0%
IUD	1	1.0%
Previous curettage, ectopic pregnancy	1	1.0%
Previous curettage, IUD	1	1.0%
Nulli-gravida	57	57.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 6: Distribution among the cases of past history.**

Past history	No.	Percentage
Hypothyroid	8	8.0%
Tuberculosis	6	6.0%
Asthma	4	4.0%
Hypertension	3	3.0%
Adnexal surgery	2	2.0%
Jaundice	2	2.0%
Abdominal trauma	1	1.0%
Anxiety disorder	1	1.0%
Bicornuate, unicolis	1	1.0%
Diabetes mellitus	1	1.0%
PCOS	1	1.0%
Septum resection	1	1.0%
Tb contact	1	1.0%
Nil	68	68.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Out of 100 patients 28 (28%) patients had previous history of curettage, 7 (7%) patients had previous live birth, 6 (6%) patients had previous medical abortion, one (1%) patient had ectopic pregnancy, one (1%) patient had

intra uterine insertion and 57 (57%) patients had no previous pregnancy events (Table 5).

Out of 100 infertile patients, 8 (8%) patients had hypothyroidism, 6 (6%) patients had tuberculosis, 4 (4%) patients had asthma, 3 (3%) patients had hypertension, 2 (2%) patients had previous adnexal surgery, 2 (2%) patients had jaundice, one (1%) patient had previous history of abdominal trauma, one (1%) patient had anxiety disorder, one (1%) patient was diagnosed case of bicornuate unicolis, one (1%) patient had diabetes mellitus, one (1%) patient had poly cystic ovarian disease, one (1%) patient had TB contact and 68 (68%) patients had no previous past history (Table 6).

**Table 7: Distribution among the cases of per speculum.**

Perspeculum	No.	Percentage
Vaginitis	12	12.0%
Cervical erosion	3	3.0%
Pin point cervix	2	2.0%
Polyp	1	1.0%
Short cervix	1	1.0%
Healthy	81	81.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Out of 100 patients, 81 patients (81%) healthy on speculum examination, 12 patients (12%) had vaginitis, 3 patients (3%) had cervical erosion, 2 patients (2%) had pin point cervix, 1 patient (1%) had polyp on examination, 1 patient (1%) had short cervix (Table 7).

**Table 8: Distribution among the cases of per vaginum.**

Per vaginum	No.	Percentage
Bulky	10	10.0%
Retroverted	4	4.0%
Adnexal mass	3	3.0%
Restricted mobility	2	2.0%
Small size	3	3.0%
Broad fundus	1	1.0%
Minimal tenderness	1	1.0%
Vaginal wall cyst	1	1.0%
Normal	75	75.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 9: Distribution among the cases of hormones.**

Hormones	No.	Percentage
Hyperprolactinemia	8	8.0%
Lh>Fsh	8	8.0%
Normal	84	84.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Authors studied that out of 100 patients 10 (10%) patient had bulky uterus on per vaginal examination, 4 (4%) patients had retroverted uterus, 3 (3%) patients had

palpable adnexal mass, 1 (1%) patient had broad fundus felt on per-vaginal examination, mobility restricted in 2 (2%) patients, minimal tenderness felt in 1 (1%) patient, vaginal cyst present in 1 patient. 75 (75%) patients had normal uterus and free fornices (Table 8).

Out of 100 patients, 8 (8%) patient hormonal reports showed hyperprolactinemia, 8 (8%) patients' reports showed raised LH level than FSH others had normal hormonal profile (Table 9).

**Table 10: Distribution among the cases of follicular study.**

Follicular study	No.	Percentage
Multiple small follicle	28	28.0%
Signs of ovulation	57	57.0%
Ovarian cyst	15	15.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Authors studied 100 patient follicular study; it showed 28 (28%) patients had multiple small follicles, 15 (15%) patients had ovarian cyst of varying size, and 57 (57%) patients had signs of ovulation (Table 10).

**Table 11: Distribution among the cases of hysteroscopy.**

Hysteroscopy	No.	Percentage
Polypoidal endometrium	14	14.0%
Scanty endometrium	8	8.0%
Endometrial polyp	5	5.0%
Moderate endometrium	4	4.0%
Os stenosed	4	4.0%
Tubular cavity	4	4.0%
Septate uterus	4	4.0%
Scanty endometrium, fibrosed cavity	3	3.0%
Calcified endometrium	2	2.0%
Fibrotic band	2	2.0%
Profuse endometrium	1	1.0%
White patches over fundus	1	1.0%
Normal	48	48.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Out of 100 patients, total 48 (48%) had normal hysteroscopic findings, 14 (14%) patients had polypoidal endometrium, 8 (8%) patients had scanty endometrium, 5 (5%) patients had endometrial polyp, 4 (4%) patient had moderate amount of endometrium, 2 (2%) patient had calcified endometrium, 2 (2%) patients had fibrotic band, 1 patient had profuse endometrium, 1 (1%) patient had white patches over fundus, not able to negotiate in 4(4%) patient because of stenosed os (Table 11).

In the present study, laparoscopy showed tuberculosis in 24 (24%) patients, endometriosis in 14 (14%) patients, polycystic ovarian syndrome in 14 (14%) patients,

congestion in 7 (7%) patients, intra-pelvic adhesions in 8 patients, hydrosalpinx in 3 (3%) patients, right sided hydrosalpinx in 1 patient, ovarian cyst in 3 patients, para-ovarian cyst in 3 patients, broad fundus in 2 (2%) patients, fibroid in 2 (2%) patients, tubo-ovarian mass in 2 (2%) patients, ovarian anomalies in 1 (1%) patient, normal in 15 (15%) patients (Table 12).

**Table 12: Distribution among the cases of laparoscopy.**

Laparoscopy	No.	Percentage
Tuberculosis	24	24.0%
Endometriosis	15	15.0%
Poly cystic ovarian syndrome	14	14.0%
Congestion	7	7.0%
Intra-pelvic adhesions	8	8.0%
Hydrosalpinx	3	3.0%
Ovarian cyst	3	3.0%
Paraovarian cyst	3	3.0%
Broad Fundus	2	2.0%
Fibroid	2	2.0%
Tubo-ovarian mass	2	2.0%
Ovarian anomaly	1	1.0%
Rt terminal hydrosalpinx	1	1.0%
Normal	15	15.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 13: Distribution among the cases of operative procedure.**

Operative procedure	No.	Percentage
Drilling	14	14.0%
Adhesiolysis	10	10.0%
Cyst puncture	7	7.0%
Cystectomy	6	6.0%
Fulguration	6	6.0%
Biopsy	2	2.0%
Cervical dilation	1	1.0%
Nil	54	54.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

**Table 14: Distribution among the cases of dye test.**

Dye test	No.	Percentage
Bilateral spill	68	68.0%
Bilateral block	13	13.0%
Bilateral delayed spill	6	6.0%
One side delay, one side spill	5	5.0%
Unilateral spill	4	4.0%
Unilateral delayed spill	3	3.0%
Extravasation	1	1.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

During the procedure laparoscopy, out of 100 patients, 14 (14%) patients undergone drilling of ovarian cystic lesions, 10 (10%) patients undergone Adhesiolysis, 7

(7%) patients undergone cyst puncture, 6 (6%) patients undergone fulguration, 2 (2%) patients biopsy, one patient had undergone dilatation of stenosed cervical os and no procedure was performed in 54 (54%) patients (Table 13).

**Table 15: Distribution among the cases of final diagnosis.**

Final diagnosis	No.	Percentage
Tuberculosis	29	29.0%
Endometriosis	15	15.0%
Poly cystic ovarian syndrome	14	14.0%
Pelvic inflammatory disease	10	10.0%
Hydrosalpinx	3	3.0%
Ovarian cyst	3	3.0%
Paraovarian cyst	3	3.0%
Adnexal mass	3	3.0%
Fibroid	2	2.0%
Uterine anomaly	2	2.0%
Ovarian anomaly	1	1.0%
Polyp	1	1.0%
Tubal pathology	1	1.0%
Normal	13	13.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

Authors performed 100 patients chromo-perturbation test, out of 100 patients, 68 (68%) patients had bilateral spill, 6 (6%) patients had bilateral delayed spill, 5 (5%) patients had one side delayed spill, one side free spill, 4 (4%) patients had unilateral spill, 3 (3%) patients had unilateral delayed spill, one (1%) patient had extra-vasation of dye (Table 14).

**Table 16: Distribution among the cases of complication of procedure.**

Complication of procedure	No.	Percentage
Spotting PV	2	2.0%
Trochar site infection	2	2.0%
Urine retention	2	2.0%
Paralytic ileus	1	1.0%
Trochar site bleeding	1	1.0%
Urinary tract infection	1	1.0%
Vomiting	1	1.0%
Nil	90	90.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

In this study, out 100 patients 29 (29%) patients diagnosed as tuberculosis, 15 (15%) patients diagnosed as endometriosis, 14 (14%) patients diagnosed as polycystic ovarian disease, 10 (10%) patients diagnosed as pelvic inflammatory disease, 3 (3%) patients had hydrosalpinx, 3 (3%) patients had ovarian cyst, 3 (3%) patients had para-ovarian cyst, 3 (3%) patients had adnexal mass, 2 (2%) patients had fibroids, 2 (2%) patients had uterine anomaly, one patient had ovarian anomaly, one (1%)

patient had polyp, one (1%) patient had tubal pathology, 13 (13%) patients showed normal study (Table 15).

Authors studied 100 patients hysterolaparoscopy study, out of which 2 (2%) patients developed spotting PV after the procedure, 2 (2%) patients developed trochars site infection, 2 (2%) patients developed urine retention, 1 (1%) patient developed paralytic ileus, one (1%) patient developed vomiting, one (1%) patient developed urinary tract infection, 90 (90%) patients not developed any complications (Table 16).

In our study, out of 100 patients, 28 (28%) patients were advised anti Koch's treatment, 22 (22%) patients advised for planned relations, 15 (15%) patients advised.

**Table 17: Distribution among the cases of plan of management.**

Plan of management	No.	Percentage
AKT	28	28.0%
Planned relations	22	22.0%
IVF	15	15.0%
COH with IUI	14	14.0%
Broad spectrum antibiotics	9	9.0%
Hormonal therapy	7	7.0%
GNRH analogues	4	4.0%
Septum resection	1	1.0%
<b>Total</b>	<b>100</b>	<b>100.0%</b>

In-vitro fertilisation technique, 14 (14%) patients advised controlled ovarian stimulation with intra uterine insemination, 9 patients advised broad spectrum antibiotics, 4 (4%) patients advised hormonal therapy, 7 (7%) patients advised GnRH analogues, one (1%) patient advised septum resection (Table 17).

## DISCUSSION

In this study, out of 100 infertile patients 19 (19%) patients were aged between 20-24 years, 42 (42%) patients were aged were 25-29 years, 29 (29%) patients were 30-34 years, 10 (10%) patients were more than 35 years, 50 (50%) patient infertile since 5-9 years, 13 (13%) patients since 10-14 years, 34 (34%) patient less than 5 years, 3 (3%) patients was infertile since 15 or more than 15 years.

In Mali K et al, study majority of the patients belonged to the age group of 26-30 years and 2% of patients were between age group of 36-40 years. Majority of the patients presented with primary infertility of less than or equal to 5 years of duration as the couples are very anxious to conceive after marriage.<sup>5</sup>

In the present study out of 100 cases for infertility evaluated, primary infertility were 57 (57%) and secondary infertility were 43 (43%), which was in comparison with study group of Borchia YG et al, where

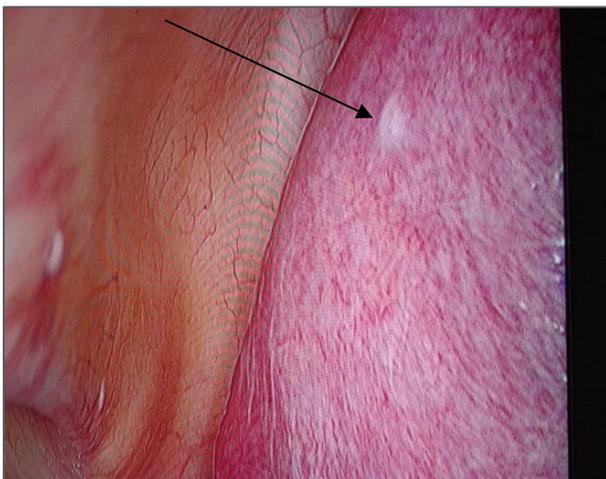
primary infertility were 35 (70%) and secondary infertility were 15 (30%) out of 50 patients studied.<sup>6</sup> Raksha et al observed that in primary infertility following hysteroscopic findings were more common than in secondary infertility.<sup>2</sup>

In this study, out of 100 patients, 14 (14%) patients undergone drilling of ovarian cystic lesions, 10 (10%) patients undergone adhesiolysis, 7 (7%) patients undergone cyst puncture, 6 (6%) patients undergone fulguration, 2 (2%) patients biopsy, one patient undergone dilatation of stenosed cervical os and no procedure was performed in 54 (54%) patients.

In the procedure of hysterolaparoscopy, laparoscopy helps the direct visualisation of upper abdomen, pathology of, uterus, fallopian tubes, peritoneum, ovaries and chromo-pertubation through the cervix for visualisation of tubal patency.

In this study out of 100 patients, Laparoscopy showed tuberculosis in 24 (24%) patients, endometriosis in 14 (14%) patients, polycystic ovarian syndrome in 14 (14%) patients, congestion in 7 (7%) patients, intra-pelvic adhesions in 8 patients, hydro-salpinx in 3 (3%) patients, right sided hydrosalpinx in 1 patient, ovarian cyst in 3 patients, para-ovarian cyst in 3 patients, broad fundus in 2 (2%) patients, fibroid in 2 (2%) patients, tubo-ovarian mass in 2 (2%) patients, ovarian anomalies in 1(1%) patient, normal in 15 (15%) patients.

In sharma et al, study, hysteroscopic abnormalities revealed myoma and polyp in 10 (7.7%) and synechia in 5 (3.8%), which was similar to other studies result.<sup>2</sup>



**Figure 1: Tuberculosis, tubercle present over uterus.**

Arrow points whitish elevated lesion, called tubercle present over the surface of the uterus. This is the important hallmark of tuberculosis.



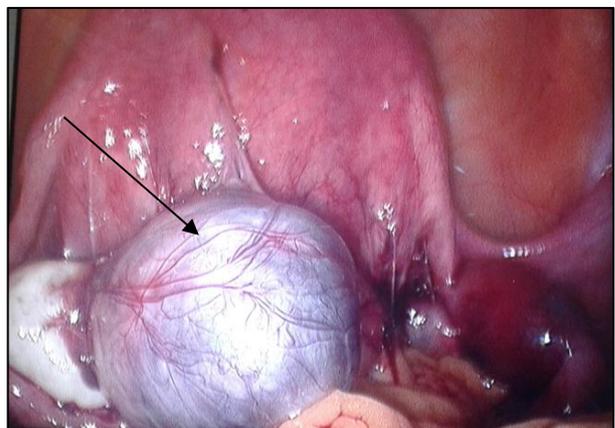
**Figure 2: Tuberculosis of fallopian tube.**

Arrow showed fallopian tube, which was affected by tuberculosis. Tube was congested, oedematous, tortuous, studded with tubercles.



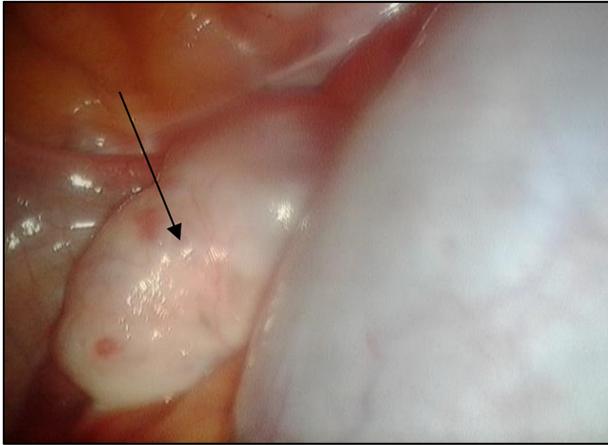
**Figure 3: Endometriosis.**

Laparoscopic grasper holds the adhesion present on the lateral wall of pelvic cavity. Adhesions were thick in consistency and presents with hemorrhagic spots.



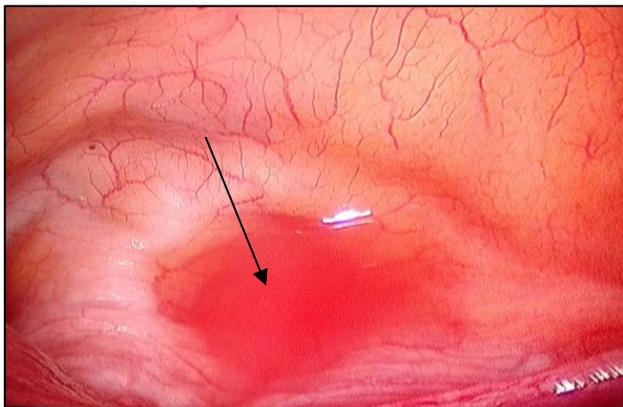
**Figure 4: Simple ovarian cyst.**

Arrow showed the ovarian cyst with thin transparent wall and minimal vascularity present over the cyst surface. The cyst was punctured, drained and cyst wall was separated.



**Figure 5: Poly cystic ovarian disease.**

Laparoscopic view of ovarian pathology, here ovary was enlarged with multiple follicles. Later this poly cystic ovary was drilled and fluid drained.



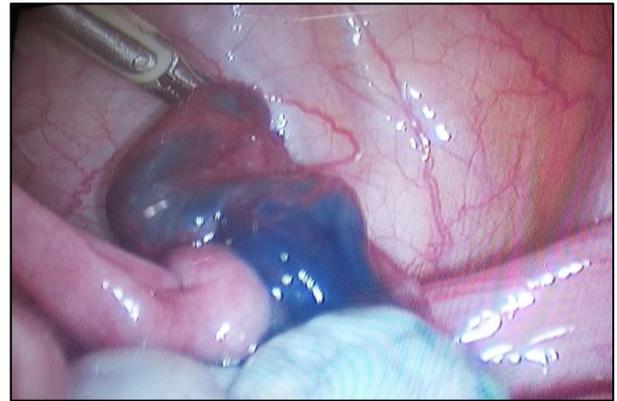
**Figure 6: Pelvic inflammatory disease.**

Arrow showed the straw colour fluid found on the pouch of Douglas, suggestive of pelvic inflammatory disease.

The results of Nayak et al study shows enlarged polycystic ovaries accounted for the most common laparoscopic abnormalities (9%) followed by endometriosis (7%) and tubal pathology (6%). Myomas were seen in 4% cases, adenomyosis and adnexal pathology were detected in 3% of cases each. 20% of cases had uterine causes of infertility.<sup>7</sup>

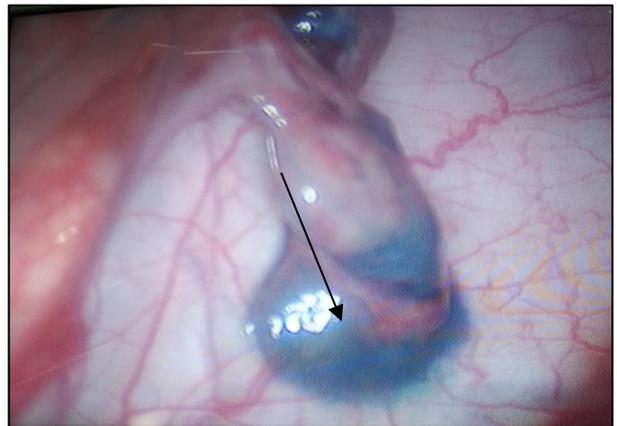
Authors performed 100 patients chromo-perturbation test, out of 100 patients, 68 (68%) patients had bilateral spill, 6 (6%) patients had bilateral delayed spill, 5 (5%) patients had one side delayed spill, one side free spill, 4 (4%) patients had unilateral spill, 3 (3%) patients had

unilateral delayed spill, one (1%) patient had extravasation of dye.



**Figure 7: Chromopertubation-complete tubal block.**

Laparoscopic picture showed the completely blocked tube with no spill of blue dye.



**Figure 8: Chromopertubation- partial block.**

Arrow showed the partial block, which is identified by delayed minimal spillage of tube.

Godinjak Z et al, conducted a retrospective study, they found bilateral tubes were blocked in 18 (5%) and unilateral tubal occlusion were in 30 (8, 33%) of patients. Pelvic adhesions were revealed in 40 (11.11%), and myomas in 42 (11.65%) out of that 31 (8.6%) were revealed by laparoscopy and 11 (3.05%) by hysteroscopy.<sup>8</sup> Singh R, et al, evaluated the role of diagnostic Hysterolaparoscopy in the management of infertile females.

The Laparoscopy was abnormal in 68% cases: Peritoneal and peri-tubal adhesions (29%), phimosis/hydrosalpinx (19%), polycystic ovaries (26%), tubo-ovarian masses (16%), endometriosis (4%), congenital abnormalities (10%), myomas (3%), bilateral tubal blockage (49%) and unilateral tubal blockage (17%).<sup>9</sup> Jayakrishnan et al, Prasant et al, from India detected findings of laparoscopy tubal blockages were present in 18% cases.

7.29% cases were having unilateral tubal blockage and 11.4% cases were having bilateral tubal block again.<sup>10</sup> In Rai study, tubal occlusion was seen in 24% (unilateral) and 10% (bilateral). Rai et al found that the most common abnormality found on Laparoscopy was endometriosis (32%). Among uterine factors, numbers of patients with fibroids were observed in 17 (8.5%) patients followed by congenital anomalies in 6 (3%) patients.<sup>11</sup>

In Dhanan jay study majority of the women with primary and secondary infertility did not had any complications (96.20% and 90.48% respectively).

Complication of hemorrhage (2.53%) and infection (1.27%) were noted in those with primary infertility while in women with secondary infertility haemorrhage was present in 4.76%.<sup>3</sup> In general, studies have suggested that hysteroscopic removal of lesions < 2 cm does not adversely affect an IVF cycle.<sup>9</sup> In Donnez study, total of 106 manuscripts were consulted. The incidence of myomas in infertile women without any obvious cause of infertility is estimated to be 1-2.4%.<sup>12</sup>

Authors studied 100 patients hysterolaparoscopy study, out of which 2 (2%) patients developed spotting PV after the procedure, 2 (2%) patients developed trochors site infection, 2 (2%) patients developed urine retention, 1 (1%) patient developed paralytic ileus, one (1%) patient developed vomiting, one (1%) patient developed urinary tract infection, 90 (90%) patients not developed any complications.

In this study 90 (90%) patients not developed any complications, only 10 patient's developed minor illness like spotting PV, trochors site infection, urine retention, paralytic ileus, vomiting, and urinary tract infection. Definitive procedure for reproductive tract pathology like, 14 (14%) drilling of ovarian cystic lesions, 10 (10%) Adhesiolysis, 7 (7%) cyst puncture, 6 (6%) patients undergone fulguration, 2 (2%) biopsy, dilatation of stenosed cervical os and no procedure was performed in 54 (54%) patients during Hysterolaparoscopy.

A combined modality of Hysterolaparoscopy helps in the management of infertility including primary and secondary infertility. With the help of Hysterolaparoscopy 28 (28%) patients were advised anti Koch's treatment, 22 (22%) patients adviced for planned relations, 15 (15%) patients advised in-vitro fertilisation technique, 14 (14%) patients advised controlled ovarian stimulation with intra uterine insemination, 9 patients advised broad spectrum antibiotics, 4 (4%) patients advised hormonal therapy, 7 (7%) patients advised GnRH analogues, one (1%) patient advised septum resection.

Many diagnostic tests for female infertility have screening value but the gold standards are laparoscopy and simultaneous hysteroscopy.<sup>13</sup>

## CONCLUSION

Hysterolaparoscopy is a gold standard in diagnosis and management of infertility. It is a feasible and acceptable procedure and it can be used as "One Time Approach" in the assessment of female infertility caused due to pelvic pathology.

It helps in diagnosing and management of certain factors causing infertility, which can be missed by any other method such as by USG, HSG and at same sitting it helps in operating the patients for pathologies hysteroscopically or laparoscopically like cystectomy, myomectomy, septum resection, pcos drilling etc.

It is concluded that while treating the causes of female infertility combined simultaneous diagnostic laparoscopy and hysteroscopy should be performed in all infertile patients as "seeing is believing" and if any pathologies found to be operable the gynaecologist can performs operative hystero-laparoscopy at that time, hence anticipating the pathologies after pre-operative work up is very important.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Pandeeswari B., Valecha SM. A prospective study on the role of hysteroscopy in the evaluation of infertility. *Int J Reprod Contracept Obstet Gynecol* 2019;8:4766-74.