

Role of Diagnostic Hysterolaparoscopy in Patients with Unexplained Infertility in Tertiary Care Centre

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Abstract

Background: Patients with unexplained infertility following standard infertility screening test usually undergo timing therapy that coordinates the time of ovulation and coitus, controlled ovarian hyperstimulation and intrauterine insemination. If the treatment is unsuccessful, diagnostic hysterolaparoscopy is performed. However with the recent improvement in the assisted reproductive technology (ART) , there has been a growing tendency to bypass diagnostic hysterolaparoscopy and proceeds directly to ART. Therefore, in the present study, we evaluated the usefulness of diagnostic hysterolaparoscopy for patients with unexplained infertility.

Aims & Objective: To understand the role of diagnostic hysterolaparoscopy in cases of unexplained infertility.

Materials and Methods: This was a descriptive type of interventional study on 80 infertile patients attending outpatient Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur.

Results: We studied 80 patients comprising of 56 (70%) cases of Primary Infertility and 24 (30%) cases of secondary infertility. The average age of active married life in 80 patients was between 8 and 9 years. The most common pathologies found on DHL were Tubal factors in 40%, PCOD in 11.3%, Endometriosis in 8.5%, uterine anomalies in 6.35% and unexplained infertility in 13.75%. Among 11 patients of unexplained infertility 3 (27.27%) conceived after

hysterolaparoscopy followed by assisted reproductive technique.

Conclusion: Diagnostic hysterolaparoscopy (DHL) is beneficial for patients with unexplained infertility. By DHL we were able to detect the causes of infertility in the pelvic cavity and to design a suitable management plan.

Keywords: ART, DHL, HSG, Diagnostic

Introduction

Unexplained infertility is defined as infertility in which the cause is difficult to detect with current diagnostic technology. The frequency of infertility is about 10-15% of couples in reproductive age group and unexplained infertility accounts for about 20% of cases. National survey of Family Growth estimates an increase in the number of infertile women from 5-6.3 million to 6.4-7.7 million by 2025. In patients with unexplained infertility following standard infertility-screening test, timing therapy that coordinates the time of ovulation and coitus is performed. If the couple does not conceive following such treatment, controlled ovarian hyperstimulation (COH), and intrauterine insemination (IUI) are performed. If COH and IUI is unsuccessful, before switching to the next treatment option (i.e. ART) diagnostic hysterolaparoscopy is performed. However with recent improvements in the assisted reproductive technology (ART), there has been a growing tendency that bypasses diagnostic hysterolaparoscopy and proceeds directly to ART. Therefore, in the present study, we evaluated the usefulness of DHL for patients with unexplained infertility. Though Basic laboratory investigations, routine pelvic examinations, sonography and hysterosalpingosonography (HSG) are good enough to exclude gross intrauterine pathology, but subtle changes in the form of small polyp, adhesions and

seedling fibroid are better picked up with magnification by hysteroscopy. The ability to see and manipulate uterus, fallopian tubes and ovaries during laparoscopy has made it an essential part of infertility evaluation. In addition, hysterolaparoscopy guided biopsy and therapeutic procedures such as polypectomy, myomectomy, septal resection and adhesiolysis can be done in same sitting. Thus the entire procedure becomes, "diagnostic and therapeutic oriented rather than only diagnostic."

Aim

To understand the role of diagnostic hysterolaparoscopy in cases of unexplained infertility.

Materials and Methods:- Our study was a descriptive type of interventional study on 80 infertile women attending Gynaecology OPD in the Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur from June 2018 to June 2019.

Inclusion Criteria

All infertile women between age 20 to 40 years.

Exclusion Criteria

1. Patients having relative contraindications for hysterolaparoscopy .
2. Male factor infertility
3. Abnormal hormonal profile
4. Active pelvic Inflammatory disease
5. Active tuberculosis
6. Couples who had not lived together for atleast 12 months.

After taking detailed history, baseline investigations and clinical examination, hysterolaparoscopy was performed during the postmenstrual phase on 7th, 8th or 9th day of cycle under general anaesthesia with written and informed consent.

At the end of the study, data was compiled, and categorized as patients with primary and secondary

infertility. The role of diagnostic hysterolaparoscopy in patients with suspected unexplained infertility evaluated.

Observation & Discussion

In our study, Out of the total 80 patients, 56 (70.00%) had primary infertility and 24 (30.00%) had secondary infertility. Primary infertility was more common in the age group of 26-30 yrs while secondary infertility was more common in age group of 21-25 yrs. This is because of limited no of the patients were selected in secondary infertility group (Group-B).

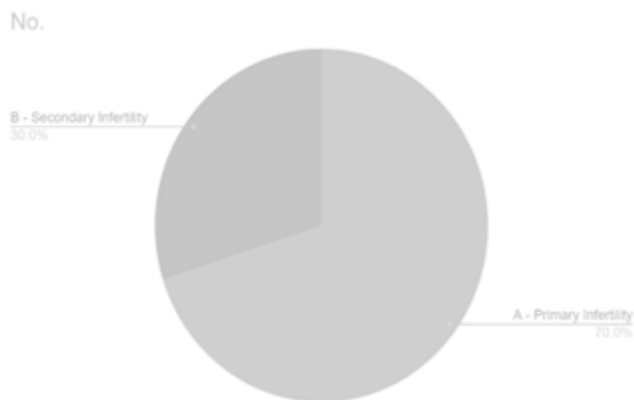


Figure 1

Table 1: Distribution of Cases According to Age

Age Group (in yrs)	Group-A (PI)		Group-B (SI)		Total	
	No	%	No	%	No	%
<20	1	1.79	0	0.00	1	1.25
21 – 25	21	37.50	11	45.83	32	40.00
26 – 30	29	51.78	9	37.50	38	47.50
31 – 35	4	7.14	1	4.17	5	6.25
>36	1	1.79	3	12.50	4	5.00
Total	56	100.00	24	100.00	80	100.00

The mean age was 26.57 ± 3.39 yrs in women of primary infertility and 27.58 ± 5.31 years in patients of secondary infertility. Mean duration of infertility in Group-A was 4.71+- 3 yrs and in Group- B was 7.8+- 4.8 yrs.

Table 2: Distribution of Cases According to Abnormalities Detected on Hysteroscopy

Findings	Group-A(PI)		Group-B(SI)		Total	
	No	%	No	%	No	%
Normal	26	46.43	15	62.50	41	51.25
Cervicoisthmic abnormalities	6	10.71	0	0.00	6	7.50
Endometrial pathology	13	23.21	4	16.67	17	21.25
Congenital Anomaly	1	1.79	3	12.50	4	5.00
Polyp	1	1.79	1	4.17	2	2.50
Absent fluid current	8	14.23	1	4.16	9	11.25
Adhesion	1	1.79	0	0.00	1	1.25

In present study, 92.50% of patients had no abnormality in cervix. Pin point cervix, fibrosed cervix and a small polyp of 2 x 1 cm size at the level of internal os was present in 3.57%, 5.36% and 1.79% patients of primary infertility group respectively.

In the study of Koskas M et al (2010)2, cervicoisthmic abnormalities were present in 4.3% of patients with 13 cases of polyps (2.3%), 9 had stenosis (18%) and 2 had adhesions (0.4%).In present study, 41 (73.21%) patients in Group-A (PI) and 16 (66.66%) patients in Group-B had normal findings during diagnostic hysteroscopy. 2 (3.57%) patients in Group-A and 4 (16.67%) patients in Group-B had atrophic endometrium, and 5 (8.93%) patients in Group-A had polypoidal endometrium. These changes are due to hypoestrogenic and hyperestrogenic state respectively associated with irregular periods due to ovarian dysfunction. while 2 (3.57%) patients in Group-A had calcified endometrium. 4 (7.14%) patients of Group-A had hyperaemic endometrium. These interfere with implantation, preventing an embryo from attaching to the uterine wall.Uterine cavity was tubular & narrow in 1 (4.17%) patient of Group-B. Partial septum was present in 1 (1.79%) patient of Group-A and 2 (8.33%) patients of Group-B and one patient (1.79%) of each

group had polyp. Similar findings were reported by Puri S et al (2015)⁶, Mehta AV et al (2016)⁹ Nanaware SS et al (2016)¹⁰. In present study, 71.25% of total patients had B/L patent ostia (75.00% of patients in Group-A v/s 62.50% of patients in Group-B). 7 (8.75%) patients had periosteal fibrosis in which 4 (7.14%) patients belonged to Group-A and 3 (12.50%) patients belonged to Group-B. 1 (1.78%) patient of primary infertility (Group-A) had flimsy adhesion around B/L ostia. On diagnostic hysteroscopy in 4 (7.14%) patients of primary and 2 (8.33%) patients of secondary infertility had absent fluid current through B/L ostia. 7.14% patients of primary infertility and 4.16% patients of secondary infertility had absent fluid current through U/L ostia. In present study, most common laparoscopic uterine abnormality in primary infertility was congestion over the uterine surface in 7 (12.50%), second was fibroid in 6 (10.71%), and third was endometriosis and periuterine adhesions in 5 (8.93%). One (1.79%) patient had small hypoplastic uterus and another one (1.79%) had tubercles all over the peritoneal cavity involving uterus and bilateral adnexa, peritoneum known as Koch abdomen.

Table 3: Distribution of Cases According to Abnormalities on Diagnostic Laparoscopy

Laparoscopic abnormalities	Group-A(PI)		Group-B(SI)		Total	
	No	%	No	%	No	%
Normal pelvic Organ	13	23.21	5	20.83	18	22.50
Tubal pathology	20	35.71	7	29.17	27	33.75
Adhesion	14	25.00	8	33.33	22	27.50
Endometriosis	6	10.71	3	12.50	9	11.25
PCOD	8	14.29	1	4.17	9	11.25
Myoma	6	10.71	3	12.50	9	11.25
Anomalous Uterus	2	3.75	2	8.33	4	5.00

In secondary infertility on laparoscopy, prevalence of periuterine adhesions, fibroid and endometriosis were equivocal. 2 (8.33%) patients in Group-B had chronic inflammation, one (4.17%) had unicornuate uterus and one had rudimentary horn (4.17%). The difference between the 2 groups regarding uterine factors in infertility was not significant ($p=0.642$). In present study, maximum number of patients, 10 (17.86%) patients in primary and 2 (8.33%) patients in secondary infertility had dilated and tortuous tubes. It may be due to subclinical PID because of lack of sexual education, unawareness about the advantages of contraceptives and poor perineal hygiene, particularly during menstrual periods. Thus proper education and counselling of girls are an important preventive measure for infertility.

Tubeoovarian mass was found in 5 (8.93%) patients of Group-A and 1 (4.17%) patient of Group-B. 2 (3.57%) patients of Group-A and 1 (4.17%) patient of Group-B had hydrosalpinx.

Peritubal adhesion was found in 2 (3.57%) patients of Group-A and 3 (12.50%) patients of Group-B and 1 (1.79%) patient of Group-A had B/L fibrosed tube. Lead pipe appearance was found in 1.79% of patients in Group-A and 12.50% of patients in Group-B. Only unilateral tube was found in 3 (12.50%) patients of Group-B due to h/o salpingectomy for ectopic pregnancy.

In present study, 58.92% patients of Group-A had normal ovarian morphology compared to 66.66% from Group-B. Ovary was enlarged and pearly white in 5 (8.93%) patients of Group-A and 1 (4.17%) patients of Group-B. In 5 (8.93%) patients of Group-A and 3 (12.50%) patients of Group-B ovary not visualized due to adhesions. Endometrioma was detected in ovary in 3

(5.36%) patients of Group-A and 2 (8.33%) patients of Group-B.

Ovary was cystic and enlarge in 7.10% patients of Group-A and 4.17% patients of Group-B. 5.36% patients of Group-A and 4.17% patients of Group-B had tubo-ovarian mass in ovary.

In present study, POD was involved in 23 (41.07%) patients in Group-A and 7 (29.16%) patients in Group-B. Hyperaemia was the most common finding in 21.42% of Group-A and 12.50% patients of Group-B.

Adhesion was present in 8.93% patients of Group-A and 8.33% patients of Group-B. Gunshot lesions of endometriosis was present in 5 (8.93%) patients of Group-A and 2 (8.33%) patients of Group-B. One patient in Group-A show fibrous band obliterating the POD.

21.42% patients in Group-A and 17.50% patients in Group-B had flimsy adhesions which was most common type of adhesions in present study. 3.57% patients in Group-A and 25.00% patients in Group-B had dense adhesion. The difference between the two groups is statistically significant i.e. adhesions were more common in primary infertility in present study. Similar results were found in study of Kabadi YM et al (2016)³ Hema KR et al (2017)⁴, Rizvi SM et al (2018)⁵ Nisar S et al (2019)⁶

Table 4: Distribution of Cases According to Tubal Patency on Diagnostic Laparoscopy

Chromopertubation findings	Group-A(PI)		Group-B(SI)		Total	
	No	%	No	%	No	%
Normal patency	30	53.51	8	33.33	38	47.50
B/L Block	13	23.21	6	25.00	19	23.75
U/L Block	7	12.50	4	16.17	11	13.75
One tube absent, 2 nd Tube patent	0	0.00	2	8.33	2	2.50
One tube absent, 2 nd Tube blocked	0	0.00	1	4.17	1	1.25
Delayed Spill	6	10.71	3	12.50	9	11.25

16.67% patients of Group-B. Among three patients of secondary infertility with history of salpingectomy for ectopic pregnancy, two had normal patency and one

had agglutinated fimbrial end. In 4 (7.14%) patients of Group-A cystectomy was performed for endometrioma. Laparoscopic ovarian drilling was done in 3 (5.35%) patients of Group-A. In 3.57% cases of PI and 8.33% cases of SI adhesiolysis was performed. Septal resection was performed in 1.78% patients of Group-A (PI) and 4.17% patients of Group-B.

Table 5: Distribution of Cases According to Operative Procedure

Procedure	Group-A (PI)		Group-B (SI)		Total	
	No	%	No	%	No	%
Cystectomy	4	7.14	0	0.00	4	5.00
Adhesiolysis	2	3.57	2	8.33	4	5.00
Laparoscopic Ovarian Drilling	3	5.35	0	0.00	3	3.75
Septal Resection	1	1.78	1	4.17	2	2.50
Laparoscopic Myomectomy	0	0	1	4.17	1	1.25
Hysteroscopic Polypectomy	1	1.78	1	4.17	2	2.50
Cyst Punctured and Suctioned Out	1	1.78	2	8.33	3	3.75
Cervical Cautery	0	0	1	4.17	1	1.25

In 4.17% cases of Group-B laparoscopic myomectomy was done. Hysteroscopic polypectomy was done in 1.78% patients of Group-A and in 4.17% patients of Group-B.

In 1.78% cases of Group-A (PI) and 4.17% cases of Group-B (SI) ovarian cyst was punctured and suctioned out. Cervical cautery was done in 1 patient of secondary infertility having cervical erosion.

Table 6: Distribution of Cases According to Complications of Diagnostic Hysteroscopy

Morbidity	Group-A (PI)		Group-B (SI)		Total	
	No.	%	No.	%	No.	%
Extroperitoneal Insufflation	1	1.78	1	4.16	2	2.50
Bleeding	1	1.78	1	4.16	2	2.50
Cervical Perforation	0	0	1	4.16	1	1.25
Uterus Perforation	0	0	1	4.16	1	1.25

$\chi^2 = 2.236$ d.f. = 3 p = 0.717 NS

In present study, there were no major complications in any patient. Only 1 (1.78%) patient of Group-A and 1 (4.16%) patients of Group-B had extraperitoneal insufflation of gas. One case in Group-A

(1.78%) had bleeding. Cervical perforation was occur in one case (4.16%) of Group-B while introducing hysteroscope. In one case in Group-B uterus perforation was occur while inserting hysteroscope. In present study, out of 80 patients who underwent diagnostic hysterolaparoscopy, 11 had unexplained infertility and normal pelvic findings. Three pregnancies (27.27%) were achieved in this group. In addition, 4 (19.04%) of 21 patients with pelvic inflammatory disease, 2(40%) of 5 patients with endometrial pathology, 1(20%) of 5 patients with congenital uterine anomalies, 1(12.50%) of 8 patients with PCOD, 1(33.33%) of 3 patients with ovarian cyst became pregnant.

Table 7: Distribution of Number of Cases Conceived by Operative Procedure

Hysterolaparoscopic Finding	Total		Conceived
	No	%	
PID	21	26.25	4
Fibroid	6	7.50	
Endometrial Pathology	5	6.25	2
Uterine Polyp	2	2.50	
Congenital Uterine Anomalies	5	6.25	1
Endometriosis	9	11.25	
PCOD	8	10.00	1
Ovarian Cyst	3	3.75	1
Unexplained infertility	11	13.75	3
TB	9	11.25	
Pinpoint Cervix	1	1.25	
Total	80	100.00	

Chi-square = 9.713 with 10 degrees of freedom; P = 0.466(NS)

Table 8: Treatments resulting in pregnancy

Treatment	N=29
Timing Therapy	4
Ovulation Induction	3
Ovulation Induction and IUI	4
IVF-ET	1

The treatment that led to pregnancies are shown in above table. The number of patients who conceived by timing , Ovulation induction, Ovulation Induction with Intrauterine insemination and In-Vitro fertilization-Embryo Transfer were 4, 3, 4 and 1 patients respectively.

Summary

In our study most common abnormalities on hysterolaparoscopy was tubal pathology and adhesions in both primary as well as secondary infertility and by using hysterolaparoscopy tubal morphology, tubal patency, ovarian morphology, unsuspected pelvic pathology and uterine cavity abnormalities can all be resolved with accuracy at one session.

Conclusion

In Infertile couples with unexplained infertility, giving 5 to 6 rounds of treatment may or may not result in pregnancy. Instead of that, it can result in anxiety, depression and socioeconomic burden. All of these only grow in volume over time and will only increase further with every cycle of treatment failure. By introducing DHL at the right time and in the right scenario, one can directly visualize the pelvic and uterine cavity and manage infertility with several treatments.

References

1. Boivin J, Baunting L, Collins JA, Nygren KG. International estimates of infertility prevalence and treatment-seeking : potential need and demand for infertility medical care. Hyman Reproduction. June 2007; 22(6) : 1506-1512.

2. Koskas M, Mergui JL, Yazbeck C, Uzan S, Nizard J. Office hysteroscopy for infertility: a series of 557 consecutive cases. *Obstet Gynecol Int.* 2010;2010:168096. doi: 10.1155/2010/168096. Epub 2010 Apr
3. Kabadi YM, Harsha B. Hysterolaparoscopy in the Evaluation and Management of Female Infertility. *J Obstet Gynaecol India.* 2016 Oct; 66(Suppl 1) : 478-81. doi: 10.1007/s13224-016-0863-
4. Hema KR, Lalitha HS. Evaluation of role of laparoscopy in determining etiology of infertility. *Int J Reprod Contracept Obstet Gynecol.* 2017 Dec; 6(12) : 5322-5326.
5. Rizvi SM, Ajaz S, Ali F, Rashid S, Qayoom T, Rashid L. Laparoscopic Evaluation of Female Infertility. *International Journal of Scientific Study.* May 2018; 6(2) : 117-121.
6. Nisar S and Bandy SS. A study of evaluation of various factors of infertility by diagnostic laparoscopy at tertiary hospital. *Int J Adv Res.* 2019; 7(2) : 1067-1071.