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Original Research Article

Role of hysterolaparoscopy in the evaluation of female infertility in a tertiary care centre

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ABSTRACT

Background: Infertility is one of the most important and underappreciated reproductive health problems in developing countries. Inability to conceive bears a social stigma which causes societal repercussion and personal suffering. The advent of hysterolaparoscopy have redefined the evaluation and treatment of infertile women. Study aimed to assess the role of hysterolaparoscopy in the evaluation of female infertility.
Methods: This prospective observational study was done in the department of obstetrics and gynaecology, Gandhi Medical College, Sultania Zanana Hospital, Bhopal, during the period between 1st December 2016 to 30th November 2017. 104 infertile patients either with primary or secondary infertility were included after thorough evaluation.
Results: Out of 104 infertile patients, 82(78.8%) women had primary infertility and rest 22(21.1%) women had secondary infertility. In primary infertility group, most common laparoscopic finding was PCOD in 24(29%) women and in secondary infertility group, tubal blockage was seen in 9(40%) women. The most common pathology seen in hysteroscopy was submucous fibroid in 6(7.3%) women with primary infertility, whereas in secondary infertility group, synechiae was found in 2(9%) patients and septum was seen in 1(4.5%) patient. Out of 104 patients, 33 (31.7%) patients underwent various interventions. The most common intervention was ovarian drilling for PCOS in 21(63.3%) patients followed by hysteroscopic cannulation in 5(15.5%) patients.
Conclusions: Hysterolaparoscopy is a very useful tool that can detect various structural abnormalities in multiple sites like uterus, tubes, ovaries and peritoneal cavity in the same sitting. When done by experienced hands and proper selection of patients, hysterolaparoscopy can be considered as a definitive investigative procedure for evaluation of female infertility.

Keywords: Hysteroscopy, Infertility, Laparoscopy

INTRODUCTION

Infertility is a disease of reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected intercourse (WHO-ICMART).[1] Infertility is one of the most important and underappreciated reproductive health problem in developing countries. Inability to conceive bears a social stigma which causes societal repercussion and personal suffering. Infertility is a problem of global proportions worldwide more than 70 million couples suffers from infertility. The prevalence of infertility in India ranges from 3.9% to16.8%.[2]

Conception depends on the fertility potential of both the male and female partner. Female factors contribute 40-45% in aetiology of infertility.[3] The common factors responsible for female infertility are tubal factors,

anovulatory disorders, Endometriosis, uterine and cervical factors.

The diagnosis and treatment of infertility stands out as the most rapidly evolving area in medicine.[4] The advent of diagnostic hysterolaparoscopy have redefined the evaluation and treatment of infertile women. Diagnostic hysterolaparoscopy is a gold standard for diagnosing tubal, ovarian, peritoneal and uterine factors.[5]

Hysterolaparoscopy is perceived as minimally invasive surgical technique that provides both panoramic and highly magnified view of the uterine and peritoneal cavity. DHL can reveal the presence of peritubal adhesions, tubal pathology, periadenexal adhesions and endometriosis in 35 to 68% cases even after normal HSG.[6] Hence DHL remains an essential part of the complete assessment of infertile women.

METHODS

This prospective observational study was done in 104 patients of primary and secondary infertility in the department of obstetrics and Gynaecology, Gandhi Medical College, Sultania Zanana Hospital, Bhopal. Duration of study was one year from 1st December 2016 to 31st November 2017. Primary objectives were to evaluate various etiological factors, to find out relative prevalence of various etiological factors in primary and secondary infertility and to define the role of hysterolaparoscopy for planning the management of infertility.

Inclusion criteria

- All patients of primary and secondary infertility for more than one year attending gynaecology OPD giving informed consent with no contraindication for hysterolaparoscopy.

Exclusion criteria

- Medical disorders which are contraindications for creating pneumoperitoneum eg. heart disease, chronic COPD, peritonitis, severe anemia, anaesthetic problem etc.
- Acute pelvic infection
- Morbid obese patients.

After thorough history taking and gynaecological examination and with all necessary investigations (Husband semen analysis, baseline endocrinal investigations, ovulation study and postmenstrual HSG) patients were admitted a day before surgery. Medical and anaesthetic fitness was taken. Written consent was obtained from all patients. All patients were kept fasting after 10 pm a day before surgery. Procedure was carried out between 6th to 12th day of menstrual cycle.

Under general anaesthesia, hysteroscope (5 mm Karl Storz) was introduced in cervical canal under vision. The uterine cavity was distended with 0.9% normal saline and examined for any pathology. Laparoscopy was done followed by chromo pertubation for tubal patency. After the procedure, patients were transferred to post-operative ward and were discharged next.

RESULTS

During the study period, a total of 623 patients of infertility came to our infertility clinic, out of which 104 patients were selected and admitted for hysterolaparoscopy. Of them, 82 (78.8%) patients were of primary infertility and 22 (21.8%) patients were of secondary infertility.

Table 1: Age distribution of patients.

Age (years)	Primary infertility (n=82)	Secondary infertility (n=22)
21-25	23 (28%)	3 (13%)
26-30	32 (39%)	5 (22%)
31-36	18(21%)	9 (40%)
> 36	9 (10%)	5 (22%)

Age is an important factor in cases of infertility. In our study, maximum number of patients 32 (39%) belonged to 26-30 years in primary infertility group and 9 (40%) patients belonged to 31-36 years in case of secondary infertility group. The patients in secondary infertility group (31±4.8years) were comparatively older to primary infertility group (26±3.5) (p value < 0.05) (Table 1).

Table 2: Duration of infertility.

Duration of infertility	Primary infertility (n=82)	Secondary infertility (n=22)
1-2 years	20 (24%)	4 (18%)
2-5 years	45 (54%)	12 (54%)
> 5 years	17 (20.7%)	6 (27.2%)

In our study, majority of patients had duration of infertility of about 2-5 years accounting for 54% in both primary and secondary infertility group as shown in Table 2.

Table 3: Presenting complaints.

Complaints	Primary infertility (n=82)	Secondary infertility (n=22)
Asymptomatic	65 (79%)	14 (63.6%)
Irregular menses	42 (51%)	9 (40%)
Dysmenorrhea	28 (34%)	7 (31.8%)
Excessive hair growth	14 (17%)	4 (18.8%)
Chronic pelvis pain	8 (9.7%)	6 (27.7%)
Unhealthy discharge	20 (24.3%)	8 (36.3%)

Most of our patients were asymptomatic accounting 65 (79%) and came for treatment of infertility only. However, another symptoms present were asked for and tabulated in Table 3.

The most common complaint was irregular menses which was seen in 42 (51%) patients in primary infertility group and in 9 (40%) patients in secondary infertility group.

In present study, 62% in primary infertility group and 91% in secondary infertility group had abnormal DHL findings.

The most common causative factor in primary infertility was ovarian factor in 24 cases (29.2%). In secondary infertility, it was found to be tubal factor in 11 cases (50%) (Table 4).

Table 4: Causative factors of infertility.

Causes of infertility	No of patients (n=104)	Percentage
Ovarian	25	24%
Tubal	19	18.2%
Uterine	18	16.3%
Peritoneal	09	8.6%
No pathology	33	32.6%

In our study, the most common abnormality found by laparoscopy was polycystic ovarian syndrome in primary infertility group seen in 24 patients (29%) and tubal blockage in secondary infertility group seen in 9 (40%). 02 patients (2.4%) had Endometriosis in primary infertility group. Other significant observed findings were lead pipe appearance of fallopian tube, perihepatic adhesions, violin strings suggestive of PID were seen in 03 patients (13%) in secondary infertility group and in 1 patient (1.2%) in primary infertility group. Among 104 patients, 51 (51.5%) patients had absolute normal laparoscopic finding (Table 5).

Table 5: Laparoscopic findings.

Laparoscopic findings	Primary infertility (n=82)	Secondary infertility (n=22)
Normal	44 (53.6%)	7 (31.8%)
PCOS	24 (29%)	1 (4.5%)
Tubal blockage	5 (6.0%)	9 (40%)
Hydrosalpinx	1 (1.2%)	1 (4.5%)
Tubo ovarian mass	2 (2.4%)	1 (4.5%)
PID	1 (1.2%)	3 (13%)
Endometriosis	2 (2.4%)	0
Peritubal adhesions	3 (3.6%)	0

Table 6 the most common pathology seen in hysteroscopy was fibroid uterus in 6 cases (7.3%) followed by septum in 2.4% cases and cervical stenosis in 1.2% cases in primary infertility group and in secondary infertility group, polyp and foreign body were found in one patient each (4.5%). Synechiae was found only in secondary group in 2 patients (9%) and none in primary infertility group.

Table 6: Hysteroscopic findings.

Hysteroscopic findings	Primary infertility	Secondary infertility
Fibroid	6 (7.3%)	1 (4.5%)
Septum	2 (2.4%)	0
Polyp	2 (2.4%)	1 (4.5%)
Sub septate uterus	2 (2.4%)	0
Foreign body	0	1 (4.5%)
Cervical stenosis	1(1.2%)	0
Synechiae	0	2 (9%)

Table 7: Interventions.

Intervention	Primary infertility (n=29)	Secondary infertility (n=4)	Total (n=33)
Ovarian drilling	20 (60%)	201 (25%)	21 (63.3%)
Hysteroscopic cannulation	3 (10.3%)	2 (50%)	5 (15.1%)
Septal resection	2 (6.8%)	0	2 (6.06%)
Adhenolysis	1 (3.4%)	0	1 (3.03%)
Conversion to laparotomy	3 (10.3%)	1 (25%)	4 (12.1%)

Table 7 shows out of 104 patients, 33 patients (31.7%) underwent various interventions at the time of hysterolaparoscopy. The most common intervention was ovarian drilling for PCOS seen in 21 (63.3%) cases followed by hysteroscopic cannulation seen in 5 (15.5%) cases.

In present study, 12 patients (41.3%) had abdominal distension, 5 patients (17.2%) had vomiting and right shoulder tip pain seen in 9 (31%) patients. One patient (3.4%) had uterine perforation at the time of uterine manipulation and one patient (3.4%) had omental injury and one (3.4%) patient had bowel injury at the time of trocar insertion.

DISCUSSION

It is widely accepted that infertility is a common medical problem. The role of hysterolaparoscopy in the evaluation of primary and secondary infertility is established beyond any doubt. Infertile women with normal ovulation, normal pelvic ultrasound finding, normal hormonal profile and normal husband semen analysis have higher possibility of having tubal, ovarian, peritoneal and subtle endometrial pathologies. The subtle changes are better picked up on magnification with hysterolaparoscopy.

The distribution of primary infertility in our study is 78% and of secondary infertility is 21.8%. Usmani et al, in

Rawalpindi reported 62% patients with primary infertility and 38% of patients with secondary infertility.[7]

Major symptoms in our study were menstrual irregularities which was seen in 42 patients (51%) in primary infertility group and in 9 patients (40%) in secondary infertility group. The most common cause of irregular menses is PCOS which coincides with our study. The menstrual dysfunction arises from anovulation or oligo-ovulation and ranges from amenorrhea to oligomenorrhea in PCOS. Barbosa G et al in mentioned in their study that majority of patients with PCOS 80% presents with oligomenorrhea and 40% with amenorrhea.[8] In present study, 62% in primary infertility group and 91% in secondary infertility group had abnormal DHL findings.

Table 8: Comparison with other studies.

Author	City	Abnormal findings	
		Primary infertility	**Primary infertility**
Ramesh et al[9]	Banglore	75.5%	76.5%
Jasmina et al[10]	Puducherry	54.5%	59.5%
Zhang et al[11]	China	64.3%	49.2%
Present study	Bhopal	62.0%	91.0%

Table 8 shows comparing to the other studies, the prevalence of abnormal findings by DHL is comparable in primary infertility but differs in secondary infertility as in our study the secondary infertility patients were less in number.

In our study, the most common cause was found to be ovarian factor in which PCOS was more common accounting for 24% in 25 patients. Due to life style changes, modernization, eating habits and less work makes PCOS a leading cause of infertility.

Sumanpui et al, also found PCOS most common pathology in their study accounting to 22% comparable with our study.[12] Zhang et al, reported PCOS as the cause of infertility only in 5.3% patients in contrast to our study.[11]

Tubal factor was the second most common cause accounting to 18.2% in 19 patients. Chlamydial infection and history of tuberculosis were found to be the causes of tubal blockage and peritubal adhesions, perhaps because of the higher incidence of tuberculosis in India and unhygienic habits which forms the source of infections.

Amrita et al, at Patna, Bihar reported tubal factor was responsible for infertility in 35.5% in her study.[13]

Uterine factors constitute (16.3%) in 18 patients in present study. Commonest finding was fibroid uterus constituting to 6.7%. Various mechanisms by which myoma adversely affect fertility include cornual myoma that involve or compress the interstitial segment of the tube, dysfunctional uterine contractility interfering with ovum or sperm transport.

Zhang et al, in their study found fibroid uterus accounting to 15.5%.[11]

Uterine anomalies were reported in our study such as septum, subseptate uterus and cervical stenosis. The reproductive performance of women with uncorrected septum is rather poor as 65% losses occur in first trimester. Synechiae formation is more seen in secondary infertility because of prior history of dilatation and curettage. Ibinaye et al, reported more number of synechiae in 26 patients accounting to 11.6% which was closer to our study results in 2 patients accounting to 9%.[14]

In our study, peritoneal factors reported were 8.6% patients. out of which endometriosis was found in maximum cases constituting 2.4%. Endometriosis may induce infertility as a result of anatomic distortion and adhesions. Current thinking dictates visual or microscopic confirmation through laparoscopy before diagnosing and treating the patient for endometriosis and infertility.

The advantage is finding an exact etiological factors and definitive surgical procedures like adhesinolysis, ovarian drilling, ovarian cystectomy, polypectomy and release of uterine synechiae can safely be combined together with hysterolaparoscopy to increase the fertility rate at a short interval of time. Ovarian drilling, hysteroscopic cannulation, septal resection and adhesiolysis were done in our study accounting to 31.7%.

CONCLUSION

Hysterolaparoscopy is a very useful tool that can detect various structural abnormalities in multiple sites like uterus, tubes, ovaries and peritoneal cavity in the same sitting. When done by experienced hands and proper selection of patients, hysterolaparoscopy can be considered as a definitive investigative 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 trauma to the couples. So, it helps in formulation an appropriate plan of management in infertility.

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