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Original Research Article

Role of hysterolaparoscopy in the diagnosis and management of infertility

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ABSTRACT

Background: Infertility is defined by WHO and ICMART as a disease of the reproductive system by the failure to achieve a clinical pregnancy after 12 months or more regular unprotected sexual intercourse. Objective of this study were to assess the role of hysteroscopy and laparoscopy in the evaluation of female infertility. To assess the therapeutic role of these endoscopic modalities in cases of infertility.

Methods: A prospective study of 112 women coming with the complain of infertility to a tertiary care centre hospital in Ahmedabad over a period of 30 months from January 2017 to June 2019.

Results: Of the 112 cases, 69.7% had primary infertility and 30.3% had secondary infertility. Septum was the most common hysteroscopic finding (7.1%) followed by polyps (5.4%) and synechiae (3.6%). Adhesions was the most common laparoscopic finding (23.2%) followed by tubal blocks (19.7%) and fibroid (17.9%). Polycystic ovaries were seen in 12.5% patients followed by endometriosis in 10.7% women. Myomectomy was most common therapeutic procedure (17.9%) followed by adhesiolysis in 14.3% women and PCO drilling in 8.9% women.

Conclusions: Hysterolaparoscopy is useful as a diagnostic and therapeutic measure for women having infertility.

Keywords: Diagnosis, Hysterolaparoscopy, Infertility, Operative procedure

INTRODUCTION

Infertility is defined by WHO and ICMART as “a disease of the reproductive system by the failure to achieve a clinical pregnancy after 12 months or more regular unprotected sexual intercourse”.¹ The number of couples experiencing fertility problems has increased from 8% to 10-15%.²

The U. S. supreme court held in 1998 that infertility is a disability under the Americans with Disabilities Act (ADA) where disability means a physical or mental impairment that substantially limits one or more major life activities.³ Childlessness may be a tragedy to a married woman, and can be a cause of marital upset as well as of personal unhappiness and ill-health.

Infertility is of two types-primary and secondary infertility, primary infertility is the absence of live birth for women who desire a child and have been in a union for at least 12 months, during which they have not used any contraceptives.⁴ Secondary infertility refers to couples who have been able to get pregnant once (irrespective of the outcome), but now are unable.⁴

Over the past decade, significant advances have occurred in the diagnosis and treatment of reproductive disorders. The practice committee of the American Society for Reproductive Medicine (ASRM) has published guidelines for a standard infertility evaluation. It includes a semen analysis, assessment of ovulation, a hysterosalpingogram, and, if indicated, tests for ovarian reserve and laparoscopy.^{5,6} The role of laparoscopy as an investigative procedure in infertility has changed over the

past few years. Given that it allows direct visualization of the pelvic reproductive anatomy, it is the test of choice to identify otherwise unrecognized peritoneal factors that influence fertility, specifically, endometriosis and pelvic adhesions. Hysteroscopy has also played a similar role in diagnosis and treatment of cornual blocks, cornual polyps, intrauterine adhesions, intrauterine septa, submucous fibroids, etc. According to Lindemann et al, laparoscopy and hysteroscopy can be combined in one session to permit a full survey of the uterus and tubes and is useful in detecting the cause of infertility in female.⁷

In this study we aim to assess the role of hysteroscopy and laparoscopy in the evaluation of female infertility. To assess the therapeutic role of these endoscopic modalities in cases of infertility.

METHODS

This prospective study on the role of hysteroscopy in the diagnosis and management of infertility was conducted at the department of obstetrics and gynecology at Smt NHL Municipal Medical College, Sheth Vadilal General Hospital, Ahmedabad, Gujarat, India during a period of 30 months from Jan 2017 to June 2019.

All the patients who satisfied the inclusion criteria and were willing to join the study were included in the study after they signed a consent form. A total of 112 patients were included.

Inclusion criteria

- Women married for >1 year
- Regular sexual intercourse
- Male factors found normal.

Exclusion criteria

- Any certified conception irrespective of site or outcome
- Any other medical or surgical disorders which precluded the use of hysteroscopy as a diagnostic modality.

They were subjected to diagnostic hysteroscopy to find out the causes of infertility. Any corrective surgical procedures if needed, were done in the same sitting.

Statistical analysis

Statistical analysis was done using the software SPSS 16. All the categorical variables were expressed as proportions and incidence of each finding was calculated.

RESULTS

In the present study, out of 112 women, 78 infertile women had primary infertility and had never conceived during their lifetime whereas 34 had secondary infertility and had conceived before, irrespective of the pregnancy outcome (Table 1).

Table 1: Type of infertility.

	Primary infertility No. (%)	Secondary infertility No. (%)
Ahmed MS et al, ⁸ n = 30	21 (70%)	9 (30%)
Sachdev PK et al, ⁹ n = 50	34 (68%)	16 (32%)
Samal S et al, ¹⁰ n = 100	75 (75%)	25 (25%)
Present study, n = 112	78 (69.75%)	34 (30.3%)

Table 2: Hysteroscopic findings.

Hysteroscopic findings	Present study n = 112, No. (%)	Prasanta KN et al ¹¹ n = 300, No. (%)
Normal	90 (80.3%)	244 (81.3%)
Myoma (submucous)	2 (01.8%)	8 (02.6%)
Polyp	6 (05.4%)	16 (05.3%)
Septum	8 (07.1%)	29 (9.6%)
Synechiae	4 (03.6%)	1 (00.3%)
Cervical stenosis	2 (01.8%)	0 (00%)

On hysteroscopy, 90 women had normal findings, 2 had submucous myoma, 6 had polyp, 8 had intrauterine septum, 4 had synechiae and 2 had cervical stenosis (Table 2).

On laparoscopy, 42 women had normal findings, 22 had tubal blocks, 12 had simple/complex ovarian cysts, 14 had polycystic ovaries, 10 had PID, 26 had adhesions, 20 had fibroids, 12 had endometriosis and 2 woman had uterine anomaly (Table 3).

Table 3: Laparoscopic findings.

Laparoscopic findings	Present study n = 112, No. (%)	Ramalingappa C et al, ¹³ n = 668, No. (%)	Prasanta KN et al, ¹¹ n = 300, No. (%)
Normal	42 (37.5%)	270 (40.4%)	199 (66.3%)
Unilateral tubal block	16 (14.3%)	30 (04.5%)	30 (10.0%)
Bilateral tubal block	6 (05.4%)	25 (03.7%)	31 (10.3%)
Ovarian cysts	12 (10.7%)	184 (27.5%)	22 (07.3%)
PCO	14 (12.5%)		
Pelvic inflammatory disease	10 (08.9%)	72 (10.8%)	-
Adhesions	26 (23.2%)	128 (19.2%)	26 (08.7%)
Fibroid uterus	20 (17.9%)	42 (06.3%)	15 (05.0%)
Endometriosis	12 (10.7%)	59 (08.8%)	37 (12.3%)
Anomaly	2 (01.8%)	12 (01.8%)	3 (01.0%)

Table 4: Operative procedures performed.

Procedure	Present study n = 112, No. (%)	Vaid K et al, ¹⁴ n = 193, No. (%)
PCO drilling	10 (08.9%)	10 (05.2%)
Ovarian cystectomy	4 (03.6%)	2 (01.0%)
Adnexal adhesiolysis	16 (14.3%)	71 (36.8%)
Fulguration of endometriotic spots	2 (01.8%)	29 (15.0%)
Salpingectomy	6 (05.4%)	2 (01.0%)
Tubal cannulation	4 (03.6%)	-
Fimbrioplasty	4 (03.6%)	50 (25.9%)
Lap/hys myomectomy	20 (17.9%)	-
Hys septal resection	2 (01.8%)	4 (02.1%)
Hys polypectomy	2 (01.8%)	10 (05.2%)

Table 5: Intraoperative and postoperative complications in cases of hysterolaparoscopy.

Complications	Present study n = 112, No. (%)
Anaesthetic complications	
Nausea, vomiting	12 (10.7%)
Hypercarbia	-
Intra-operative complications	
Bleeding at cervix bite site	-
Uterine perforation	-
Injury to bowel	-
Injury to bladder	-
Post-operative complications	
Vomiting	18 (16.1%)
Hemorrhage	-
Fever	12 (10.7%)
Paralytic ileus	-
Wound infection	2 (01.8%)

Of the pathologies which were correctible, operative procedure was done in the same sitting. PCO drilling was done in 10 women, ovarian cystectomy in 4, adnexal adhesiolysis in 16, fulguration of endometriotic spots in 2, salpingectomy in 6, tubal cannulation in 4, fimbrioplasty in 4, myomectomy in 20, hysteroscopic

septal resection in 2 and hysteroscopic polypectomy in 2 (Table 4).

Intraoperative complications like uterine perforation, injury to bowel and bladder were not seen in any case. Post-operative vomiting was seen in 18 women, fever was seen in 12 women, wound infection was seen in 2 women (Table 5).

DISCUSSION

In the present study, 69.7% infertile women had primary infertility whereas 30.3 % had secondary infertility. The results seen were comparable to studies done by Ahmed MS et al, Sachdev PK et al, and Samal S et al, having primary infertility in 70%, 68% and 75% women respectively (Table 1).⁸⁻¹⁰

In the present study, 80.3% women had normal hysteroscopic findings, 1.8% had submucosa fibroids, 5.4% had endometrial polyps, 7.1% had septate uterus, 1.8% had synechiae, 1.8% had cervical stenosis, with overlapping of findings in some cases. In the patient having cervical stenosis, further hysteroscopy to evaluate the endometrium could not be done. The results were comparable to Prasanta KN et al, study, where 81.3% women had normal hysteroscopic findings, 2.6% had myomas, 5.3% had polyps, 9.6% had septum's, 0.3% had

synechiae (Table 2).¹¹ The most common abnormality found was a septum, followed by a polyp. A septum distorts the uterine cavity and has poor blood supply, resulting in poor implantation efficiency and embryo growth.¹² Large polyps also distort the cavity, and cause local inflammatory changes. Sperm transport and implantation of blastocyst is hampered in cases of submucous fibroids due to deformity of cavity, obstruction of ostia, and impaired uterine blood flow. Submucous myomas may displace the cervix, decreasing exposure to sperm.¹²

In the present study, 37.5% women had normal laparoscopic findings, 19.7% had tubal blocks on chromopertubation, out of which 14.3% were unilateral and 5.4% were bilateral. Ovarian cysts were seen in 10.7% cases and PCO was seen in 12.5% cases. PID was found in 8.9% cases, 23.2% had adhesions, 17.9% had fibroids, 10.7% had endometriosis, and 1.8% had uterine anomaly (with overlapping of findings in some cases). The results were comparable to the studies done by Ramalingappa C et al and Prasanta KN et al, (Table 3).^{11,13} Distal tubal blocks exhibit a wide spectrum of severity ranging from adherent fimbrial folds, to varying degrees of phimosis, to complete obstruction with hydrosalpinges. Proximal tubal blocks are caused by obliterative luminal fibrosis, salpingitis isthmica nodosa, chronic inflammation, and intratubal endometriosis.¹² In the present study, most common abnormality was the presence of ovarian cysts and polycystic ovaries which result in infertility mainly due to anovulation. Intramural fibroids can cause dysfunctional uterine contractility and endometrial vascular disturbance and inflammation interfering with gamete transport and embryo implantation.¹² Endometriosis, PID, adnexal adhesions distort the adnexal anatomy preventing ovum capture after ovulation and cause chronic inflammation leading to disorders of folliculogenesis, fertilization or implantation.¹²

In the present study, apart from diagnostic use of infertility, hysteroscopy was used for myomectomy of submucous fibroid (1.8% cases), septal resection (1.8% cases) and polypectomy (1.8% cases). Laparoscopy was used for PCO drilling in 8.9% cases, cystectomy in 3.6% cases, adhesiolysis in 14.3% cases, fulgration of endometriotic spots in 1.8% cases, salpingectomy in 5.4% cases, unilateral tubal cannulation followed by selective chromopertubation in 3.6% cases, fimbrioplasty in 3.6% cases, and myomectomy in 16.1% cases. The results were comparable to the study done by Vaid K et al, (Table 4).¹⁴ More than one procedure was performed in some cases.

Hysterolaparoscopy has very few complications. Intra operative complications like uterine perforation, injury to bowel and bladder were not seen in any case. Postoperative vomiting was seen in 16.1% cases, pyrexia in 10.7% cases and wound infection in 1.8% cases. Zhang E et al evaluated the effects and safety of combined

hysterolaparoscopy in diagnosing infertility and found no major surgical or anaesthetic complication in any of the 132 patients other than mild abdominal pain.¹⁵

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