Study of hysterolaparoscopy in the evaluation of infertility

Shilpa G B

Consultant Reproductive Medicine, Shilpa Diagnostics, Davanagere-577004, Karnataka, INDIA.

Email: shilpagb@yahoo.com

Abstract

Background: World health organisation defined infertility as failure to conceive after 12 months or more of regular unprotected sexual intercourse. Combining hysteroscopy with laparoscopy has become a standard tool of evaluation though the absolute role of hysteroscopy in unexplained infertility is yet to be elucidated. The purpose of present study is to assess the role of hysterolaparoscopy in diagnosis and treatment of female infertility at a tertiary hospital. **Material and Methods:** This was a prospective, observational study, conducted in Department of obstetrics and gynaecology, in patients with primary or secondary infertility, underwent hysterolaparoscopy. **Results:** During study period total 112 patients satisfying study criteria underwent hysterolaparoscopy. 78 % patients had primary infertility while rest 22% had secondary infertility. Most patients were from 26-30 years age group (35 %) followed by 21-25 years age group (32 %). In 46% patients no abnormality noted in laparoscopy (primary infertility- 47% and secondary infertility- 44%). In patients with primary infertility PCOS (20%), fallopian tube blockage (14%) and ovarian cyst (9%) were main findings. Hysteroscopy was normal in 81% patients. (primary infertility- 80% and secondary infertility- 84%). In patients with primary infertility uterine anomaly such as septate uterus/bicornuate uterus/submucous fibroid (10%) was most common finding followed by endometrial polyp (7%). PCOS drilling (20%), successful tubal cannulation (10%) and ovarian cystectomy (9%) were most common interventions in total and primary infertility patients. In secondary infertility patients hysteroscopic polypectomy and dilatation curettage were also common interventions done. No post-op complication, morbidity or mortality noted in present study. **Conclusion:** Hysterolaparoscopy is a definitive diagnostic tool for evaluation of female infertility. Hysterolaparoscopy is an effective, safe, reliable and minimal invasive tool in comprehensive evaluation of infertility and also good therapeutic intervention by experienced hands.

Keywords: infertility, hysterolaparoscopy, hysteroscopy, laparoscopy.

*Address for Correspondence:

Dr Shilpa G B, consultant Reproductive medicine, Shilpa Diagnostics, Davanagere-577004, Karnataka, INDIA.

Email: shilpagb@yahoo.com

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INTRODUCTION

Infertility is one of the most important and underappreciated reproductive health problems in developing countries. Infertility is frequently considered a personal tragedy and a curse for the couple, affecting the

entire family. World health organisation defined infertility as failure to conceive after 12 months or more of regular unprotected sexual intercourse. The prevalence of infertility ranges from 3.5% to 16.7% in more developed nations and from 6.9% to 9.3% in less developed nations, with an estimated overall median prevalence of 10% of reproductive age couples.^{1,2} It can be subdivided into primary infertility, that is, no prior pregnancies, and secondary infertility, referring to infertility following at least one prior conception. The aetiology of female infertility can be broadly divided into ovulation disorders, uterine abnormalities, tubal obstruction, peritoneal factors and cervical factors. Unexplained infertility is infertility that is idiopathic in the sense that its cause remains unknown even after an infertility work-up, usually including semen analysis in the men and assessment of ovulation and fallopian tubes in the woman. The

advantages of endoscopic surgery are preciseness, superior haemostasis, less tissue handling, less pain, no cosmetic issue, short convalescence and quicker recovery. Combining hysteroscopy with laparoscopy has become a standard tool of evaluation though the absolute role of hysteroscopy in unexplained infertility is yet to be elucidated.^{3,4} While some researcher consider hysterolaparoscopy as an effective tool in investigation of unexplained infertility patients, as early therapeutic interventions or early decisions for artificial reproductive technique can be taken place.⁵ The purpose of present study is to assess the role of hysterolaparoscopy in diagnosis and treatment of female infertility at a tertiary hospital.

MATERIAL AND METHODS

This was a prospective, observational study, conducted in Department of obstetrics and gynaecology, Shilpa Diagnostics, Davanagere. Study period was from January 2019 to December 2019. Institutional ethical committee approval was obtained for present study.

Inclusion Criteria -

Patients with primary or secondary infertility, willing to participate in study.

Exclusion Criteria -

1. Patients with infectious disorder like acute PID or active TB.
2. Couples with male factor infertility.
3. Patient with major medical disorder like cardiovascular, respiratory or immune disorders, patient unfit for surgery.

Procedure was explained to patients and a written informed consent was taken. A complete clinical history and examination was carried out. All basic routine investigations with some special hormonal investigation such as hemoglobin percentage, total WBC count, DLC, ESR, urine routine, serological test for Syphilis, HIV, HbsAg, Blood grouping and Rh typing, hormonal tests such as FSH, LH, prolactin levels and thyroid profile was done. A baseline USG abdomen and TVS was done in each patient. With pre-op preparation, patients were posted for diagnostic and if required therapeutic hysterolaparoscopy procedure, under general anaesthesia. Intraoperative findings were noted. Standard post-operative care was given to all patients. All clinical findings and details were recorded in case proforma. Statistical analysis was done using descriptive statistics.

RESULTS

During study period total 112 patients satisfying study criteria underwent hysterolaparoscopy. 78 % patients had primary infertility while rest 22% had secondary infertility.

Table 1: Infertility type

Type	Number	(%)
Primary	87	78%
Secondary	25	22%

Most patients were from 26-30 years age group (35 %) followed by 21-25 years age group (32 %). In patients with primary infertility, most patients were from 21-25 years age group (40 %) followed by 26-30 years age group (33 %). In secondary infertility patients, 31-35 years age group (48 %) was most common followed by 21-25 years age group (40 %).

Table 2: Age distribution

Age (years)	Primary Infertility (n = 87)	(%)	Secondary infertility (n = 25)	(%)	Total	(%)
21-25	35	40%	1	4%	36	32%
26-30	29	33%	10	40%	39	35%
31-35	16	18%	12	48%	28	25%
>36	7	8%	2	8%	9	8%

Most patients had duration of infertility less than 5 years (49%), followed by 6-10 years (32 %). Most common duration in primary infertility patients was less than 5 years (53 %) while in secondary infertility patients it was 6-10 years (40 %).

Table 3: Duration of infertility

Duration (years)	Primary Infertility (n = 87)	(%)	Secondary infertility (n = 25)	(%)	Total	(%)
1-5	46	53%	9	36%	55	49%
6-10	26	30%	10	40%	36	32%
11-15	14	16%	6	24%	20	18%
>16	1	1%	0	0%	1	1%

In 46% patients no abnormality noted in laparoscopy (primary infertility- 47% and secondary infertility- 44%). In patients with primary infertility PCOS (20%), fallopian tube blockage (14%) and ovarian cyst (9%) were main findings. In secondary infertility patients PCOS (20%), fallopian tube blockage (16%) and peritubular adhesion (8%) were common findings noted.

Table 4: Laparoscopic findings*

Findings	Primary Infertility (n = 87)	(%)	Secondary infertility (n = 25)	(%)	Total	(%)
Normal	41	47%	11	44%	52	46%
PCOS	17	20%	5	20%	22	20%
Unilateral fallopian block	8	9%	4	16%	12	11%
Ovarian cyst	8	9%	1	4%	9	8%
Peritubular adhesion	6	7%	2	8%	8	7%
Tubovarian mass	5	6%	1	4%	6	5%
Dermoid cyst	5	6%	1	4%	6	5%
Bilateral fallopian block	4	5%	0	0%	4	4%
Adhesions	4	5%	0	0%	4	4%
Endometriotic spot	4	5%	1	4%	5	4%
Bicornuate uterus	3	3%	0	0%	3	3%
Subserosal fibroid	3	3%	0	0%	3	3%
Endometrial cyst	3	3%	1	4%	4	4%
Uterus didelphys	1	1%	0	0%	1	1%

*- A patient can have one or more clinical finding/s.

Hysteroscopy was normal in 81% patients. (primary infertility- 80% and secondary infertility- 84%). In patients with primary infertility uterine anomaly such as septate uterus/bicornuate uterus/submucous fibroid (10%) was most common finding followed by endometrial polyp (7%). While in secondary infertility patients endometrial polyp (8%) and intrauterine adhesions were common findings.

Table 5: Hysteroscopy findings

Hysteroscopy findings	Primary Infertility (n = 87)	(%)	Secondary infertility (n = 25)	(%)	Total	(%)
Normal	70	80%	21	84%	91	81%
Uterine anomaly	9	10%	0	0%	9	8%
Endometrial polyp	6	7%	2	8%	6	5%
Intrauterine adhesions	1	1%	1	4%	4	4%
Cervical stenosis	1	1%	1	4%	2	2%

PCOS drilling (20%), successful tubal cannulation(10%) and ovarian cystectomy (9%) were most common interventions in total and primary infertility patients. In secondary infertility patients hysteroscopic polypectomy and dilatation curettage were also common interventions done. No post-op complication, morbidity or mortality noted in present study.

Table 6: Surgical Intervention

Procedures	Primary Infertility (n = 87)	(%)	Secondary infertility (n = 25)	(%)	Total	(%)
Only diagnostic	36	41%	11	44%	47	42%
PCOS drilling	17	20%	5	20%	22	20%
Successful tubal cannulation	9	10%	2	8%	11	10%
Ovarian Cystectomy	8	9%	1	4%	9	8%
Dilatation and curettage	6	7%	2	8%	8	7%
Dermoid cystectomy	5	6%	1	4%	6	5%
Adhesiolysis	4	5%	0	0%	4	4%
Endometrial spot ablation	4	5%	1	4%	5	4%
Endometrial Polypectomy	6	7%	2	8%	5	4%
Endometriod /chocolate Cystectomy	3	3%	1	4%	4	4%
Hysteroscopic resection of septum	2	2%	0	0%	2	2%
Cervical dilatation	1	1%	0	0%	1	1%
Myomectomy	1	1%	0	0%	1	1%

*- A patient may underwent one or more surgical intervention/s.

DISCUSSION

Routine examination and diagnostic procedures are not enough to evaluate pelvic pathology of infertile women. Uterine and tubal factors can effectively diagnosed by endoscopic approach. Hysteroscopy provides opportunity to understand the levels of infertility among couples which is crucial in order to improve the clinical management of infertility.⁶ Most patients were from 26-30 years age group (35 %) followed by 21-25 years age group (32 %). Increasing lifestyle choices, stress and later age of marriage have made occurrence of Infertility higher than couple of decades ago.⁷ Stressful and exhausting lifestyle is a major cause of infertility in young age as depicted by the study as 26 – 30 years. The prevalence of primary infertility was higher among women aged 20-24 years than among older women.¹ Similar findings noted in present study. In present study 78 % patients had primary infertility while rest 22% had secondary infertility. In a similar study Nayak *et al*³ observed 69% of cases with primary infertility and secondary infertility in 35% of cases. In 46% patients no abnormality noted in laparoscopy. Kavitha G,⁸ noted normal laparoscopic findings were seen in 42.4% patients while Bhandari S *et al.*⁹ had 47.9% patients with normal findings. Rai *et al.*¹⁰ 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. In present study PCOS (20%), fallopian tube blockage (14%) and ovarian cyst (9%) were main findings. Similar results were seen in studies done by Puri *et al.*,¹¹ they detected polycystic ovarian syndrome in 22% of cases while Kabadi and Harsha¹² found ovarian pathology in 20.8% of cases.⁹ Laparoscopy can improve pregnancy rates and quality of life. It can also reduce costs of further fertility treatments by enhancing response to treatment, guiding further management, circumventing treatments that are of low benefit and avoiding complications like multiple pregnancies.¹³ Laparoscopy can reveal the presence of peritubal adhesions, periadnexal adhesions, tubal pathology, and endometriosis in 35–68% of cases even after normal HSG result.¹⁴ Apart from diagnostic purpose laparoscopy can help in adhesiolysis, ablation of endometriosis, ovarian drilling and ovarian cystectomy in same sitting. Hysteroscopy helps to pick up subtle changes in the form of small polyps, adhesions, and seedling fibroid due to magnification facility. Additionally, hysteroscopy-guided biopsy and therapeutic procedures like polypectomy, myomectomy, septal resection, and adhesiolysis can be done in the same sitting. In present study 19% females have abnormal findings on hysteroscopy. Patients underwent hysteroscopic adhesiolysis polypectomy, tubal cannulation, septal

resection and myomectomy with good results. The high incidence of uterine factors can be attributed to current increased use of hysteroscopy in diagnosis of uterine anomalies and there by their correction as well. Surgical correction of septum improves the pregnancy outcome uterus with 80% term delivery, 5% preterm delivery, and 15% pregnancy loss.¹⁵ Polyps can cause sub-fertility and pregnancy loss by various mechanisms as interference with sperm transport, embryo implantation or through intrauterine inflammation or altered production of endometrial receptivity factors. In infertility patients apart from diagnostic aid many hysteroscopic procedures such as septal resection, polypectomy, submucous myoma resection, adhesiolysis and tubal cannulation can be done at the same time. Thus, hysteroscopy provides both diagnostic and therapeutic advantage in the same sitting with minimal complications. Abnormalities detected on laparoscopy were more common than those in hysteroscopy both in primary infertility group and in secondary infertility group.¹⁶ Similar findings were noted in present study. Certain conditions such as previous abdominal surgery, especially bowel surgery, and a history or presence of bowel/pelvic adhesions, severe endometriosis, pelvic infections, obesity, or excessive thinness. may increase the risk of intra and post-op complications. Proper patient selection and preoperative preparation is essential to reduce risk. Hysteroscopy with chromopertubation is definitely superior in diagnosis of various kinds of tubal pathologies.

CONCLUSION

Hysteroscopy is a definitive diagnostic tool for evaluation of female infertility. Hysteroscopy is an effective, safe, reliable and minimal invasive tool in comprehensive evaluation of infertility and also good therapeutic intervention by experienced hands. Abnormalities missed on routine pelvic and radiological examination such as peritoneal endometriosis, adnexal adhesions, septate uterus, tubal blocks are diagnosed and corrected in one setting.

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