



HYSTEROSCOPIC AND LAPAROSCOPIC FINDINGS IN PATIENTS WITH INFERTILITY AT TERTIARY CARE HOSPITAL.

Obstetrics & Gynaecology

Dr. Tabeer Shoaib*	Resident, Department of Gynecology & Obstetrics, Govt. Medical College, Srinagar. *Corresponding Author
Prof. (Dr.) Ambreen Qureshi	Professor, Department of Gynecology & Obstetrics, Govt. Medical College, Srinagar.
Dr. Taseer Shoaib	Senior Resident, Department of Gynecology & Obstetrics, Max Hospital, Patparganj, Delhi.
Dr. Asif	Lecturer, Department of Gynecology & Obstetrics, Govt. Medical College, Srinagar.
Dr. Asma Afzal	Associate Professor, Department of Gynecology & Obstetrics, Govt. Medical College, Srinagar.
Dr. Sami Jan	PG Resident, Department of SPM, Govt. Medical College, Srinagar. Srinagar.

ABSTRACT

Background: Infertility is defined as 'the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse' by WHO. The WHO estimates that 60–80 million couples worldwide suffer from infertility and the overall prevalence of the primary infertility in India is 3.9–16.8%. Leading cause of infertility includes tuboperitoneal disease, ovulatory disorders, uterine factor, and male factor infertility. Hysterolaparoscopy is an excellent diagnostic modality to detect hidden pathology in patients without any overt clinical manifestations. **Aim and Objectives:** The aim of the present study was to study the role of combined diagnostic laparoscopy and hysteroscopy in evaluation of female infertility, to find out different factors associated with infertility and to provide concurrent therapeutic management. **Material & Methods:** A total of 66 women underwent combined diagnostic laparoscopy and hysteroscopy for a period of 1 year in the Obstetrics and Gynaecology Department, Govt. Medical College, Srinagar, India. **Results:** The age of the patients ranged from 21–45 years with a mean age of 31.7 years. Out of the 66 patients, 41 (62.1%) were suffering from the primary and 25 (37.9%) were suffering from the secondary infertility. The study population was presented with 1–10 years of infertility with maximum population showing 3–7 years of infertility. Out of total study population, 16 (24.2%) were presented with menstrual abnormalities with oligomenorrhea and dysmenorrhea being commonest of them. Laparoscopy revealed abnormal findings in 75.7% cases that included tuboperitoneal factors 56%, ovarian factors 56%, and uterine factors 28%; 24.2% cases showed normal laparoscopic findings. In 51.6% cases, abnormal findings were noted through hysteroscopy, such as obliterated osteum, endometrial hyperplasia, polyp, adhesions, septum, etc. Dye test was performed in all patients; 15.1% cases showed tubal block. **Conclusion:** In our study, 75.7% of the cases had some form of tubo-ovarian pathology, which makes laparoscopy an essential tool of infertility workup. Although hysteroscopy alone was diagnostic in 51.6% of cases, its simultaneous use with laparoscopy provides cost-effective, comprehensive, and single setup diagnostic aid in these patients.

KEYWORDS

Hysteroscopy, laparoscopy, Infertility.

INTRODUCTION

The World Health Organization defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease. By this definition, infertility is a major cause of diminished health in both developing and developed countries [1]. Infertility is defined as inability to conceive after one year of unprotected intercourse. This condition is further classified as primary infertility in which no previous pregnancies have occurred and secondary infertility, in which a prior pregnancy has occurred. Infertility is one of the three main complaints encountered in gynaecology, affecting 186 million people worldwide [2], and leads to psychological stress, anxiety, and depression [3]. Infertility affects about 10–15% of reproductive age couples globally. Both male and female factors contribute to infertility and Female factor includes ovulatory factor 30–40% of cases, tubal factor 25–35% of cases, uterine factors 15% of cases, pelvic factor which includes endometriosis and adhesions 10% of cases [4]. Before the advent of Hysterolaparoscopy, infertile females were evaluated for tubal factor by hysterosalpingography (HSG), ovarian factor by hormone profile or folliculometry, and uterine factor by transvaginal ultrasound. But now, the advanced endoscopic instruments demonstrate the superiority of direct visualization over the radiographic examination of various body cavities.

Hysteroscopy is a minimally invasive procedure that permits the visualization of the endocervical canal, uterine cavity, endometrium, and tubal Ostia. At the same time, laparoscopy allows the investigation of uterine, tubal, and ovarian factors [5]. The frequency of laparoscopic findings (pelvic inflammatory disease, endometriosis) is higher than Hysteroscopic ones (polyps, uterine septum) in primary and secondary infertility [6]. In women with primary infertility, laparoscopy detected abnormalities in 35% of cases, and hysteroscopy

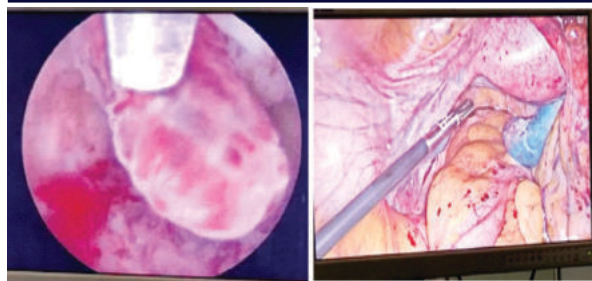
in 17%; while in patients with primary/secondary infertility, Hysterolaparoscopy revealed abnormalities in 26% of cases [7]. The aim of this study was to find out the role of combined diagnostic laparoscopy and hysteroscopy in evaluation of female infertility, to find out different factors associated with infertility and to find out feasibility of providing therapeutic management concurrently.

MATERIAL & METHODS

A retrospective study was undertaken by reviewing the case records of patients who underwent hysteroscopy and laparoscopy for infertility between November 2021 to October 2022 at Lalla Ded Hospital, Govt. Medical College, Srinagar, India. All women who underwent Hysterolaparoscopy had History of regular physical relation, clinical examination, and hormonal assay, cervical smears, ultrasound report and semen analysis of the husband. The procedure was carried out on the follicular phase of the menstrual cycle.

First hysteroscopy was performed under general anaesthesia. Endocervical canal was visualized for any abnormality and endometrial cavity was evaluated for presence of any abnormalities-polyp, myoma, intrauterine adhesions, intrauterine septum, cervical erosions and endometrial appearance and color. Besides bilateral tubal ostia were visualized. Thereafter laparoscopy was performed using a 30-degree deflection angle telescope powered with a fiber-optic cable for light source. Chromoperturbation (dye test) studies performed with methylene blue.

The pelvis was evaluated in clockwise manner from anterior cul de sac to the right tube, right ovary, right ovarian fossa, posterior cul de sac, left ovarian fossa, left ovary and left tube. The visceral peritoneum was evaluated for presence of any vesicles/endometriotic spots, where ever adhesiolysis was needed, it was performed and restoration of normal anatomy was done in cases where needed and feasible.



RESULTS

A total of 66 patients underwent Hysterolaparoscopy for infertility between November 2021 to October 2022. The age of the patients ranged from 21 -45 years with a mean age of 31.7 years. Out of the 66 patients, 41 (62.1%) were suffering from the primary and 25 (37.9%) were suffering from the secondary infertility (table1 and Fig 1). The study population was presented with 1-10 years of infertility with maximum population showing 3-7 years of infertility (table 2 & Fig 2). Out of total study population, 16 (24.2%) were presented with menstrual abnormalities with oligomenorrhea and dysmenorrhea being commonest of them. (Table 3 & Fig 3). Laparoscopy revealed abnormal findings in 75.7% cases that included tuboperitoneal factors 56%, ovarian factors 56%, and uterine factors 28%; 24.2% cases showed normal laparoscopic findings. (Table 4 & Fig 4). Out of 50 abnormal cases, 14 (28%) showed different abnormalities in uterus as shown in Table 5. Fibroid (18%), adhesions (18%) and tubercles (2%) were the main abnormalities noted in the uterus. Out of 50 abnormal cases, 28 (56%) showed different abnormalities in ovaries as shown in table 6 and figure 6. the ovaries were presented with abnormalities like PCOS (18%), ovarian cysts (16%), parovarian cysts (2%), dermoid cysts (2%), tubercles (4%), endometriotic spots (4%), adhesions (4%), tubo-ovarian mass (2%) and streak ovary (2%). Tubal abnormalities were reported in 56% of the cases as shown in the table 7 and Figure 7. Adhesions (24%). Hydrosalpinx (14%) and tortuous tubes were the main abnormalities encountered in tubes. Hysteroscopy revealed abnormalities in 51.5% cases. The main abnormalities reported on hysteroscopy findings reported endometrial polyp (22.7%), obliterated osutem (12.1%), intrauterine adhesions (6.0%), uterine septum (3%) and cervical erosions (3%). Dye test was performed in all patients with 15.2% cases showed tubal block (Table 8).

Table 1: Age Distribution In Infertility.

Age distribution	Primary infertility	Secondary Infertility	Number	Percentage
20-30	24	9	33	50
> 30	17	16	33	50
Total	41	25	66	

Table 2: Duration Of Infertility.

Dion of infertility	Number	Percentage
Less than 2 years	11	16.6
2-5 years	24	36.4
More than 5 years	31	47.0

Table 3: Classification Of Infertility

Classification of infertility	Number	Percentage
Primary Infertility	41	62.1
Secondary Infertility	25	37.9

Table 3: Menstrual Abnormalities Associated With Infertility.

Menstrual cycle abnormality	Number	Percentage
Menorrhagia	2	12
Polymenorrhagia	2	13
Oligomenorrhagia	6	38
Dysmenorrhagia	4	25
Metrorrhagia	1	6
Secondary amenorrhagia	1	6
Total	16	

Table 4: Different Factors Associated With Infertility On Laparoscopy.

Laparoscopy Finding	Number	Percentage
Abnormality in either Uterus, Ovary or Tubes	50	75.7
Normal uterus, Ovary and tubes	16	24.2

Table 5: Different Uterine Factors Associated With Infertility On Laparoscopy.

Condition	Number	Percentage
Fibroid	09	18.0
Adhesions	04	8.0
Tubercles	01	2.0
Total	14	28.0

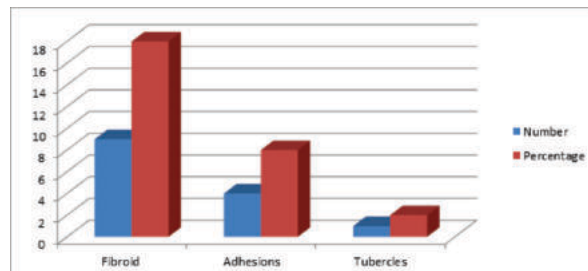


Figure 5: Graphical representation of the various uterine factors associated with Infertility on laparoscopy.

Table 6: Different Ovarian Factors Associated With Infertility On Laparoscopy.

Condition	Number	Percentage
PCOS	09	18.0
Ovarian Cyst	08	16.0
Parovarian Cyst	02	4.0
Dermoid Cyst	01	2.0
Tubercles	02	4.0
Endometriotic spots	02	4.0
Adhesions	02	4.0
Tubo-ovarian mass	01	2.0
Streak ovary	01	2.0
Total	28	56

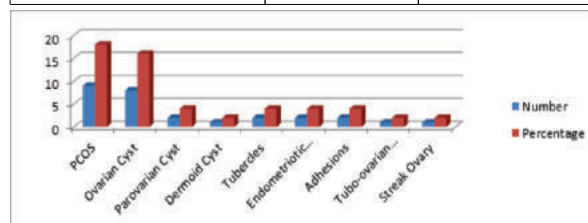


Figure 6: Graphical representation of the various ovarian factors associated with Infertility on laparoscopy.

Table 7: Different Tubal Factors Associated With Infertility On Laparoscopy.

Condition	Number	Percentage
Adhesions.	12	24.0
Hydrosalpinx	07	14.0
Tortuous Tubes	09	18.0
Total	28	56.0

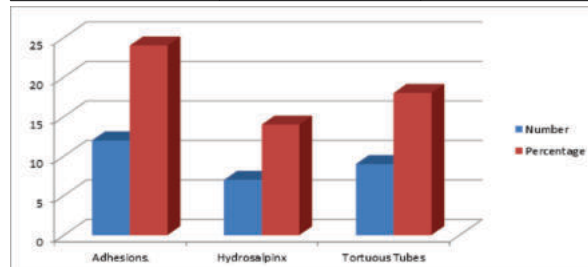


Figure 7: Graphical representation of the various tubal factors associated with Infertility on laparoscopy.

Table 8: Different Factors Associated With Infertility On Hysteroscopy.

Condition	Number	Percentage
Endometrial polyp	15	22.7
Obliterated ostium	08	12.1

Intrauterine adhesions	04	6.0
Uterine septum	02	3.0
Cervical erosions	02	3.0
Others	03	4.5
Total	34	51.5

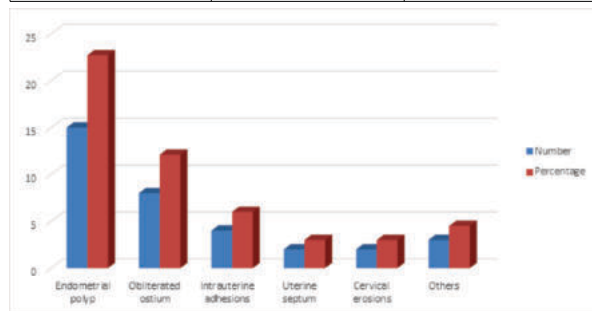


Figure 8: Graphical representation of different factors associated with Infertility on hysteroscopy.

Table 9: Dye Test Results

Laparoscopic dye test	Number	Percentage
Positive	56	84.8
Negative	10	15.2
Total	66	

DISCUSSION

Exploration of the female genital tract is one of the essential elements of infertility assessment. Laparoscopy provides both a panoramic view of the pelvic reproductive anatomy and a magnified view of the peritoneal surfaces. It is generally regarded as the most reliable tool in the diagnosis of tubal pathology and other intra-abdominal causes of infertility [8, 9]. About 96% of women in our study were aged 20–35 years, thus supporting the fact of early marriage and childbearing in developing countries. This is in contrast to the current trend in developed as well in developing countries to some extent to defer childbearing until the mid-30s, which results in a diminished time frame available both for conception and for infertility evaluation. The predominance of a female factor was seen in both primary and secondary infertility, but the female factor was significantly higher in secondary infertility than in primary infertility. This was explained by Ngowa *et al.*, [10] where they suggested that pelvic infection resulting from ascending infection during childbirth can lead to tubal damage and thus higher contribution to the incidence in the female factors in secondary infertility.

Infertile women with normal ovulation, pelvic ultrasound findings, hormonal profile, and husband semen analysis have a higher possibility of tubo-peritoneal pathologies like endometriosis. Performing Hysteroscopy as a 'one-step procedure' in these women will be more beneficial. There could be more than one cause of infertility in a patient and it becomes equally important to diagnose each cause as each individual cause need specific and complete treatment. In our study, an effort was made to find out the role of diagnostic hysteroscopy in evaluating the different factors responsible for female infertility and providing therapeutic management wherever feasible. On analyzing the type of infertility in our study, out of 66 couples, primary infertility was seen in 62.1% and secondary infertility was 37.1% which was very similar to the famous study of Duignan *et al.*[11] The various causes causing female infertility were broadly categorized into ovarian, tubal, uterine, peritoneal, and cervical factors. Other causes like implantation failure, autoimmune disorders, psychological problems, and maturation defects of the gametes were not evaluated and were well above the limits of our study.

In our study, we found that tubal factor causing infertility was present in 56.0%, ovarian factor in 56.0% and uterine factor 28.0%. There is significant variation in the percentage of various factors causing infertility in our study compared with the other studies, but one point has been common despite this variation that, there is a predominance of a female factor of infertility over all other factors individually. We noted in our study that the majority of patients were suffering from tubal factor infertility. Tubal appearance on laparoscopy was further subdivided into five different subcategories as beading of tubes, phimosis, hyperemia, hydrosalpinx, and lead pipe appearance, their

impact on infertility was not known. Patency of the tube was assessed with chromopertubation during a diagnostic laparoscopy. Combined hysteroscopy make it possible to evaluate completely and treat in the same sitting. Pelvic inflammatory disease and endometriosis is still the two major lesions found among infertility women in more than 90% reports [12,13]. Our findings in laparoscopy were similar to those of these literatures. About 30%-35% of the infertility was caused by tubal and peritoneal pathology [14]. Hysteroscopy and laparoscopy are the two methods for evaluation and treatment of tubal pathology and are complementary to each other [15]. Uterine pathologies were the cause of infertility in about 28% of infertile couples and were diagnosed in about 50% of infertile women [16,17]). Among all congenital uterine abnormalities, septate uterus is the most common cause associated with highest reproductive failure rate [18,19]. The incidence of asymptomatic endometrial polyps in infertile women has been reported to range from 10% to 32% [20,21]). Developmental uterine anomalies have long been associated with pregnancy loss and obstetric complications, but the ability to conceive is generally not affected. This can explained why the incidence of uterine anomalies in primary infertility group was similar to those in secondary infertility group in this study.

CONCLUSION

In our study, 75.7% of the cases had some form of tubo-ovarian pathology, which makes laparoscopy an essential tool of infertility workup. Although hysteroscopy alone was diagnostic in 51.6% of cases, its simultaneous use with laparoscopy provides cost-effective comprehensive, and single setup diagnostic aid in these kinds of patients.

REFERENCES

- Gnoth C, Godehardt E, Frank-Herrmann P, et al. Definition and prevalence of subfertility and infertility. *Hum Reprod* 2005;20(5):1144–1147.
- Inhorn, M.C.; Patrizio, P. Infertility around the Globe: New Thinking on Gender, Reproductive Technologies and Global Movements in the 21st Century. *Hum. Reprod. Update* 2015; 21, 411–426.
- Wallach, E.E.; Seibel, M.M.; Taymor, M.L. Emotional Aspects of Infertility. *Fertil. Steril.* 1982; 37, 137–145.
- Wolman, I. (2014). Berek and Novak's gynecology 15th edition.
- Fard, S.A.; Gharabaghi, P.M.; Montazeri, F.; Mashrafi, O. Hysteroscopy as a Minimally Invasive Surgery, a Good Substitute for Invasive Gynecological Procedures. *Iran. J. Reprod. Med.* 2012; 10, 377–382.
- Zhang, E.; Zhang, Y.; Fang, L.; Li, Q.; Gu, J. Combined Hysteroscopy for the Diagnosis of Female Infertility: A Retrospective Study of 132 Patients in China. *Mater. Socio Medica* 2014; 26, 156.
- Nayak, P.K.; Mahapatra, P.C.; Mallick, J.; Swain, S.; Mitra, S.; Sahoo, J. Role of Diagnostic Hystero-Laparoscopy in the Evaluation of Infertility: A Retrospective Study of 300 Patients. *J. Hum. Reprod. Sci.* 2013; 6, 32–34.
- Ganguly S, Unisa S. Trends of infertility and childlessness in India: findings from NFHS data. *Facts Views Vis Obgyn* 2010;2(2):131–138.
- Tanahatue SJ, Hompes PG, Lambalk CB. Investigation of the infertile couple. should diagnostic laparoscopy be performed in the infertility work up program in patients undergoing intrauterine insemination? *Hum Reprod* 2003;18(1):8–11. DOI: 10.1093/humrep/deg034.
- Dupont J, Ngowa K, Nkongo K. Contribution of laparoscopy in the management of female fertility in low resource countries: a review of 208 cases at Yaounde general hospital, Cameroon. *Int J Clin Med* 2015;6(12):934–999. DOI: 10.4236/ijcm.2015.612122.
- Duignan NM, Jordan JA, Coughlan BM, et al. One thousand consecutive cases of diagnostic laparoscopy. *BJOJ: An International Journal Obstetrics Gynaecology* 1972;79(11):1016–1024.
- Godinjak Z, Idrizbegović E. Should diagnostic hysteroscopy be a routine procedure during diagnostic laparoscopy in infertile women? *Bosn J Basic Med Sci.* 2008; 8(1): 44–47.
- Tsuji I, Ami K, Miyazaki A, et al. Benefit of diagnostic laparoscopy for patients with unexplained infertility and normal hysterosalpingography findings. *Tohoku J Exp Med.* 2009; 219(1): 39–42.
- Miller JH, Weinberg RK, Canino NL, et al. The pattern of infertility diagnoses in women of advanced reproductive age. *Am J Obstet Gynecol.* 1999; 181(4): 952–957.
- Vaid K, Mehra S, Verma M, Jain S, et al. Pan endoscopic approach "hysteroscopy" as an initial procedure in selected infertile women. *J Clin Diagn Res.* 2014; 8(2): 95–98.
- Wallach EE. The uterine factor in infertility. *Fertil Steril.* 1972; 23(2): 138–158.
- Brown SE, Coddington CC, Schnorr J, et al. Evaluation of outpatient hysteroscopy, saline infusion hysterosonography, and hysterosalpingography in infertile women: A prospective, randomized study. *Fertil Steril.* 2000; 74: 1029–1034.
- Homer HA, Li TC, Cooke ID. The septate uterus: a review of management and reproductive outcome. *Fertil Steril.* 2000; 73(1): 1–14.
- Grimbizis GF, Camus M, Tarlatzis BC, et al. Clinical implications of uterine malformations and hysteroscopic treatment results. *Hum Reprod Update.* 2001; 7: 161–174.
- Hinckley MD, Milki AA. 1000 office-based hysteroscopies prior to in vitro fertilization: feasibility and findings. *JSLS.* 2004; 8(2): 103–107.
- Shalev J, Meizner I, Bar-Hava I, et al. Predictive value of transvaginal sonography performed before routine diagnostic hysteroscopy for evaluation of infertility. *Fertil Steril.* 2000; 73(2): 412–417.