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ORIGINAL ARTICLE

Study of Combined Laparoscopic and Hysteroscopic Findings in 100 Cases of Infertility

[1]BS Jodha, [2]Preeti Chawla

ABSTRACT

Objectives:

- To study the role of combined diagnostic laparoscopy and hysteroscopy in evaluation of female infertility.
- To find out different factors associated with infertility.
- To provide concurrent therapeutic management.

Materials and methods: A total of 100 women underwent combined diagnostic laparoscopy and simultaneous diagnostic hysteroscopy during the period from January 2015 to December 2015 in the Obstetrics and Gynecology Department, Umaid Hospital, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan, India.

Results: Age ranged from 21 to 38 years, and mean age was 25.98 years. Abnormal laparoscopic findings were noted in 41% cases, abnormal hysteroscopy seen in 24% cases, and 17% cases showed abnormality in both. Bilateral tubal patency was demonstrated in 81% cases. Tubal blockage was bilateral in 5% and unilateral in 9% cases. In 2% cases, bilateral block with beaded appearance found suggestive of tuberculosis. Of total 100 cases, 12% cases were found to have endometriosis, 8% had polycystic ovarian syndrome (PCOS), chocolate cyst was found in 5% cases, and 7% had functional cyst of ovary. Pelvic adhesions were found in 15% patients. Myomas were found in 8% cases. Endometrial polyps were revealed in 5% and Asherman's syndrome in 6% patients. Combined laparoscopy and hysteroscopy was diagnostic in 17% of cases, 41% were diagnosed through laparoscopy alone, 24% through hysteroscopy alone, while in 18% cases findings were normal. In our study, tuboperitoneal factors were responsible for infertility in 40% cases, ovarian factors in 26% cases, and PCOS in 8% cases.

Conclusion: In our study, 74% 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 30% of cases, its simultaneous use with laparoscopy provides cost-effective, comprehensive, and single setup diagnostic aid in these kinds of patients.

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[1]Professor and Guide, [2]Resident (3rd Year)

[1,2]Department of Obstetrics and Gynecology, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan, India

Corresponding Author: Preeti Chawla, B-274, Rajbagh Scheme, Soorsagar Road, Jodhpur, Rajasthan, India, Phone: +918441032350, e-mail: preeti.chawla67@gmail.com

INTRODUCTION

Infertility is defined as failure to conceive during 1 year of unprotected frequent intercourse. It affects approximately 10 to 15% of couples. Leading cause of infertility includes tuboperitoneal disease (40–50%), ovulatory disorders (30–40%), uterine factor (15–20%), and male factor infertility (30–40%).[1,2] Hysterolaparoscopy is an excellent diagnostic modality to detect hidden pathology in patients without any overt clinical manifestations.

Laparoscopy can reveal the presence of peritubal adhesions, periadnexal adhesions, tubal pathology, and endometriosis in 35 to 68% of cases even after normal hysterosalpingogram (HSG).[1] Diagnostic hysteroscopy is an equally important modality to detect uterine anomalies and other intrauterine pathologies.[3]

The present study is carried out to enhance our knowledge in regard to the role of laparoscopy and hysteroscopy as a safe, effective, cost-effective, and accurate tool for the assessment and planning of the protocol for management of infertility.

AIMS AND OBJECTIVES

- To find out the role of combined diagnostic laparoscopy and hysteroscopy in evaluation of female infertility.
- To find out different factors associated with infertility.
- To find out feasibility of providing therapeutic management concurrently.

MATERIALS AND METHODS

After getting approval from our hospital ethical committee, a descriptive study on 100 patients, who underwent laparoscopy and hysteroscopy during investigation for primary and secondary infertility, was done. Laparoscopy and hysteroscopy were conducted between January 2015 and December 2015 in Obstetrics and Gynecology Department, Umaid Hospital, Dr. Sampurnanand Medical College, Jodhpur, Rajasthan, India. Before laparoscopy and hysteroscopy, women had satisfied criteria: History of regular physical relation, clinical examination, hormonal assay, cervical smears, ultrasound report, and semen analysis of the husband. This procedure was carried out on the follicular phase of the menstrual cycle under general anesthesia and dye studies performed with methyl blue.

The mean duration of infertility was 3 years, and mean age at the time of procedure was 25.98 years, ranging between 21 and 38 years.

DATA ANALYSIS AND DISCUSSION

Infertile women with normal ovulatory cycles, seminogram, and hormonal profiles have higher possibility of having tuboperitoneal and subtle endometrial pathologies. These women undergo series of procedures like HSG, receiving treatment for timing ovulation with coitus, controlled ovulation stimulation with follicular tracing by transvaginal ultrasound, laparoscopy, and hysteroscopy before being referred for assisted reproductive technology (ART). Performing hysterolaparoscopy as single-step procedure straightaway in these patients proves to be more fruitful as therapeutic interventions or early decisions for ART or both can be undertaken simultaneously.[4] Diagnostic hysteroscopy is also a proven method for investigating the cause of female infertility. Uterine pathologies can be the contributing factor for infertility in as many as 15% of couples seeking treatment.[5-8]

In our study, 70% patients were suffering from primary infertility and 30% patients with secondary infertility; 79% patients were among the 20 to 30 years age group with mean age of 26.5 years (Tables 1 to 3 and Graph 1).

In all age groups, about 31% of women had some type of abnormal menstrual disorder. Oligomenorrhea and dysmenorrhea (8% each) were the commonest among them.

Table 1: Age distribution in infertility

Age distribution	*Primary infertility*	*Secondary infertility*	*Number*	*Percentage*
20–30	55	24	79	79
>30	15	6	21	21

Table 2: Duration of infertility

Duration of infertility	*Number*	*Percentage*	*Need for seeking treatment*
<2 years	11	11	Patients were above 35 years of age
2–5 years	37	37	
>5 years	52	52	

Table 3: Menstrual cycle abnormality associated with infertility

Menstrual cycle abnormality	*Percentage*
Menorrhagia	6
Polymenorrhagia	2
Oligomenorrhea	8
Dysmenorrhea	8
Metrorrhagia	4
Secondary amenorrhea	3
Total	31

Laparoscopy revealed abnormal findings in 41% cases that included tuboperitoneal factors 40%, ovarian factors 34%, and uterine factors 9%; 18% cases showed normal laparoscopic findings.

In 30% cases, abnormal pathology was noted through hysteroscopy, such as myoma, endometrial hyperplasia, polyp, adhesions, septum, etc. Dye test was performed in all patients; 5% cases showed bilateral tubal block and 9% cases showed unilateral tubal block (Table 4 and Figs 1 to 10).

Our study also revealed myoma and polyp in 5 (5%) patients each and synechiae in 6 (6%) patients. In infertile patients, about 20% of hysteroscopic examination shows some grade of intrauterine abnormalities.[9] This is at par with our study of 30%. In a study comparing hysteroscopy with HSG, the latter showed a false-negative rate of 12% and the complication rate of diagnostic hysteroscopy can be as low as 0.012%.[9,10] In a retrospective study of 495 infertile women with unexplained infertility, laparoscopy before starting treatment revealed a significant incidence of abnormalities, resulting in change in decision.[11] Similarly, when patients with unexplained infertility following standard infertility screening tests underwent diagnostic laparoscopy, 21 to 68% of these patients were found to have pathologic abnormalities, which included endometriosis and tubal disease.[12-14] Our results at laparoscopy and dye

Table 4: Different factors associated with infertility on laparoscopy and hysteroscopy

Abnormal tuboperitoneal factors	*Percentage*
Unilateral tubal block	9
Bilateral tubal block	5
Bilateral tubal block with beaded appearance – tuberculosis	2
Fimbrial cyst-agglutination	5
Rudimentary tube	2
Paratubal adhesions	15
Tubo-ovarian mass	1
Hydrosalpinx	1
Total	40
Ovarian pathology	
Simple cyst	7
Polycystic ovarian syndrome	8
Endometriosis	12
Endometrioma (preoperative diagnosis)	6
Streak ovary	1
Total	34
Uterine factors (on hysteroscopic findings)	
Uterine septum	9
Myomas	5
Hyperplasia	1
Adhesions	6
Polyp	5
Unilateral cornual block	1
Bilateral cornual block	1
Total	30

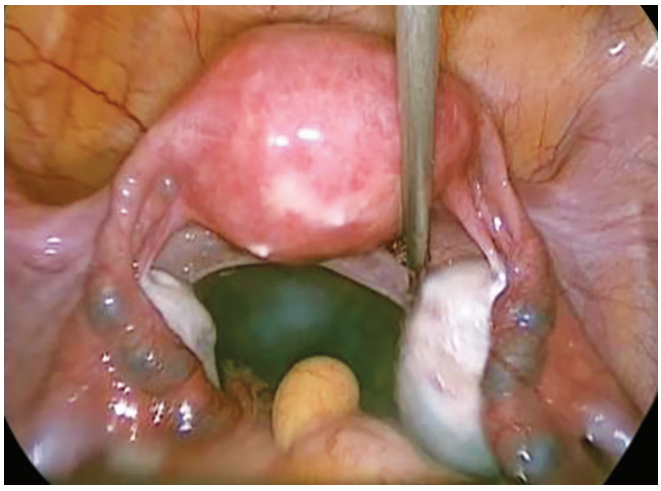


Fig. 1: Dye seen through left fimbrial end

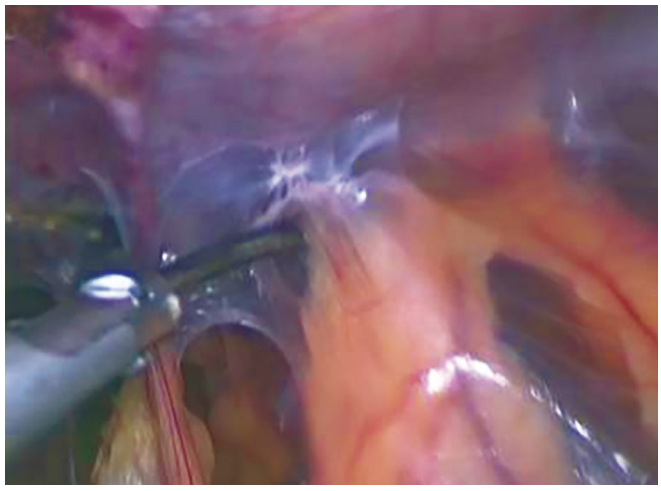
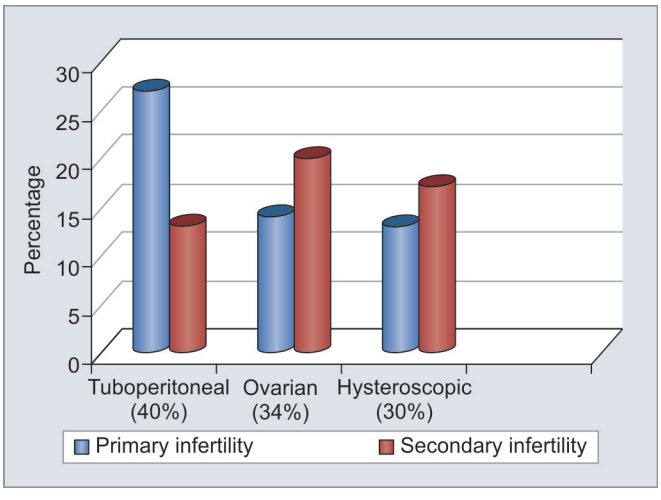


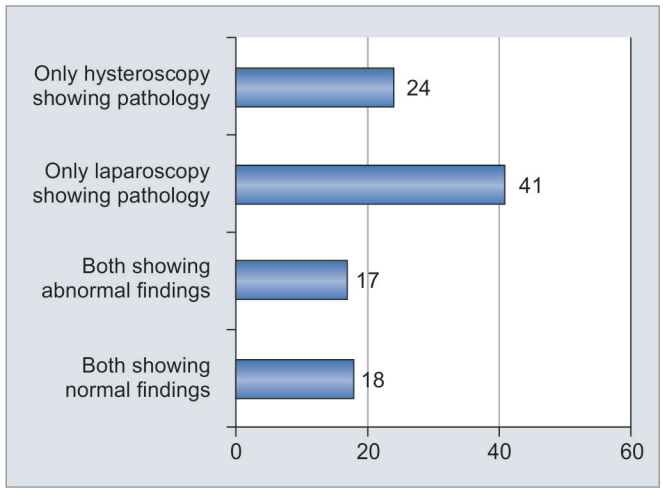
Fig. 2: Adhesiolysis done by harmonic

Fig. 3: Left tube hydrosalpinx with ovary

Fig. 4: Cyst wall removed with gloves



Graph 1: Tuboperitoneal of pathology in primary and secondary infertility



Graph 2: Types of diagnostic method

studies had shown bilateral tubal block in 5% and unilateral tubal block in 9% of infertile patients, excluding those who had come for recanalization. In one study at laparoscopy, bilateral tubal patency was demonstrated in 86.67%, bilateral tubal block in 5%, and unilateral block in 8.33% of patients.[15] In our study, pelvic pathology by laparoscopy was confirmed in 41% of our cases, which was similar to that of other studies (Graph 2).[13,14] In the present study, ovarian pathology was the most common finding (34%), comprising pelvic endometriosis in 12% of infertile cases.

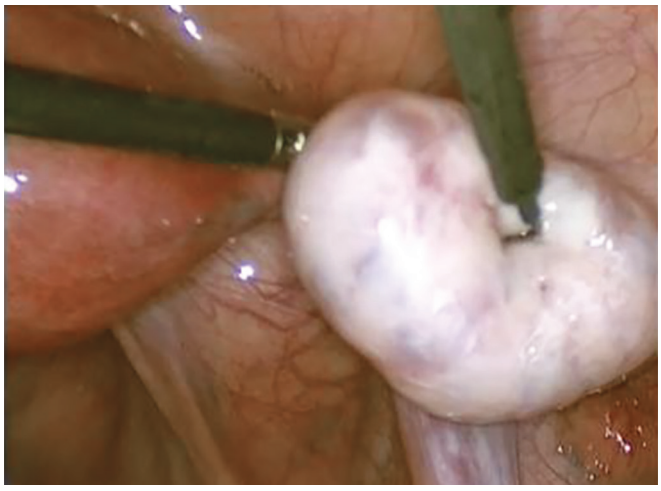


Fig. 5 Left ovarian puncture

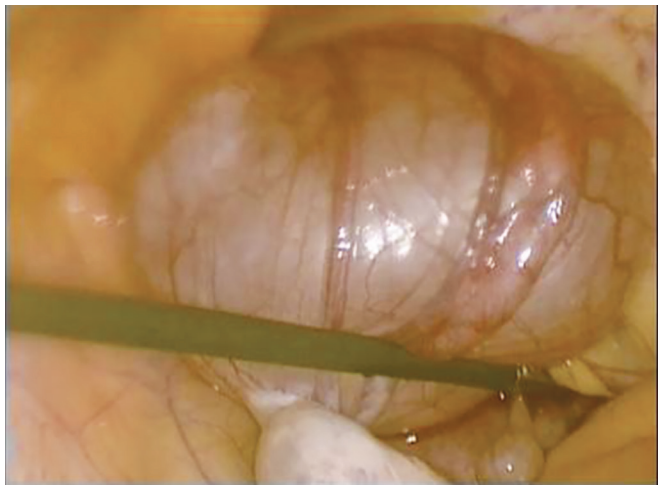


Fig. 6 Initial picture of left para – ovarian cyst

Fig. 7 Right fimbrial cyst

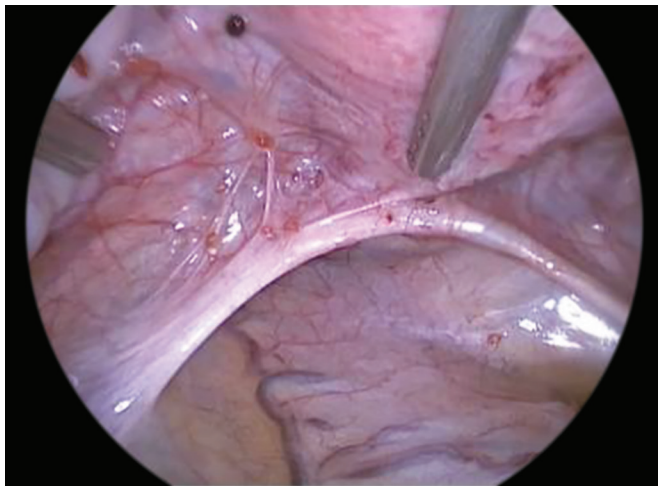


Fig. 8: Endometriotic implants

Fig. 9: Fulguration done

Fig. 10: Endometric implants with fulguration

In 2% of cases, beaded appearance along with caseation, clinical findings consistent with tuberculosis were seen – fluid was sent for tuberculosis polymerase chain reaction, diagnosis confirmed, and AKT was started. This confirmed with another study where 3% had bilateral tubal block and 11% had unilateral tubal block (Fig. 11).[9]

Simultaneous treatment was given to almost all patients during these diagnostic procedures.

A total of 29% of the women who underwent combined laparoscopy and hysteroscopy had previous laparotomy (cesarean section, appendectomy, after injuries in abdomen, cystectomy, myomectomy, salpingectomy);

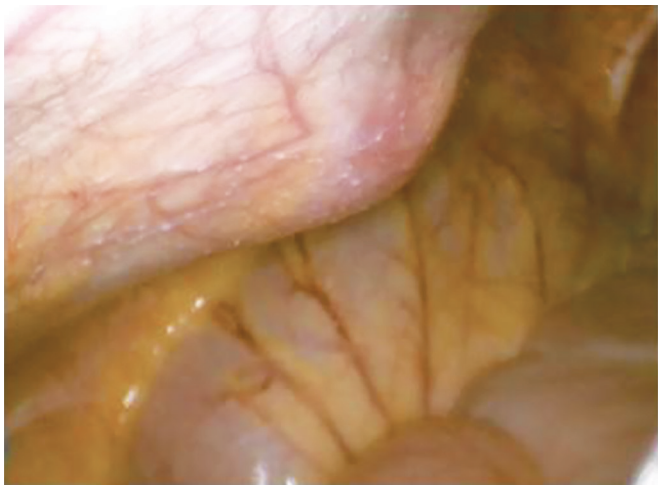


Fig. 11: Fine tubercles seen on peritoneum

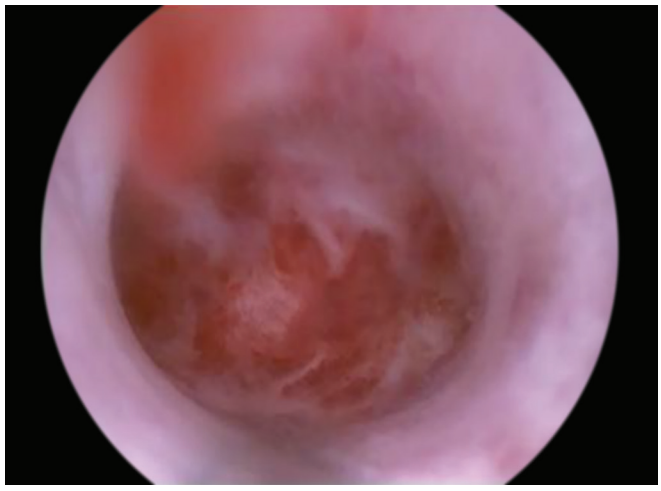


Fig. 12: Panoramic view of cavity

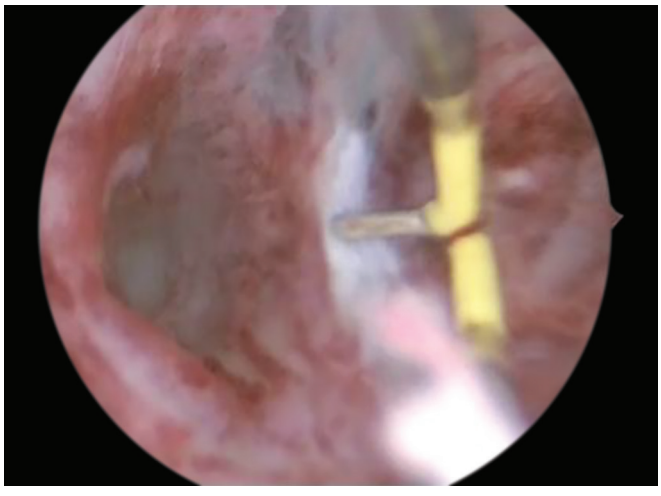


Fig. 13: Adhesion cut by resectoscope

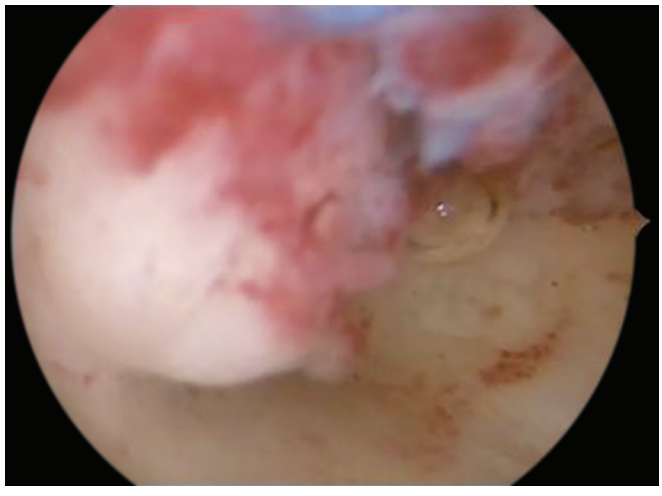


Fig. 14: Multiple polyp in cavity

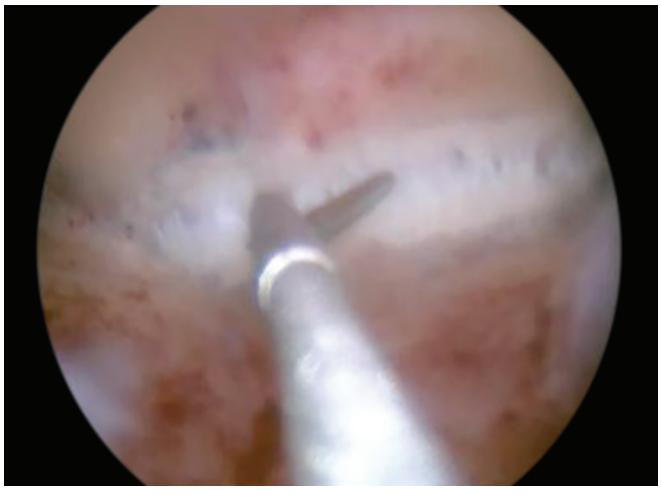


Fig. 15: Septum cut by scissors

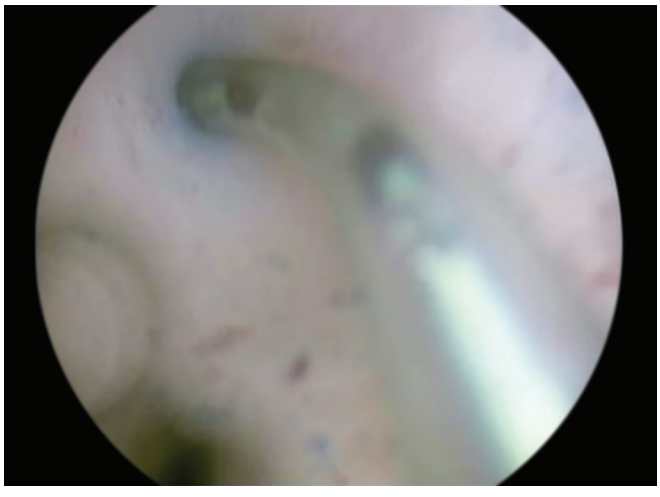


Fig. 16: Cannulation done through Right Ostia

42% of the women had one or more risk factors associated with infertility, such as smoking, poor diet, stress, sexually transmitted diseases, overweight, underweight, age greater than 32 years, etc (Figs 12 to 16).

Thus, diagnostic laparoscopy is the standard means of diagnosing the tubal pathology, peritoneal factors, ovarian factors, and uterine factors as cause of infertility. In a comparative study between HSG and laparoscopy done by La Sala et al for evaluation of tuboperitoneal factors, they had shown a false-negative rate of 35.5% and false-positive rate of 37.7% for HSG, and Snowden et al[16] also in their study obtained a false-negative rate of

13% and false-positive rate of 16% for HSG. In 11 cases, HSG showed tubal block, but dye studies showed block in only 7, a false-positive rate of 36.3%.

CONCLUSION

Approximately two-third (74%) of cases had some form of tubo-ovarian pathology, which makes laparoscopy an essential part of infertility workup. Although hysteroscopy alone was diagnostic in 30% of cases, its simultaneous use with laparoscopy provides cost-effective, comprehensive, and single setup diagnostic aid in these kinds of patients. These diagnostic procedures are also very effective in providing simultaneous therapeutic treatment, and are thus helpful in providing minimally invasive, definitive, and satisfactory treatment to our patients.

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