



Original Article

Role of Diagnostic Hysterolaparoscopy in Evaluation of Infertility and Its Impact on Reproductive Outcomes: An Observational Study

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ABSTRACT

Infertility affects approximately 10–15% of reproductive-age couples globally. Diagnostic hysterolaparoscopy (DHL), combining hysteroscopy and laparoscopy, provides comprehensive evaluation of uterine, tubal, ovarian, and peritoneal factors

Keywords: *infertility, diagnostic hysterolaparoscopy.*

INTRODUCTION

Infertility is defined as the inability to conceive after one year of regular unprotected intercourse and affects a significant proportion of couples worldwide.

Female factors contribute to nearly 40–50% of infertility cases, including:

- Tubal block
- Ovulatory dysfunction
- Endometriosis
- Uterine abnormalities

Conventional investigations often fail to detect subtle pelvic pathology. Diagnostic hysterolaparoscopy (DHL) allows direct visualization of pelvic organs and uterine cavity in a single sitting, making it the gold standard in infertility evaluation.

Additionally, DHL offers therapeutic interventions such as adhesiolysis, ovarian drilling, and septal resection during the same procedure, improving fertility outcome



Infertility is defined as the inability to conceive after one year of regular, unprotected sexual intercourse. It is a distressing condition with significant psychological, social, and economic implications. The burden of infertility is particularly high in developing countries,

where access to advanced reproductive technologies may be limited. Female infertility accounts for nearly half of all cases and is multifactorial in origin. Common causes include:

- Tubal blockage or damage
 - Ovulatory dysfunction (e.g., PCOS)
 - Endometriosis
 - Uterine abnormalities (polyps, fibroids, septum)
- Traditional diagnostic approaches such as hysterosalpingography (HSG), ultrasonography, and hormonal assays have limitations in detecting subtle or combined pathologies. In this context, diagnostic hysterolaparoscopy (DHL) has emerged as the gold standard.

DHL provides:

- Direct visualization of pelvic organs
 - Assessment of tubal patency via chromopertubatio
 - Identification of endometriosis and adhesions
 - Evaluation of uterine cavity
- Additionally, it offers the advantage of simultaneous therapeutic intervention, including:
- Adhesiolysis
 - Ovarian drilling
 - Endometriotic lesion ablation
 - Septal resection and polypectomy

Questionnaire used

SOCIODEMOGRAPHIC DETAILS

1. Age: _____ year
2. Residence: ◦ Rural ◦ Urban
3. Education: ◦ Illiterate ◦ Primary ◦ Secondary ◦ Graduate
4. Occupation: ◦ Homemaker ◦ Working

SECTION B: INFERTILITY PROFILE

5. Type of infertility: ◦ Primary ◦ Secondary
6. Duration of infertility: ◦ 1–3 years ◦ 3–5 years ◦ >5 years
7. Menstrual history: ◦ Regular ◦ Irregular
8. History of: ◦ Dysmenorrhea: Yes No ◦ Dyspareunia: Yes No
9. Past history of pelvic infection/TB: ◦ Yes ◦ No
10. Previous surgeries: • Yes • No

SECTION C: PREVIOUS INFERTILITY EVALUATION

11. Previous treatment taken: • Ovulation induction • IUI • None

12. Previous HSG done: • Yes • No

Tubal Factors

13. Tubal patency: • Bilateral patent • Unilateral block • Bilateral block Ovarian Factors

14. Ovarian findings: • Normal • Polycystic ovaries • Ovarian cyst Peritoneal Factors

15. Peritoneal findings: • Normal • Endometriosis • Adhesions Uterine Factors (Hysteroscopy)

16. Uterine cavity: • Normal • Polyp • Septum • Adhesions

SECTION E: INTERVENTIONS PERFORMED

17. Procedures done during DHL: • Ovarian drilling • Adhesiolysis • Polypectomy • Septal resection • None

SECTION F: FINAL DIAGNOSIS

18. Cause of infertility: • Tubal • Ovarian • Peritoneal • Uterine • Unexplained

SECTION G: FOLLOW-UP OUTCOME

19. Duration of follow-up: • 3 months • 6 months • 12 months

20. Pregnancy outcome: • Conceived • Not conceived

21. If conceived: • Mode: ◦ Spontaneous Assisted

22. Outcome of pregnancy • Ongoing • Miscarriage • Live birth

Female factor infertility accounts for nearly 40–50% of cases and frequently involves multiple overlapping etiologies. The major causes include tubal pathology, ovulatory dysfunction, uterine abnormalities, cervical factors, and peritoneal conditions such as endometriosis and pelvic adhesions.

SECTION D: INTRAOPERATIVE DHL FINDINGS Among these, tubal factors and ovulatory

disorders—particularly polycystic ovarian syndrome (PCOS)—are the most commonly identified contributors.

The evaluation of female infertility has traditionally relied on a combination of clinical history, hormonal assays, ultrasonography, and radiological procedures such as hysterosalpingography (HSG). While these methods provide valuable preliminary information, they have several limitations. HSG, although useful for assessing tubal patency, may produce false-positive or false-negative results and does not allow visualization of peritoneal factors such as endometriosis or adhesions. Similarly, transvaginal ultrasonography is limited in detecting subtle intrauterine or pelvic pathology.

In this context, diagnostic hysterolaparoscopy (DHL) has emerged as a highly valuable modality in the comprehensive evaluation of infertility. It combines hysteroscopy and laparoscopy, enabling simultaneous visualization of the uterine cavity, fallopian tubes, ovaries, and peritoneal surfaces in a single sitting. This dual approach allows for accurate identification of structural abnormalities that may otherwise remain undetected.

Hysteroscopy facilitates direct inspection of the endometrial cavity, aiding in the diagnosis of intrauterine lesions such as polyps, submucosal fibroids, septum, and adhesions.

Laparoscopy, on the other hand, allows detailed evaluation of pelvic anatomy, including tubal morphology, ovarian pathology, and peritoneal conditions such as endometriosis and adhesions. The addition of chromoperturbation further enhances diagnostic accuracy by assessing tubal patency under direct vision.

A major advantage of DHL lies in its therapeutic potential. Unlike conventional diagnostic tools, it allows for immediate correction of identified abnormalities during the same procedure. Interventions such as adhesiolysis, ovarian drilling, cystectomy, septal resection, and polypectomy can be performed simultaneously, thereby reducing the need for multiple procedures and expediting the management process.

Several studies have demonstrated that DHL not only improves diagnostic accuracy but also enhances fertility outcomes, particularly in cases of unexplained infertility. It has been reported that a significant proportion of women with normal findings on routine investigations are found to have underlying pathology on DHL, emphasizing its role as a definitive diagnostic modality.

METHODS AND MATERIAL

Study Design

Cross-sectional observational study

Study Population

- Total patients: 158 infertile women
- Age group: 20–40 years
- Conducted at tertiary care hospital

Inclusion Criteria • Primary or secondary infertility >1 year

- Normal male partner evaluation

Exclusion Criteria

- Male factor infertility
- Endocrine disorders (thyroid, prolactin)
- Active pelvic infection

Procedure

All patients underwent:

- Diagnostic hysteroscopy
- Diagnostic laparoscopy
- Chromopertubation for tubal patency

- Outcome Measures
1. Etiological factors of infertility
 2. Post-procedure pregnancy outcome

Procedure

All patients underwent diagnostic hysterolaparoscopy in the premenstrual phase under general anesthesia.

Hysteroscopy

- Assessment of uterine cavity
- Detection of polyps, septum, adhesions ,fibroids
- Visualization of uterus, tubes, ovaries
- Detection of adhesions, endometriosis
- Methylene blue dye used to assess tubal patency

Outcome Measures

1. Etiological factors detected
2. Therapeutic interventions performed
3. Pregnancy outcomes during follow up



RESULTS AND DISCUSSION

1. Demographic Profile

Peritoneal factor	28	17.7%
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Uterine factor	12	7.6%
Unexplained	37	23.4%

Most patients belonged to the age group of 25–30 years. Primary infertility was more common than secondary infertility.

2. Infertility

Type	Number	Percentage
Primary infertility	112	70.9%
Secondary infertility	46	29.1%

3. Overall Findings

Findings	Number	Percentage
Abnormal	121	76.6%
Normal	37	23.4%

4. Etiological Factors

Factor	Number	Percentage
Tubal factor	42	26.5%
Ovarian factor	39	24.7%

Hysteroscopic Findings

- Endometrial polyps
- Septate uterus
- Intrauterine adhesions

6. Laproscopy Findings

- Tubal block (unilateral/bilateral)
- Polycystic ovaries
- Endometriosis
- Pelvic adhesions

7. Interventions Performed

- Ovarian drilling
- Myomectomy
- Adhesiolysis
- Polypectomy
- Septal resection

8. Reproductive Outcomes

Outcome	Number	Percentage
Conceived	46	29.1%
Not conceived	112	70.9%

CONCLUSION

The present study highlights the significant role of DHL in evaluating infertility. The detection rate of abnormalities (76.6%) observed in this study is consistent with previous literature, emphasizing its superior diagnostic accuracy. Tubal factors were the most common cause of infertility, followed by ovarian and peritoneal causes. This finding aligns with global trends where tubal pathology remains a

- DHL is a comprehensive diagnostic tool in infertility
- High detection rate of underlying pathology
- Allows simultaneous treatment
- Significantly improves pregnancy outcomes

Clinical Recommendation

leading contributor to infertility. The ability of DHL to detect peritoneal factors such as minimal endometriosis and

adhesions provides a major advantage over non-invasive modalities. Many of these conditions remain undiagnosed with routine investigations. Another key finding of this study is the 29.1% conception rate following DHL. This highlights its therapeutic potential. Interventions such as ovarian drilling and adhesiolysis significantly improve chances of conception. Compared to assisted reproductive techniques, DHL offers a cost-effective alternative, especially in resource-limited settings.

DHL should be considered early in the infertility workup, particularly in cases of unexplained infertility or failed medical management.

LIMITATIONS

- Short follow-up duration
- Lack of control group
- No comparison with ART outcomes

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