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# Evaluation of Hysterolaparoscopic Findings in Infertile Woman at Tertiary Care Hospital

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## ABSTRACT

**Background:** Infertility is a global problem. 10-15% of married couples fail to achieve pregnancy at the end of one year of regular unprotected sexual life. Female factors contribute to 40-45%, male factors 30-40%, both partners 10% and 10% unexplained. This study aims to evaluate causes of Infertility, to identify uterine/tubo-peritoneal and ovarian pathologies as observed during hysterolaparoscopy and to advise appropriate treatment/intervention.

**Methods:** A cross-sectional observational study was conducted on 34 cases of infertile women attending Gynecology OPD at NSCBMCH, Jabalpur.

**Results:** In the study conducted over 34 infertile women (74% primary infertility and 26% secondary infertility) below noted results were obtained: peritoneal factors were 42%, Uterine factors contributed to 32%, Tubal factors contributed to 6% and Ovarian factors found in 3% of cases. As for therapeutic intervention laparoscopic myomectomy, hysteroscopic septal resection, hysteroscopic adhesiolysis or hysteroscopic polypectomy were done at the same sitting for some cases in this study as required.

**Conclusion:** DHL is an effective and safe tool. It is also an acceptable, feasible and daycare procedure. In a one-time approach evaluation and therapeutic procedure can be done in the same sitting as needed. From this study, it can be concluded that DHL is the gold standard tool in the evaluation of female subfertility.

**Key-words:** Chromopertubation, DHL, Fertility enhancing surgery, Hysteroscopy, Laparoscopy, Subfertility

## INTRODUCTION

Reproduction is a basic function of human life. The desire for reproduction is an important motivating human force.

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Fertility stands for Reproductivity, continuity and growth. Infertility: WHO defines infertility as "A disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse" [1].

Primary infertile patients are those who have never conceived. Secondary infertility indicates previous pregnancy irrespective of the outcome but failure to conceive subsequently. Many couples may succeed in achieving pregnancy with adequate time, so it is better to refer to them as "subfertile" rather than infertile [2].

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Infertility is a global problem. 10–15% of married couples fail to achieve pregnancy at the end of one year of regular unprotected sexual life [2,3].

Female factors contribute to 40–50%, male factors 30–40% and both partners and 10% are unexplained [4-6].

Infertility is generally a tragedy to the couple and brings forth family unhappiness and mental disharmony. Infertility is considered a taboo in some cultural and societal circles. The taboos& myths of infertility in society sometimes lead to isolation, frustration and often delayed medical treatment. Infertility has always been one of the most elusive symptom complexes that perplex a gynecologist. Correct diagnosis of causes of infertility and opting for treatment accordingly will help in reducing the prevalence of infertility.

Hysteroscopy aids in diagnosing uterine cavity lesions leading to infertility like septate uterus, submucous myoma, and synechiae; whereas laparoscopy helps in evaluating tuboperitoneal, ovarian, pelvic factors and helps to assess the tubal patency with the addition of chromopertubation. Combining hysteroscopy and laparoscopy- hysterolaparoscopy - helps in the evaluation of female factor infertility like uterine cavitary lesions, and peritoneal and pelvic factors in the same setting and is considered as gold standard. Thus, it is considered the “third eye of the gynaecologist” in the diagnosis of causes of infertility [7-9].

Diagnostic Hysterolaparoscopy is an effective and safe tool in the comprehensive evaluation of female infertility, particularly in the detection of peritoneal endometriosis, adnexal adhesions, tubal patency and septate uterus which are usually missed by routine pelvic examinations and usual NSCB MCH tertiary referral hospital in central India, catering to population from about 200 - 250 km radius. The average infertility OPD is about 100-110 per week.

This study aims to evaluate endoscopy findings in women with subfertility and correlate with HSG to offer better treatment options and to study the sociodemographic profile of infertile patients attending OPD, various contributing causes/ factors of infertility and various hysterolaparoscopic findings in those undergoing DHL for infertility.

## MATERIALS AND METHODS

**Place of the study-** This cross-sectional observational study of evaluation of hysterolapraroscopic findings in infertile women at tertiary care center was conducted at the Department of Obstetrics and Gynaecology, Netaji Subhash Chandra Bose Medical College and Hospital, Jabalpur, MP, India from July 2022 to June 2024.

All the patients who were fit and satisfied the inclusion criteria mentioned below were included in the study. Thus 34 patients were selected for the study.

The ethics committee approval was obtained and then patient history was taken thoroughly, detailed clinical examination was done. All relevant investigations were done and a final diagnosis was made after Hysterolaparoscopy procedure. The Performa contains all the above details of the patients which were recorded and collected data is analyzed by using Chi-square test.

**Interventions done in this study**

- Laparoscopic myomectomy for fibroid uterus and endometriotic cyst excision with adhesiolysis for endometriosis.
- Hysteroscopic septal resection for septate uterus, polypectomy for submucous polyp and tubal cannulation for corneal block.

**Inclusion criteria**

- Infertile women aged 21–40 years.
- Primary or secondary infertility as per WHO criterion.

**Exclusion criteria**

- Age >40 Yrs & <21 or <1 yr of attempted conception.
- Patients with cardiovascular disease, chronic respiratory disease, generalized peritonitis, active foci of tuberculosis and acute pelvic infection.
- Cases with suspected pregnancy/ luteal phase.
- Patients who had absolute or relative contraindication for anesthesia.
- Patients who are not willing.

**Statistical analysis-** Statistical analysis was conducted using the Chi-square test for evaluating categorical data. However, no other statistical tests, such as t-tests, ANOVA, or regression analysis, were mentioned. The study results primarily rely on percentages and comparative analysis to assess the differences between diagnostic modalities, including HSG vs. Laparoscopic Chromopertubation and USG vs. Hysterolaparoscopy. The p-value reported (0.009) indicates statistical significance in some comparisons.

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**RESULTS**

In this study, 25 (74%) patients are of primary infertility and 9 (26%) patients are of secondary infertility. Most of the primary infertility patients belong to the age group of 21–25 years (44%) and in secondary infertility, most of them belong to the age group of 26–30 years and also 31–35 years. In total 39% of the cases presented belong to the age group 26–30 years, 36% of them belong to 21–25 years, 17 % belong to 31–35 years and 8 % of cases belong to the 36–40 years age group.

In this study 44% of cases of secondary infertility presented with a previous 1 miscarriage, 22 % presented with a previous 2 miscarriages, 22% presented with vaginal delivery and 12% with a history of LSCS. As per Table 1 in comparison with USG findings and Hysterolaparoscopic findings 52% of patients were found to be Normal study in USG where whereas only 18% of patients were found to have normal findings in Hysterolaparoscopy. Septate uterus, Fibroid uterus. Whereas adnexal mass accounts for 20% of cases and ovarian cyst for 14%, unicornuate uterus for 8% of cases were identified in hysterolaparoscopic evaluation. Hence it can be stated that some of the missed findings in route sonographic evaluation can be identified through hysterolaparoscopic evaluation.

**Table 1:** Hysterolaparoscopic findings & USG findings:

| Findings | USG findings | | Hysterolaparoscopy findings | | p-value |
|---|---|---|---|---|---|
| | Patients No. | Percentage | Patients No. | Percentage | |
| Normal | 18 | 52% | 6 | 18% | p-value is 0.158 insignificant |
| Unicornuate | 1 | 3% | 3 | 8% | |
| Septate/Bicornuate | 2 | 6% | 2 | 5% | |
| Adnexal mass | 10 | 30% | 7 | 20% | |
| Ovarian cyst | 1 | 3% | 5 | 14% | |
| Fibroid Uterus | 1 | 3% | 1 | 3% | |

As per Table 2, it was found that 42% of the patients found with B/L tubal blockage in HSG among them 23% of patients had B/L tubal blockage as per findings in laparoscopic chromopertubation. 50% of patients had B/L patent tubes as per the laparoscopic chromopertubation study, whereas it was 32% in HSG. 23% of patients found with U/L tubal blockage in laparoscopic chromopertubation whereas it was 26% in HSG.

**Table 2:** Correlation between HSG findings & Laparoscopic chromopertubation findings

| Findings | HSG findings | | Laparoscopic Chromopertubation findings | | p-value |
|---|---|---|---|---|---|
| | Patients No. | Percentage | Patients No. | Percentage | |
| B/L spillage | 11 | 32% | 17 | 50% | p-value is 0.009 Significant* |
| U/L spillage | 9 | 26% | 8 | 23% | |
| B/L blockage | 14 | 42% | 8 | 23% | |
| Hydrosalpinx | 0 | 0 | 1 | 4% | |

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As per Table 3, it has been found that peritoneal factors are responsible for 42% of infertility out of which 36% were primary infertile and 56% were secondary infertile. Followed by uterine factors at 32%, unexplained at 17%, tubal at 6% and Ovarian factors contributing at 3%. The total number of cases is not shown in the table as many patients had more than one pathology at Hysterolaparoscopy.

**Table 3:** Distribution of cases according to various factors of infertility in DHL

| DHL Findings Factors causing infertility | Primary infertility | | Secondary infertility | | Total | |
|---|---|---|---|---|---|---|
| | Patients No. | Percentage | Patients No. | Percentage | Patients No. | Percentage |
| Uterine | 7 | 28% | 4 | 44% | 11 | 32% |
| Tubal | 2 | 8% | - | - | 2 | 6% |
| Ovarian | 1 | 4% | - | - | 1 | 3% |
| Peritoneal | 9 | 36% | 5 | 56% | 14 | 42% |
| Unexplained | 6 | 24% | - | - | 6 | 17% |
| Total | 25 | 100% | 9 | 100% | 34 | 100% |

**DISCUSSION**

The gold standard for identifying peritoneal and tubal diseases is laparoscopy. It facilitates the direct view of the peritubal adhesions and pelvic organs. Laparoscopy's capacity to view and manipulate the uterus, fallopian tubes, and ovaries has made it a crucial component of infertility evaluation. The gold standard for diagnosing intrauterine abnormalities such as adhesions, polyps, and submucous myomas is hysteroscopy. A minimally invasive technique called hysteroscopy makes it possible to see the endocervix, uterus, endometrium, and tubal ostia.

In the present study incidence of primary infertility is 74% and secondary infertility is 26%. It correlates with Hemalatha *et al.* [10] where the incidence of primary and secondary infertility was 75% and 25% respectively as well as with Gambhava *et al.* [11] where it was 73% and 27% respectively.

In this study, most of the patients of primary infertility (40%), secondary infertility (33%) and a total 39% of patients belong to the age group of 26-30 years. This correlates with the study by Hemalatha *et al.* [10], where primary infertility 46% and secondary infertility 44% of patients belong to the age group of 26-30 years.

The percentage of patients with primary infertility with 1 to 5 years and 6 to 10 years duration of infertility was 72% and 20% respectively. The percentage of patients with secondary infertility with 1 to 5 years and 6 to 10 years duration of infertility was 33% and 56% respectively [12-15]. This correlates with the study by Gambhava *et al.* [11] where most of the primary infertility cases were 1 to 5 years duration and most of the secondary infertility cases were 6 to 10 years duration.

As per Table 4 In the present study it reveals peritoneal factors (42%) are the most common causes of infertility followed by uterine (32%), unexplained (17%), tubal (6%) and ovarian (3%). The study conducted by Hemalatha et al also found peritoneal factor as a commonest cause followed by uterine factor. Ghambhava *et al.*[11] found tubal factor as common cause followed by ovarian [16-21].

**Table 4:** Percentage of various factors of infertility found in diagnostic hysterolaparoscopy (DHL)

| Factors | Hemalatha *et al.*[10] | Ghambhava *et al.*[11] | Present study |
|---|---|---|---|
| Uterine | 23% | 8.6% | 32% |

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| | | | |
|---|---|---|---|
| Tubal | 19% | 33.4% | 6% |
| Ovarian | 16% | 26.7% | 3% |
| Peritoneal | 25% | 9.3% | 42% |
| Unexplained | 17% | 22% | 17% |

## CONCLUSIONS

Diagnostic hysteroscopy and laparoscopy is an established and effective modality that gives the option of seeing and treating. It is also an acceptable, feasible and daycare procedure. In a one-time approach evaluation and therapeutic procedure can be done in the same sitting as needed. It helps in formulating specific planning for further management. Based on the results of this study it can be concluded that while investigating the couple of female subfertility combined simultaneous diagnostic laparoscopy and hysteroscopy should be performed in all infertile patients.

## SUMMARY

In this study, 17% of cases had normal findings in DHL whereas 83% of patients presented with pathology. In Hysteroscopy 15% of cases show abnormal findings, submucous polyp was present in 3% of cases, and intrauterine adhesions in 6% of cases with complete and partial septum in 3% of cases each. The rest of 85% of cases show normal findings. On laparoscopy, peritoneal factors were found in 42% of cases, Uterine factors were found in 32% of cases, Tubal factors were found in 6% of cases and Ovarian factors were found in 3% of cases. None of the patients had complications intraoperatively except minimal pain abdomen postoperatively.

## LIMITATIONS

- Number of the patients admitted for DHL procedure are less hence sample size was small.
- Follow-up is poor and challenging.
- Some of the patients attending OPD are already operated in outside facilities and are seeking treatment for the same diagnosis.

## CONTRIBUTION OF AUTHORS

**Research concept:** Kavita N Singh, Vinuth HS
**Research design:** Kavita N Singh, Vinuth HS
**Supervision:** Kavita N Singh, Deepti Gupta
**Material and data collection:** Vinuth HS, Swathi Holla U
**Data analysis and interpretation:** Kavita N Singh, Deepti Gupta, Vinuth HS
**Literature search:** Vinuth HS, Swathi Holla U
**Writing article:** Kavita N Singh, Vinuth HS, Swathi Holla U
**Critical review:** Kavita N Singh
**Article editing:** Vinuth HS, Swathi Holla U
**Final approval:** Kavita N Singh

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