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COMPREHENSIVE EVALUATION AND MANAGEMENT OF FEMALE INFERTILITY USING HYSTEROLAPAROSCOPY FOR BETTER OUTCOMES

Obstetrics & Gynaecology

Dr. Shraddha S Hiremath Junior Resident, Department of Obstetrics And Gynecology, Sapthagiri Institute of Medical Sciences And Research Centre, Bangalore.

Dr. Rajini Uday* Professor and HOD , Department of Obstetrics and Gynecology , Sapthagiri Institute of Medical Sciences and Research Centre. *Corresponding Author

Dr. Ashwini Chandankhede Assistant Professor , Department of Obstetrics and Gynecology , Sapthagiri Institute of Medical Sciences and Research Centre, Bangalore

Dr Bindushree V Junior Resident, Department of Obstetrics And Gynecology, Sapthagiri Institute of Medical Sciences And Research Centre, Bangalore.

ABSTRACT

Introduction: Infertility, defined by the WHO and ICMART as the inability to achieve clinical pregnancy after 12 months of regular unprotected intercourse, affects 10-15% of couples worldwide. Common causes include tuboperitoneal disease, ovulatory disorders, uterine factors, and male factor infertility. Hysterolaparoscopy, combining hysteroscopy and laparoscopy, is pivotal for its direct visualization capabilities and minimal invasiveness in diagnosing and managing these conditions. **Aims and Objectives:** This retrospective study aimed to assess the role of hysterolaparoscopy in the comprehensive evaluation and management of female infertility. **Materials and Methods:** Conducted at Sapthagiri Superspeciality Hospital over 14 months, the study included 70 women aged between 20-40 years with primary or secondary infertility and normal male factors. Diagnostic hysterolaparoscopy evaluated pelvic anatomy, identified pathologies and performed concurrent corrective procedures as necessary. Data collected included patient demographics, infertility type, hysteroscopic/laparoscopic findings and operative details. **Results:** Among the participants, 64.3% had primary infertility and 35.7% had secondary infertility. Most cases (76% primary, 56% secondary) were aged 20-30 years. Hysteroscopy revealed polyps (24%) and myomas (11%) in primary infertility, and tubal block (32%) and polyps (24%) in secondary infertility. Laparoscopy findings included polycystic ovaries (26%) and myomas (11%) in primary infertility, and adnexal adhesions (28%) and myomas (20%) in secondary infertility. Operative procedures included myomectomy (21%), hysteroscopic polypectomy (14%), and adhesiolysis (15%). **Discussion:** The study's findings align with existing literature, underscoring the prevalence of primary and secondary infertility and the efficacy of hysterolaparoscopy in identifying and treating pathologies. The procedure's ability to correct abnormalities in the same setting enhances diagnostic accuracy and treatment outcomes. **Conclusion:** Hysterolaparoscopy emerges as a crucial tool in the comprehensive management of female infertility, offering safe, minimally invasive diagnosis and treatment of correctable pathologies. This approach facilitates targeted management planning, potentially improving outcomes for infertility patients.

KEYWORDS

Female infertility, hysterolaparoscopy, hysteroscopy, laparoscopy, diagnostic accuracy, treatment outcomes

INTRODUCTION

Infertility is defined by the World Health Organization (WHO) and the International Committee for Monitoring Assisted Reproductive Technology (ICMART) as the failure to achieve a clinical pregnancy after 12 months of regular, unprotected sexual intercourse[1]. Approximately 10-15% of couples worldwide experience fertility problems, with prevalence rates of 17.8% in high-income countries and 16.5% in developing countries[1]. The primary causes of infertility are tuboperitoneal disease (40-50%), ovulatory disorders (30-40%), uterine factors (15-20%), and male factor infertility (30-40%).[2,3]

Laparoscopy is gold standard and preferred method for diagnosing tubal and peritoneal disease due to its ability to provide direct visualization of the pelvic organs and peritubal adhesions. Hysteroscopy, a minimally invasive procedure, allows for the examination of the endocervical canal, uterine cavity, endometrium, and tubal ostia. Combining both techniques, hysterolaparoscopy offers a thorough and safe approach for evaluating infertility. This comprehensive method ensures a detailed assessment of infertile patients.[4]

Despite the prevalence of infertility and the advancements in diagnostic techniques, many couples continue to face challenges in achieving pregnancy. This study aims to assess the role of hysteroscopy and laparoscopy in the comprehensive evaluation of female infertility, providing insights into the prevalence of different infertility types and the effectiveness of these diagnostic tools.

The study was conducted at Sapthagiri Superspeciality Hospital over 14 months, involving 70 women with primary and secondary infertility. By analyzing patient characteristics, hysteroscopic and laparoscopic findings, and operative procedures performed, this research seeks to contribute valuable data to the existing body of knowledge on infertility management.

AIMS AND OBJECTIVES

The primary aim of this study is to assess the role of hysteroscopy and laparoscopy in the comprehensive evaluation of female infertility. Specific objectives include:

1. To determine the prevalence of primary and secondary infertility among the study population.
2. To identify the common hysteroscopic and laparoscopic findings in infertile women.
3. To evaluate the effectiveness of corrective surgical procedures performed during hysterolaparoscopy.
4. To provide recommendations for the management of female infertility based on the study findings.

MATERIALS AND METHODS

Study Design: Retrospective study.
Sample Size: 70 women.
Study Period: June 2022 to October 2023.
Study Location: Sapthagiri Superspeciality Hospital, Bangalore.
Statistical Methods: Descriptive statistical analysis was performed on purposive samples using SPSS software.

INCLUSION CRITERIA:

- Women married for more than one year.
- Women aged between 20-40 years with primary and secondary infertility.
- Normal male factor fertility.

EXCLUSION CRITERIA:

- Women unfit for the procedure.
- Women with hormonal abnormalities causing anovulation (e.g., thyroid dysfunction, hyperprolactinemia).
- Women who did not give consent for the study.

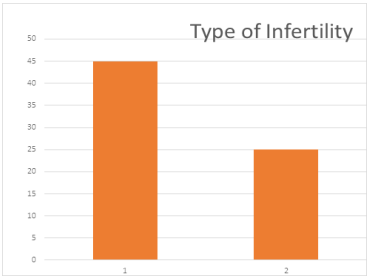
Data Collection: All women underwent diagnostic

hysterolaparoscopy to assess pelvic anatomy and identify any pathological causes of infertility. Corrective surgical procedures were performed in the same sitting if necessary. Data were collected on patient characteristics, hysteroscopic and laparoscopic findings, and operative procedures performed.

Results

Table 1 : Type of Infertility:

	Primary infertility No. (%)	Secondary infertility No. (%)
TYPE OF INFERTILITY	45 (64.3%.)	25(35.7%)



In this study, out of 70 women, 45 women had primary infertility and 25 women had secondary infertility (Table 1).

Table 2 : Age-wise Distribution:

Age in years	Primary infertility 45	Percentage%	Secondary infertility 25	Percentage
20-25	12	27 %	04	16%
26-30	22	49%	10	40%
31-35	07	16%	07	28%
36-40	04	8%	04	16%

The majority of infertility patients were between 20-30 years old, with primary infertility accounting for 76% and secondary infertility around 56%.

Table 3 : Hysteroscopic Findings:

Hysteroscopic findings	PRIMARY N=45	SECONDARY N=25	TOTAL N= 70
Normal	20 (44%)	8 (32%)	28
Myoma (submucous)	5 (11%)	2 (8%)	7
Polyp	11 (24%)	6 (24%)	17
Septum	3 (6%)	1 (4%)	4
Uterine Anomaly	3 (6%)	-	3
Tubal block	3 (6%)	8 (32%)	11

The most common abnormalities detected by hysteroscopy in primary infertility were polyps (24%) and myoma (11%), while in secondary infertility, tubal block (32%) and polyps (24%) were prevalent.

Table 4 : Laparoscopic Findings

LAPAROSCOPIC FINDINGS	PRIMARY N=45	SECONDARY N=25	TOTAL
NORMAL	13 (28%)	5 (20%)	18
ENDOMETRIOSIS	3 (6%)	2 (8%)	5
PCOD	12 (26%)	2 (8%)	14
ADNEXAL ADHESIONS	4 (48%)	7 (28%)	11
FIBROID UTERUS	5 (11%)	5 (20%)	10
ENDOMETRIOTIC CYST	3 (6%)	2 (8%)	5
TUBAL PATHOLOGY	2 (4%)	2 (8%)	4
UTERINE ANOMALIES	3 (6%)	-	3

Common abnormalities detected by laparoscopy in primary infertility cases included polycystic ovaries (26%) and myoma (11%), whereas in secondary infertility, adnexal adhesions (28%) and myoma (20%) were prevalent.

Table 5: Operative Procedures Performed:

PROCEDURE	NUMBER OF PATIENTS	PERCENTAGE
PCOD drilling	14	20%
Ovarian cystectomy	5	7%
Adnexal adhesiolysis	11	15%
Tubal recannulation	2	2%
Myomectomy	15	21%
Hysteroscopic septal resection	3	4%
Hysteroscopic Polypectomy	10	14%

Of the correctible pathologies, operative procedures were performed in the same sitting. PCOD drilling was done in 14 women, ovarian cystectomy in 5, adnexal adhesiolysis in 11, tubal recannulation in 2, myomectomy in 15, hysteroscopic septal resection in 3, and polypectomy in 10 cases.

DISCUSSION

The current study demonstrates a comprehensive evaluation of female infertility using hysterolaparoscopy, providing significant insights into the prevalence, types, and management of infertility among women. The incidence of primary infertility was found to be 64.3%, while secondary infertility was 35.7%, aligning with the findings of Hemalata et al.5(2022), who reported primary infertility at 75% and secondary infertility at 25% .. The majority of patients were within the 20-30 year age range, with 76% of primary infertility and 56% of secondary infertility cases in this bracket, correlating with previous studies[5].

Hysteroscopic findings revealed abnormalities in 56% of primary infertility cases and 68% of secondary infertility cases, similar to the observations made by Nayak et al. and Sonal Patil et al[7,8] The most common hysteroscopic findings in primary infertility were polyps (24%), myomas (11%), and uterine anomalies (6%), whereas secondary infertility commonly showed tubal block (32%) and polyps (24%).. These findings are consistent with the literature, emphasizing the importance of hysteroscopy in detecting intrauterine pathologies that could impede fertility.

Laparoscopic findings highlighted polycystic ovaries (PCOD) in 26% and myomas in 11% of primary infertility cases, while secondary infertility cases frequently showed adnexal adhesions (28%) and myomas (20%).. These results align with the studies by Madhuri N et al6., which reported similar observations in the prevalence of PCOD and myomas in infertility cases..

The operative procedures performed during the same setting included PCOD drilling (20%), ovarian cystectomy (7%), adnexal adhesiolysis (15%), tubal recannulation (2%), myomectomy (21%), hysteroscopic septal resection (4%), and polypectomy (14%).. These procedures underscore the therapeutic potential of hysterolaparoscopy, not only in diagnosing but also in treating correctable causes of infertility in a single session.

The high prevalence of PCOD among primary infertility patients suggests a significant role of metabolic and hormonal factors in infertility. PCOD drilling, which was performed in 20% of cases, has been shown to improve ovulation rates and enhance fertility outcomes.Similarly, myomectomy, performed in 21% of cases, is crucial in removing fibroids that could obstruct the uterine cavity or interfere with implantation[9].

Adnexal adhesiolysis, conducted in 15% of patients, is vital in managing cases with pelvic adhesions, which can distort pelvic anatomy and hinder the pick-up of oocytes by the fallopian tubes.. Tubal recannulation, though less frequent (2%), addresses tubal blockages, facilitating the passage of gametes and improving the chances of natural conception[9,10].

The study's findings also highlight the importance of addressing uterine anomalies and polyps through hysteroscopic interventions. Hysteroscopic septal resection (4%) and polypectomy (14%) are minimally invasive procedures that can significantly improve uterine environment and fertility outcomes.. These procedures, by correcting structural anomalies, enhance the likelihood of successful implantation and reduce the risk of miscarriages.

In summary, the study affirms that hysterolaparoscopy is a comprehensive and effective tool for evaluating and managing female infertility. It offers the dual advantage of diagnosis and treatment in a single session, making it a valuable approach in infertility management. By identifying and correcting a wide range of pathologies, from PCOD and myomas to adhesions and tubal blockages, hysterolaparoscopy improves fertility outcomes and aids in the formulation of individualized treatment plans for infertile women.

CONCLUSION

Hysterolaparoscopy emerges as a minimally invasive, safe, and effective procedure in the comprehensive evaluation of female infertility. It provides a detailed assessment of pelvic anatomy and identifies conditions like endometriosis, adnexal adhesions, and septate uterus, which are often missed by imaging procedures. This dual diagnostic and therapeutic modality allows for immediate corrective interventions, such as adhesiolysis, tubal cannulation, and the removal of polyps and fibroids, thereby enhancing the chances of conception.

The findings from this study suggest that combined simultaneous laparoscopy and hysteroscopy should be a routine part of the infertility workup for all infertile women. This approach not only helps in diagnosing the underlying causes of infertility but also facilitates targeted treatments in the same session, improving patient outcomes and reducing the time to achieve pregnancy.

In conclusion, hysterolaparoscopy should be considered an essential procedure in the management of female infertility due to its comprehensive diagnostic capability and therapeutic benefits. This study reinforces the procedure's role in modern gynecological practice and its potential to significantly impact fertility treatment protocols.

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