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REMOVAL OF RETAINED INTRAUTERINE DEVICE WITH MISSING STRINGS BY HYSTEROSCOPY AT TERTIARY HOSPITAL.

Dr Ayesha Siddiqua. R	MBBS MS, Post Graduate, Department Of Obstetrics And Gynecology, Bangalore Medical college and Research Institute Krishna Rajendra Road, Kalasipalya Bangalore 560002
Dr Sushmitha V	MBBS MS, Post Graduate, Department Of Obstetrics And Gynecology, Bangalore Medical college and Research Institute Krishna Rajendra Road, Kalasipalya Bangalore 560002
Dr Chaithrashree B N	MBBS MS, Post Graduate, Department Of Obstetrics And Gynecology, Bangalore Medical college and Research Institute Krishna Rajendra Road, Kalasipalya Bangalore 560002
Dr Ashok Kumar Devoor	MBBS MS, Professor, Department Of Obstetrics And Gynecology, Bangalore Medical college and Research Institute Krishna Rajendra Road, Kalasipalya Bangalore 560002

ABSTRACT **Background:** The intrauterine device (IUD) is a safe and effective long-term reversible contraceptive. The method of removal depends on string visibility; if the string is not visible, initial removal attempts involve uterine forceps under ultrasound guidance. If unsuccessful, hysteroscopy is used to retrieve the device. **Aims/ Objective:** This study aimed to evaluate the effectiveness and clinical outcomes of hysteroscopic-guided IUD retrieval in complex cases. **Methods:** This retrospective study was conducted at Vani Vilas Hospital, Bangalore Medical College and Research Institute (BMC&RI), from January 2023 to March 2024. The sample included 21 cases of intrauterine device (IUD) retrievals performed using hysteroscopy, it was determined based on the number of cases meeting these criteria within the specified timeframe, providing a focused analysis of outcomes in this subset of patients which were specifically selected based on the need for hysteroscopic intervention due to missing or non-visible IUD strings, making standard removal techniques ineffective. **Results:** This study involved 21 cases of Cu-T IUD retrieval. In 18 cases, the IUD was successfully removed by grasping the vertical limb with the hysteroscope. One case required piecemeal removal due to fragmentation, while two cases necessitated laparotomy-one embedded in the uterine wall, the other in the rectosigmoid colon, which required a loop colostomy. **Conclusion:** Hysteroscopy is a highly useful and effective technique for accurately locating and retrieving intrauterine devices (IUDs), especially in cases where the device is difficult to access or has missing strings.

KEYWORDS : Intrauterine device (IUD), hysteroscopy, contraceptive retrieval, missing strings, laparotomy

INTRODUCTION

One of the most effective and safe options for long-term reversible contraception is the intrauterine device (IUD). IUDs are favored globally due to their high efficacy, low maintenance, and minimal side effects, making them an excellent choice for women seeking a reliable contraceptive solution.[1,2] While side effects are typically mild, some women experience vaginal bleeding and dysmenorrhea a few months post-insertion. Other complications, though less frequent, may include pain, expulsion, perforation, and even migration of the device. In cases where adverse effects become unbearable, women often seek medical consultation for IUD removal.[3]

The visibility of the IUD string, commonly referred to as the filament, is crucial in determining the method of device removal. The most frequent issue encountered in IUD removal is the loss of the string at the external cervical os, making the retrieval process more challenging. Studies indicate that IUDs may be misplaced in up to 5% of cases, necessitating further evaluation for proper device removal. When an IUD with missing strings is encountered, a transvaginal ultrasound is typically the first step in assessing its location. This imaging helps determine whether the IUD is within the uterine cavity, embedded in the uterine wall, or has migrated into the peritoneal cavity. If the IUD remains within the uterine cavity, initial attempts are often made to remove it using uterine forceps under ultrasound guidance. However, if these attempts fail, hysteroscopy becomes essential for safe and precise retrieval.[4-8]

Hysteroscopy, as both a diagnostic and operative technique, has revolutionized the retrieval of misplaced or retained IUDs, offering a minimally invasive alternative to traditional surgical methods. This technique allows for direct visualization and targeted removal, which reduces the risks associated with blind procedures. As a minimally invasive procedure, hysteroscopy provides advantages such as a short hospital stay, minimal blood loss, and fewer immediate or long-term complications. In complex cases of embedded or migrated IUDs, hysteroscopy enables successful retrieval with high accuracy, enhancing patient outcomes and comfort.[9,10]

This study evaluates the use of hysteroscopy in a tertiary care setting for the retrieval of retained IUDs with missing strings, specifically focusing on cases where standard removal techniques were insufficient. By assessing the effectiveness, safety, and clinical outcomes of hysteroscopic IUD removal, this research aims to contribute valuable insights to improve management strategies for women experiencing complications with long-term contraceptives.[11]

Thus, this study aimed to evaluate the effectiveness and clinical outcomes of hysteroscopic-guided IUD retrieval in complex cases.

MATERIALS AND METHODS

This retrospective study was conducted at Vani Vilas Hospital, part of the Bangalore Medical College and Research Institute (BMCRI), over a 15-month period from January 2023 to March 2024. The study was approved by the institutional ethics committee, and only patients meeting specific inclusion criteria were considered for analysis. The study aimed to assess cases that required hysteroscopic-guided removal of intrauterine devices (IUDs) under the Department of Obstetrics and Gynecology.

The source of data was the major operation theater (OT) register, which documented all relevant surgical procedures within the study period. Patients eligible for inclusion were those with IUDs that had invisible strings, confirmed as in situ through ultrasound imaging. Exclusion criteria were applied to eliminate cases where the IUD strings were visible, as these did not necessitate hysteroscopic intervention. From the OT registry, the researchers extracted data on demographic and clinical details, including age, parity, reason for IUD removal, and intraoperative findings. The postoperative course and clinical outcomes were also documented to provide a comprehensive evaluation of each case. These data points were systematically recorded for all 21 patients who met the study's criteria, ensuring uniformity in data collection and facilitating an accurate descriptive statistical analysis.

The analysis was conducted to summarize patient characteristics and outcomes, thereby providing insights into the effectiveness and clinical implications of hysteroscopic-guided IUD removal in cases with challenging access due to non-visible strings.

RESULTS

In this study of 21 cases of intrauterine device (IUD) removal, three distinct methods were used depending on the condition and location of the device. The majority of cases, totaling 18 out of 21 (85.71%), involved a straightforward removal process. In these cases, the IUD was accessible and was simply grasped by the vertical limb and withdrawn using a hysteroscope. This high percentage of easy removals indicates that most IUDs were not deeply embedded and could be retrieved with minimal intervention, highlighting the effectiveness of hysteroscopy as a primary method for IUD removal in uncomplicated cases.

However, one case (4.76%) required a different approach due to fragmentation of the IUD. In this instance, the IUD was found to be broken into pieces, requiring piecemeal removal using the hysteroscope. Fragmentation complicates the retrieval process as each fragment must be carefully extracted to prevent complications. This case illustrates a situation where hysteroscopy remains effective but demands greater precision and attention due to the fragmented state of the IUD.

Two cases (9.52%) required a more invasive approach with laparotomy, as the IUD had either migrated or become embedded in other organs. In one of these cases, the IUD was embedded in the posterior uterine wall, making it unreachable via hysteroscopy. In the other case, the device had migrated to the rectosigmoid portion of the colon, necessitating not only laparotomy but also a loop colostomy following IUD removal. These cases represent the more severe end of the complication spectrum, where the IUD had moved beyond the reach of non-invasive techniques and required open surgical intervention. Such instances underscore the importance of surgical readiness and multidisciplinary support in managing complex IUD removals.

Overall, the data reveal that hysteroscopy was highly successful as a primary method for IUD removal, accounting for 90.47% of the cases. Only a small proportion (9.52%) required more invasive surgical techniques due to complications involving migration or embedding. This distribution of removal methods highlights the efficacy of hysteroscopy in most cases, while also demonstrating the necessity of advanced surgical intervention in certain complex situations. This study reinforces the value of hysteroscopy as a minimally invasive approach for IUD retrieval, while acknowledging the need for readiness to escalate to open surgery when necessary. (Table 1)

Table 1: Types of IUD Removal Procedures

Removal Method	Patients		Description
	Number	Percentage	
Easy Removal	18	85.71	IUD removed by grasping the vertical limb and withdrawing with hysteroscope.
Fragmented CuT Removal	1	4.76	IUD was fragmented and required piecemeal removal with hysteroscope.
Laparotomy	2	9.52	Surgical removal required due to IUD migration or embedding in other organs.

The figure 1 illustrates the outcomes of hysteroscopic IUD removal among 21 patients. A majority (18 patients, 85.71%) underwent easy removal. One case (4.76%) required piecemeal removal due to fragmentation of the IUD. Two cases (9.52%) needed laparotomy due to migration or embedding in other organs. This highlights the effectiveness of hysteroscopy in most cases, with only a few requiring surgical interventions.

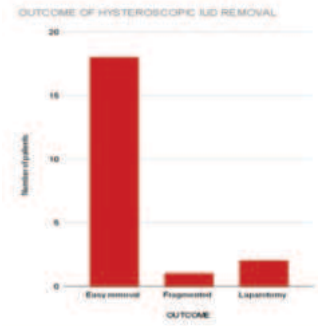

Figure 1: Outcomes of Hysteroscopic Intervention for IUD Removal

DISCUSSION

The findings from this study reinforce the effectiveness of hysteroscopy as a primary method for intrauterine device (IUD) retrieval. In 85.71% of cases, the IUD was removed successfully and straightforwardly through hysteroscopy, highlighting its efficiency in accessible cases. These results are consistent with other studies, such as Asto and Habana,[9] who reported a 100% success rate in IUD removal via hysteroscopy, effectively minimizing the need for invasive surgical interventions.[12] This alignment across studies supports the efficacy of hysteroscopy as a low-complication, preferred technique for uncomplicated IUD retrievals.

In cases of IUD fragmentation, encountered in 4.76% of our sample, piecemeal removal was necessary. This method requires precision to avoid retained fragments, a technique similarly emphasized by Perveen et al.[7] in managing fragmented IUDs. Additionally, Stabile et al.[13] demonstrated that hysteroscopic removal with careful procedural adjustments, such as using low infusion pressure, is effective in avoiding tissue disruption during fragmented IUD retrieval. Our study's successful piecemeal removal of fragmented IUDs supports the adaptability and precision of hysteroscopy in managing these challenging cases.

Although hysteroscopy was effective in most cases, 9.52% required laparotomy due to significant IUD embedding or migration into adjacent organs. This result is consistent with other findings, such as Varun et al.,[8] who noted that a small proportion of migrated or mispositioned IUDs required laparoscopy. In our study, two cases involved IUDs embedded in the posterior uterine wall and the rectosigmoid colon, underscoring that device migration poses a considerable challenge to non-surgical retrieval. Similarly, Tabatabaei et al.[14] highlighted that provider expertise and appropriate follow-up are essential for minimizing complications, especially in cases involving device migration. The need for laparotomy in these complex cases emphasizes the importance of surgical readiness and experienced provider involvement to manage severe outcomes effectively.

Our study also aligns with Gurney et al.[12] who recommended using ultrasound to verify device positioning, particularly in cases where strings are non-visible. We used ultrasound routinely before hysteroscopy to ensure accurate device localization, which likely contributed to the high success rate in straightforward cases. This practice highlights the role of pre-procedural imaging in optimizing hysteroscopic retrieval outcomes, reducing the need for exploratory procedures. Jaber et al.[15] discussed the feasibility of hysteroscopy in outpatient settings, showing high success rates in IUD removal when strings were accessible. This is similar to our findings, where the majority of IUDs were easily removed by grasping the visible strings, supporting hysteroscopy as an efficient, minimally invasive solution for IUD retrieval in accessible cases.

Other studies by Balci et al.,[16] Malathi et al. [17] and Jafra PR et al. [18] highlighted that laparoscopic intervention is generally favored for abdominally displaced IUDs due to minimized recovery times and complications. Although our study utilized laparotomy for complex cases, this finding suggests that, where resources permit, laparoscopy could serve as an alternative to mitigate recovery durations associated with laparotomy.

CONCLUSION

This study demonstrates that hysteroscopy is a highly effective and minimally invasive method for the retrieval of retained intrauterine devices (IUDs) with missing strings, achieving successful removal in 85.71% of cases. Hysteroscopy offers precision, reduced complications, and minimal intervention in uncomplicated cases. However, in complex cases involving IUD migration or embedding in adjacent organs, surgical interventions such as laparotomy are necessary. These findings highlight the importance of hysteroscopy as a first-line approach, with surgical readiness essential for managing complications.

Conflict of Interest

All authors declare that there are no conflicts of interest regarding this study.

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