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COMPLICATIONS OF INTRAUTERINE DEVICES: A STUDY OF EMBEDMENT, ITS CONSEQUENCES AND MANAGEMENT

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Abstract

Objective: To evaluate the clinical presentation, risk factors, and management outcomes of embedded intrauterine devices (IUDs) with a focus on hysteroscopic intervention. **Method:** A retrospective study of six cases cases presented with embedded IUD, evaluated with Ultrasonography and has undergone hysteroscopic removal. Data on demographics, symptomatology, imaging findings, surgical details, and outcomes were analyzed. **Results:** The mean age of participants was 31.8 years. Chronic pelvic pain (83.3%) was the most common symptom. A history of intra- caesarean IUD insertion was noted in 50% of cases. Hysteroscopy confirmed embedment in all cases, with the posterior myometrium being a frequent site. Hysteroscopic removal was successful as a standalone procedure in 50% (3/6) of cases. In the remaining patients, deep myometrial invasion necessitated conversion to laparoscopy (n=2) or laparotomy (n=1). Uterine preservation was achieved in all cases. One patient conceived spontaneously six months after successful hysteroscopic removal. **Conclusion:** IUD embedment often presents with chronic pain and is associated with postpartum insertion. Hysteroscopy is an invaluable and definitive method for diagnosis and removal of misplaced or embedded IUD in significant proportion of cases.Rarely, laparoscopy or laparotomy may be required for IUD in cases with deep embedment or extra uterine migration.Early diagnosis and a tailored surgical approach are essential for optimal patient outcomes.

Keywords: Intrauterine Device; Copper-T; Embedment; Hysteroscopy; Surgical Management; Fertility Preservation.

Introduction

Intrauterine devices (IUDs) are one of the most widely used and effective long-acting reversible contraceptives (LARCs) globally. Among these, copper-bearing IUDs, particularly the Copper-T type, are preferred due to their safety, cost-effectiveness, and high efficacy in preventing unintended pregnancies. Despite their widespread use, complications associated with IUDs—though infrequent—can be clinically significant. One such underreported complication is embedment, where part or the whole of the IUD becomes partially or completely embedded within the myometrium. The incidence of embedded IUDs is less than 1% depending on duration of use, insertion technique, and patient-related uterine factors [1,2].The pathophysiology of IUD embedment is multifactorial. Improper insertion, postpartum uterine involution, cesarean scar niches, and chronic inflammatory changes induced by the foreign body reaction of copper materials can lead to partial perforation and embedment within the uterine wall. Chronic inflammation promotes myometrial fibrosis and tissue ingrowth around the IUD frame, making removal difficult and leading to potential complications such as pelvic pain, abnormal uterine bleeding, and infertility [3,4]. Additionally, undetected or neglected cases may result in migration through the uterine wall, necessitating surgical retrieval through hysteroscopy or laparotomy.

The consequences of IUD embedment extend beyond localized symptoms. Chronic inflammatory reactions within the uterus may interfere with endometrial receptivity and tubal patency, thus impacting fertility outcomes [5]. Women with embedded IUDs may also present with recurrent pelvic infections,heavy menstrual bleeding, dysmenorrhea, or secondary infertility. Moreover, failed IUD removals can exacerbate uterine trauma and lead to complications such as uterine perforation or retained fragments. Therefore, identifying risk factors predisposing women to embedment—such as prolonged IUD retention, previous cesarean section, retroverted uterus, or postpartum insertions—is essential for early diagnosis and prevention.Transvaginal ultrasonography (TVS) is the first-line imaging modality for locating IUD position and detecting abnormal embedment. However, hysteroscopy remains the gold standard for both diagnosis and management, allowing for direct visualization, minimal trauma, and safe retrieval of embedded devices [6]. In cases where hysteroscopic retrieval attempted and was not possible,regular follow up is adviced and if the device partially perforates the myometrium or migrates beyond the uterine cavity, if symptoms are persisting or worsening, combined hystero-laparoscopy or laparotomy may be required to ensure complete removal while preserving uterine integrity [7].

This study aims to evaluate clinical presentations, risk factors, and management outcomes of embedded intrauterine devices through hysteroscopic and laparoscopic interventions. The growing use of postpartum and intra-cesarean IUD insertions under national reproductive health programs underscores the importance of understanding their potential complications. With timely identification and appropriate minimally invasive interventions, fertility preservation and uterine integrity can be achieved, improving reproductive outcomes in affected women.

By documenting clinical cases and management approaches, this research intends to contribute to the growing body of evidence guiding gynecologists in optimizing IUD insertion, follow-up, and complication management. Such studies are critical for bolstering patient safety, informing clinical guidelines, and reinforcing the continued use of IUDs as a highly effective contraceptive method with a favorable risk-benefit profile.

Objectives

1. To evaluate the clinical presentations and symptomatology associated with intrauterine device (IUD) embedment.
2. To identify potential risk factors predisposing to IUD embedment.
3. To assess the diagnostic utility of imaging modalities and hysteroscopy in identifying and characterizing embedded IUDs.
4. To report the outcomes of a hysteroscopic-guided approach for the management of embedded IUDs, with a focus on uterine preservation and fertility outcomes.

Materials and Methods:

Study Design and Settings: A retrospective study conducted in the Department of Obstetrics and Gynaecology at Chettinad Hospital and Research Institute (CHRI).

Study Population: The study population consisted of six patients who presented to the Obstetrics and Gynaecology Outpatient Department (OG OPD) of CHRI between [November 2024] and [November 2025] with embedded IUD, evaluated by USG ,for removal of IUD.

Inclusion Criteria:

1. Female patients aged 18-45 years.
2. History of Copper-T IUD insertion with clinical (e.g., missing strings, pain, bleeding) or radiological suspicion of embedment.
3. Willingness to undergo hysteroscopic evaluation and removal.

Exclusion Criteria:

1. Active pelvic inflammatory disease.
2. Known or suspected uterine perforation with complete translocation of the IUD into the abdominal cavity.
3. Patients unfit for hysteroscopy under anesthesia.

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Methodology:
All patients underwent a baseline transvaginal ultrasound (TVS) to confirm the position of the IUD and few patients underwent MRI abdomen-pelvis to assess the degree of myometrial penetration. Hysteroscopic-guided removal was planned as the primary intervention. The procedure was performed under general anesthesia using a standard hysteroscopic set-up with normal saline as the distension medium.The uterine cavity was systematically inspected to locate the embedded IUD. An attempt was made to gently dislodge and retrieve the device using hysteroscopic graspers or scissors under direct vision. In cases where hysteroscopic removal was deemed unsafe or unsuccessful due to deep myometrial invasion, the procedure was converted to laparoscopy or laparotomy for retrieval. Concurrent procedures like laparoscopic sterilization or cystectomy were performed as indicated. Data regarding patient demographics, obstetric history, clinical presentation, imaging findings, surgical procedure details, and postoperative outcomes were systematically recorded in a pre-designed proforma.

Results

Table 1: Demographic and Clinical Characteristics of Patients (N=6)

Case	Age (yrs)	Parity	Mode of Last Delivery	IUD Type	Duration in situ	Presenting Complaint(s)
1	28	P2L2	LSCS	Cu-T	~5 years	Abdominal pain, Intermenstrual spotting
2	42	P2L2A1	NVD	Cu-T	~15 years	Asymptomatic (for removal)
3	26	P1L1	LSCS	Cu-T	<1 year	Postpartum abdominal pain
4	27	P1L1	LSCS	Cu-T	~3 years	Infertility, History of failed removal
5	36	P2L2	NVD	Mirena*	~1 year	Lower abdominal pain
6	32	P1L1	LSCS	Cu-T	~7 years	Lower abdominal & back pain

*Case 5 involved a Levonorgestrel-IUS (Mirena). All others were Copper-T.

Table 2: Risk Factor Evaluation

Case	Age (yrs)	Mode of Last Delivery	IUD Type	Type of Insertion	Insertion to symptom interval
1	28	LSCS	Cu-T	Intra- caesarean	~5 years
2	42	NVD	Cu-T	Reinsertion	~15 years
3	26	LSCS	Cu-T	Intra- caesarean	<1 year
4	27	LSCS	Cu-T	Intra- Caesarean	~3 years
5	36	NVD	Mirena*	Reinsertion	~1 year
6	32	LSCS	Cu-T	Intra- Caesarean	~7 years

Table 3: Diagnostics and Management Outcomes

Case	Pre-op Imaging Findings	Hysteroscopy Findings	Primary Removal Method	Additional Procedure	Outcome
1	Threads not visualised	Deep embedment in ant. & post. wall	Laparotomy	Lysis of adhesions	Successful retrieval
2	Partial removal attempted	Deep embed ment in posterior wall	Hysteroscopy (Failed)	Laparoscopic Sterilization	Limb retained; stable
3	USG: IUD outside cavity	Embed ment in posterior wall	Laparoscopy	-	Successful retrieval
4	USG: Limb in anterior myometrium	Partial embedment at fundus	Hysteroscopy	None	Successful retrieval; Spontaneous conception 6 months later
5	USG: Embed ment in posterior wall	Embed ment in posterior wall	Hysteroscopy	Laparoscopic Sterilization	Successful retrieval
6	USG/CT: IUD incavity, complex cyst	Embedment at fundus	Hysteroscopy	Laparotomy (Cystectomy)	Successful retrieval

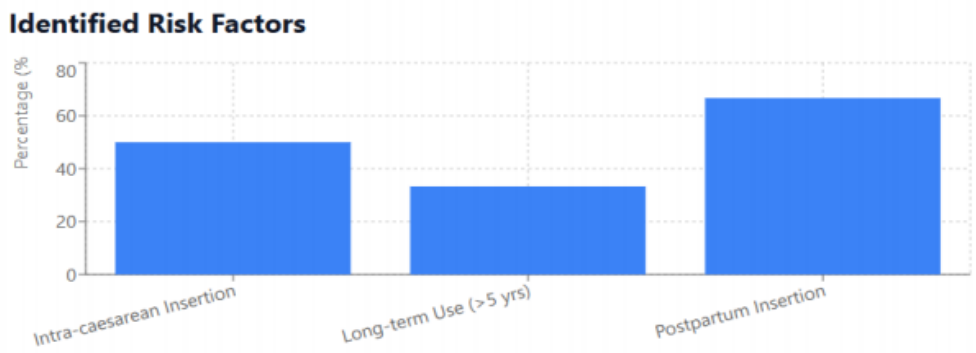
Clinical Presentation: The most common presenting complaints were chronic lower abdominal pain (5/6, 83.3%) and abnormal uterine bleeding (1/6, 16.7%). One patient was asymptomatic.

Risk Factors: A history of intra-caesarean IUD insertion was noted in 3 out of 6 cases (50%). Long-term use (>5 years) was documented in at least 2 cases.

Diagnostics Accuracy: Transvaginal ultrasound successfully identified the abnormal IUD position in all cases. Hysteroscopy provided definitive visual confirmation of the site and depth of embedment (100%).

Management Efficacy: Hysteroscopic removal was successful as the sole procedure in 3 out of 6 cases (50%). In the remaining cases, a combined surgical approach (laparoscopy/laparotomy) was required due to deep myometrial invasion or extra- uterine migration. Uterine integrity was preserved in all cases.

Fertility Preservation: In one case (Case 4), successful hysteroscopic removal led to spontaneous conception within six months.



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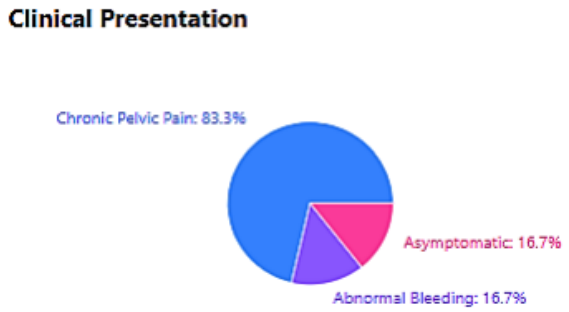

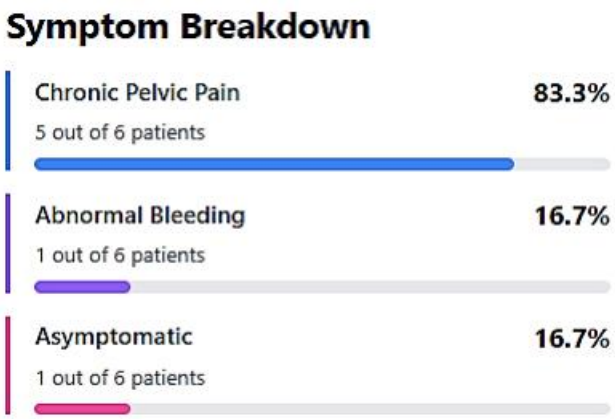

Discussion

Intrauterine device embedment, though uncommon, represents a significant complication that can compromise contraceptive efficacy and patient well-being. This prospective study of six cases adds to the growing body of evidence on the clinical profile and management of this condition, highlighting the pivotal role of hysteroscopy.

Our findings align with existing literature indicating that chronic pelvic pain is the predominant symptom driving clinical presentation. [1,2] The pathophysiology is attributed to chronic inflammatory reaction incited by the copper ions or the physical irritation of the myometrium, leading to prostaglandin release and pain. [3] Notably, one of our patients (Case 2) was entirely asymptomatic despite a retained fragment for 15 years, underscoring the silent nature embedment can sometimes assume,

often discovered incidentally during removal attempts. This variability in symptomatology necessitates a high index of suspicion, particularly in patients with missing strings or a history of difficult insertion.

A notable risk factor identified in our series was previous intra-caesarean IUD insertion (50% of cases). The postpartum uterus, particularly with a recent scar, is more vascular and softer, potentially allowing for easier myometrial penetration during insertion. [4] This correlates with the findings of Singh et al. (2024), who noted higher complication rates with postpartum IUD insertions, especially in settings with high patient load. [5] Furthermore, long duration of use emerged as a potential contributor, as seen in Cases 1 and 2. Prolonged exposure may lead to copper corrosion and weakening of the device structure, potentially facilitating embedment, or may simply increase the cumulative probability of uterine contractions displacing the device over time. [6]

The diagnostic algorithm confirmed the paramount importance of imaging. Transvaginal ultrasound (TVS) served as an excellent first-line, non-invasive tool for localizing the IUD and suggesting myometrial involvement, consistent with its reported sensitivity of over 90%. [7] However, hysteroscopy remains the gold standard for definitive diagnosis. In our study, it provided unparalleled direct visualization of the uterine cavity, precisely delineating the relationship of the IUD to the endometrium and myometrium, which was crucial for planning the surgical approach. This dual-modality approach (TVS followed by hysteroscopy) is widely recommended. [8]

The cornerstone of our discussion revolves around management. Hysteroscopic removal was successful in 50% of our cases, all of which involved partial or focal embedment. This technique offers distinct advantages: it is minimally invasive, allows for concurrent diagnostic evaluation, and most importantly, preserves uterine integrity and future fertility, as dramatically demonstrated by Case 4. This aligns with the work of Han & Yang (2021), who successfully managed translocated IUDs endoscopically, emphasizing fertility preservation. [9]

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However, our series also realistically showcases its limitations. In cases of deep myometrial invasion (Cases 1 & 2) or transmural migration (Case 3), hysteroscopy alone was insufficient or risky, necessitating laparoscopy or laparotomy. This highlights a critical clinical decision point. The depth of embedment judged via hysteroscopy and preoperative imaging should guide the surgical plan. A combined laparo-hysteroscopic approach is ideal when partial perforation or deep embedment is suspected, as it allows simultaneous intra-abdominal and intrauterine visualization. [10] Skoczek & Sylvester (2023) similarly advocated for a tailored, multi-modal surgical strategy based on precise anatomical localization. [11]

Conservative management, as chosen for the retained fragment in Case 2, is a debated but sometimes prudent option. When a fragment is deeply embedded in the myometrium without causing symptoms, and surgical retrieval poses a significant risk of hemorrhage or uterine damage, leaving it in situ may be acceptable with appropriate counselling and follow-up. [12] This decision must be individualized.
Complications beyond embedment were also observed. Case 6 presented with a complex ovarian cyst, unrelated but managed concurrently. More directly, chronic inflammation surrounding the embedded device was a common hysteroscopic finding, supporting the proposed mechanism for pain and bleeding. [3] There were no instances of severe infection or uterine rupture in our series, but these remain potential serious sequelae reported elsewhere. [13]
When compared to larger case series, such as that by Aljohani et al. (2023) which reviewed migrated IUDs, our findings are concordant regarding the efficacy of endoscopic retrieval but underscore a higher reliance on advanced laparoscopic/laparotomic skills in scenarios of deep embedment associated with previous caesarean sections. [14] The study by Kumarappan et al. (2015) on a "wandering" IUD to the colon represents the extreme of migration, a complication not seen in our cohort but a reminder of the potential for serious visceral injury. [15]
In conclusion, this study reinforces that IUD embedment is a manageable complication with a spectrum of clinical presentations. A high index of suspicion, systematic use of TVS and diagnostic hysteroscopy, and a flexible surgical strategy are key. Hysteroscopy stands out as a safe and effective first-line therapeutic tool for partial embedment, aligning with the goals of minimally invasive surgery and fertility preservation. Future research with larger sample sizes is needed to better quantify risk factors and establish standardized management protocols.

Conclusion

IUD embedment is a significant complication that necessitates timely recognition and intervention to prevent long-term morbidity such as chronic pain, abnormal bleeding, and infertility. This study identified a history of intra-caesarean insertion and prolonged use as potential risk factors. Transvaginal ultrasound is a reliable diagnostic tool, but hysteroscopy is invaluable for definitive diagnosis and planning. Hysteroscopic removal proved to be a safe and effective first-line treatment for partial embedment, successfully preserving uterine integrity and fertility in suitable cases. However, deeply embedded or migrated devices often require a combined surgical approach utilizing laparoscopy or laparotomy. A patient-tailored, stepwise management strategy based on precise anatomical localization is paramount for optimal outcomes.

References

1. Hoffman BL, Schorge JO, Halvorson LM, Hamid CA, Corton MM, Schaffer JI, eds. Williams Gynecology. 4th ed. McGraw-Hill Education; 2020.
2. Bahamondes L, Mansour D, Fiala C, et al. Practical advice for avoidance of pain associated with insertion of intrauterine contraceptives. J Fam Plann Reprod Health Care. 2014 Jul;40(3):220-5.
3. Ortiz ME, Croxatto HB. Copper-T intrauterine device and levonorgestrel intrauterine system: biological bases of their mechanism of action. Contraception. 2007 Jun;75(6 Suppl):S16-30.
4. Kaislasuo J, Heikinheimo O, Lähteenmäki P, et al. Uterine perforation caused by the intrauterine device: clinical course and treatment. Hum Reprod. 2013 Jun;28(6):1547-52.
5. Singh S, Singh A, Kumar K. Postpartum Contraceptive Use in India: Focus on PPIUCDs. PLOS ONE. 2024;19(1): e0294567.
6. Goldstuck ND. Insertion of intrauterine devices: a review of clinical guidelines. Eur J Contracept Reprod Health Care. 2019 Oct;24(5):325-335.
7. Shulman LP. The state of the intrauterine device. Curr Opin Obstet Gynecol. 2006 Dec;18(6):585-90.
8. Gupta N, Mittal S, Misra R. Uterine perforation with intrauterine device: a stepwise management approach. J Gynecol Surg. 2012;28(2): 109-112.
9. Han X, Yang H. Successful endoscopic management of 3 cases of translocated intrauterine devices: a case report. Ann Palliat Med. 2021 Feb;10(2):2371-2378.
10. Panelli DM, Phillips CH, Brady PC. Incidence, diagnosis and management of tubal and nontubal ectopic pregnancies: a review. Fertil Res Pract. 2015;1:15.
11. Skoczek AC, Sylvester J. Cervically Embedded Fragment of an Intrauterine Device in a Patient with a Bicornuate Uterus: A Case Report and Review of Current Management Strategies. Cureus. 2023 Jun 25;15(6):e40938.
12. Heinemann K, Reed S, Moehner S, et al. Risk of uterine perforation with levonorgestrel-releasing and copper intrauterine devices in the European Active Surveillance Study on Intrauterine Devices. Contraception. 2015 Feb;91(2):155-61.
13. Boortz HE, Margolis DJ, Ragavendra N, et al. Migration of intrauterine devices: radiologic findings and implications for patient care. Radiographics. 2012 Mar -Apr;32(2):335-52.
14. Aljohani A, Alzarea AA, Alnafee R, et al. Migrated intrauterine device: Case series report. Int J Surg Case Rep. 2023 Oct;111:108631.
15. Kumarappan AL, Karthikeyan M, Gunaseelan D, et al. Wandering intrauterine contraceptive device: An unusual travel to the sigmoid colon. Med J Malaysia. 2015 Oct;70(5):312-3.