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Case Report

When contraception goes astray: a case of trans-vesical migration of Copper-T intrauterine device

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ABSTRACT

Intrauterine devices (IUDs) are among the most widely used reversible contraceptive methods worldwide and are generally considered safe and effective. However, rare complications such as uterine perforation and migration into adjacent organs may occur. We report a case of trans-vesical migration of a Copper-T IUD presenting as recurrent urinary tract infection (UTI) with vesical stone formation. A 34-year-old woman presented with recurrent episodes of dysuria, pelvic pain and gross haematuria. She had undergone Copper-T insertion five years earlier. Urinalysis demonstrated pyuria and microscopic haematuria, while urine culture grew Escherichia coli. Although symptoms improved with antibiotic therapy, persistent haematuria prompted further evaluation. Imaging studies revealed an extra-uterine Copper-T lodged within the urinary bladder with associated calcific encrustation. Cystoscopic examination confirmed an intravesical encrusted foreign body embedded in the posterior bladder wall. The patient underwent successful endoscopic cystolitholapaxy with complete removal of the migrated IUD and stone fragments. Postoperative recovery was uneventful and she remained symptom-free during follow-up. This case highlights the importance of considering migrated IUDs in women presenting with recurrent or refractory urinary symptoms, particularly when there is a history of prior IUD insertion. Early diagnosis using appropriate imaging modalities and timely surgical intervention are essential to prevent long-term complications such as recurrent infection, stone formation and bladder injury.

Keywords: Intrauterine device, Copper-T, Trans-vesical migration, Urinary bladder calculus, Recurrent urinary tract infection, Foreign body bladder

INTRODUCTION

Intrauterine devices (IUDs) are among the most commonly used long-acting reversible contraceptive methods worldwide because of their effectiveness, affordability and favourable safety profile. Despite their widespread use, complications can occur, including abnormal uterine bleeding, pelvic inflammatory disease, expulsion, uterine perforation and device migration.[1] Uterine perforation is an uncommon but recognized complication, with an estimated incidence ranging from 0.4 to 1.6 per 1,000 insertions.[1] Following perforation, an IUD may migrate into adjacent pelvic or abdominal structures such as the omentum, bowel, broad ligament, ovary, peritoneal cavity, or urinary bladder.[2,3] Although migration into the urinary bladder is rare, it may result in chronic inflammation, recurrent urinary tract infections, haematuria, lower urinary tract symptoms and vesical stone formation due to progressive encrustation of the foreign body.[4,5] The pathogenesis of trans-vesical migration is multifactorial and may involve uterine perforation at the time of insertion, gradual erosion through the uterine wall, postpartum uterine changes and mechanical forces generated by adjacent pelvic organs.[4-6] Patients may remain asymptomatic for years, leading to delayed diagnosis and presentation only after the development of complications.[6,7] Radiological investigations, particularly plain radiography and

computed tomography (CT), play a pivotal role in identifying the location of a migrated device, while cystoscopy confirms intravesical involvement and facilitates treatment planning.[7,8] Surgical removal is recommended for all migrated IUDs because of the risk of infection, stone formation, fistula development and injury to adjacent organs.[6-8]

We report a rare case of trans-vesical migration of a Copper-T (Cu-T) IUD presenting as recurrent refractory urinary tract infection with vesical calculus formation, successfully managed by endoscopic removal.

CASE REPORT

A 34-year-old woman referred to the surgical outpatient department, with a history of pelvic pain, dysuria and gross haematuria for the past three weeks. She reported similar recurrent episodes approximately two months prior and had a Cu-T IUD placed five years ago. Urinalysis revealed 35-40 RBCs/hpf and 20-25 pus cells/hpf. Urine culture and sensitivity identified E. coli as the causative organism, sensitive to ciprofloxacin. Urine cytology for atypical cells was negative.

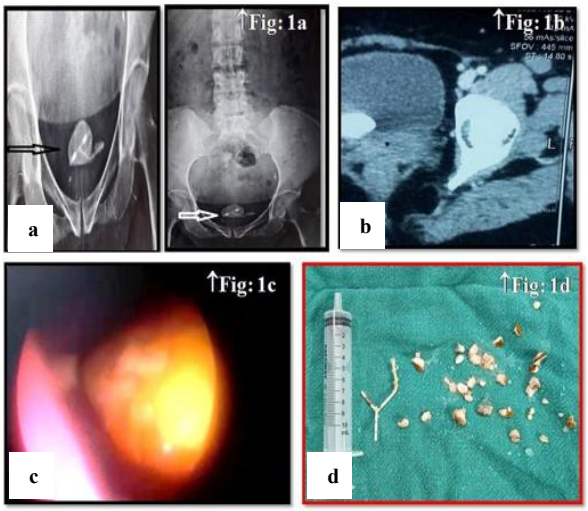

Figure 1: (a) Radio-opaque shadow within bladder, (b) CT image of same, (c) cystoscopic view of the intravesical IUD calculus and (d) external extracted intravesical view of the IUD foreign body.

A clinical diagnosis of UTI was made and the patient was started on oral ciprofloxacin for 7 days. While her symptoms improved, microscopic haematuria persisted. An X-ray KUB revealed the presence of an intrauterine device (Figure 1 a and b).

Further, A contrast-enhanced computed tomography (CECT) scan of the lower abdomen was provided detailed localization, showing the IUD lodged on the posterior aspect of the urinary bladder accompanied by calcifications around the limbs and proximal body, measuring 3 by 1.5 cm. Cystoscopy confirmed a thick, encrusted plaque embedded in the posterior wall of the bladder. The patient underwent suprapubic cystolitholapaxy. The stone was fragmented using a pneumatic lithoclast. The Cu-T IUD and the fragments were removed. An indwelling percutaneous ureteral catheter (PUC) was placed for one week. The patient made a smooth recovery, with all symptoms regressing by the end of two weeks. She was symptom-free upon follow-up after two months.

DISCUSSION

Trans-vesical migration of an IUD with subsequent vesical calculus formation is an uncommon but clinically significant complication of long-term IUD use. Uterine perforation associated with IUD insertion has been reported in approximately 0.8-1.6 per 1,000 insertions and may result in migration into adjacent pelvic or abdominal structures.[1,2] Although the peritoneal cavity, bowel, omentum and broad ligament are more frequent sites of migration, involvement of the urinary bladder remains rare.[3-6]

The mechanism of IUD migration is multifactorial. Primary perforation may occur at the time of insertion because of improper technique, uterine malposition, postpartum uterine involution, or insertion during lactation when the uterine wall is relatively thin.[1-4] Secondary perforation may occur gradually due to chronic inflammatory reactions and uterine contractions, allowing the device to progressively erode through the myometrium and migrate into adjacent organs.[6]

Once the bladder wall is breached, repetitive bladder contractions and local inflammatory processes may facilitate complete intravesical migration.[5-7] In the present case, the long interval between insertion and presentation suggests a gradual process of erosion and migration rather than an acute perforation event.

Patients with migrated intravesical IUDs may remain asymptomatic for several years. When symptoms develop, recurrent urinary tract infections, dysuria, suprapubic pain, frequency, urgency, haematuria and lower urinary tract symptoms are the most common manifestations.[6,7]

The foreign body acts as a nidus for mineral deposition and bacterial colonization, resulting in progressive stone formation. In our patient, persistent urinary symptoms and recurrent infection despite antibiotic therapy prompted further investigation, ultimately leading to the diagnosis. The stone analysis demonstrated magnesium ammonium phosphate and carbonate apatite components, supporting the role of chronic infection in calculus formation. Imaging studies play a pivotal role in establishing the diagnosis. Plain radiography may identify a displaced radio-opaque device and associated bladder calculus; however, CT provides superior anatomical localization and allows assessment of surrounding structures and associated complications.[7,8]

Table 1: Depicting a summary of previous similar cases of migrated IUDs.

No.	Author	Presentation /diagnosis	Management
1.	Guifeng et al[3]	Intractable abdominal pain, IUD at right broad ligament- USG and hysteroscopy	Laparoscopic removal
2.	Mavintop et al[4]	Pregnant women IUD in bladder-USG	Laparotomy
3.	Lafraia et al[5]	Ovarian migration of IUD-USG	Right salpingo-ophorectomy
4.	Varlas et al[6]	IUD in bladder- CT abdomen	Laparoscopic removal
5.	Ghoniem et al[7]	IUD in bladder, USG abdomen	Cystoscopic removal
6.	Liu et al[8]	2 cases. 1st IUD strip migrated into bladder with vesical stone formation. 2nd IUD in bladder detected on CT abdomen	Cystotomy
7.	Present case	Recurrent refractory UTI due to transvesical migrated encrusted IUD with vesical stone	Percutaneous endoscopic cystolithotomy (PCCL)

In the present case, CT clearly demonstrated the relationship of the encrusted IUD to the posterior bladder wall and aided preoperative planning. Cystoscopy remains the diagnostic gold standard for confirming intravesical migration because it allows direct visualization of the foreign body, assessment of stone burden, and simultaneous therapeutic intervention.[7]

Current recommendations advocate removal of all extra-uterine or migrated IUDs regardless of symptom status because of the potential risk of chronic infection, stone formation, fistula development, bowel injury, infertility, and adhesion formation.[6] Surgical management depends on the location of the device and extent of encrustation.

Minimally invasive approaches, including cystoscopic extraction and endoscopic cystolitholapaxy, are preferred for intravesical devices because they are associated with reduced morbidity, shorter hospital stay and rapid recovery.[7] Open or laparoscopic procedures may be required in cases with extensive bladder wall involvement, large stone burden, fistula formation, or migration into adjacent pelvic organs.[3-6] A review of previously published reports demonstrates the diverse presentations and management strategies associated with migrated IUDs. Cases have been described involving migration into the broad ligament, ovary and urinary bladder, with treatment ranging from cystoscopic retrieval to laparoscopic removal and laparotomy.[3-8] Similar to several recently reported cases, our patient presented with recurrent urinary symptoms secondary to intravesical migration and stone formation (Table 1). However, successful management was achieved using a minimally invasive endoscopic approach, avoiding the need for open surgery.

CONCLUSION

This case highlights the importance of maintaining a high index of suspicion in women presenting with recurrent or unexplained lower urinary tract symptoms, particularly when there is a history of prior IUD insertion and absent visualization of retrieval strings. Early radiological evaluation and timely intervention can prevent progression to chronic infection, extensive stone formation and more complex reconstructive procedures.

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