

## Functional Urology

# Intrauterine device (IUD) migration into the bladder with stone formation: A case report



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## ABSTRACT

Intrauterine device (IUD) is one of the most effective and standard contraception methods worldwide, including in Indonesia. A 54-year-old woman with frequent urination, pain in urination, and intermittency. History of using IUD 19 years ago. Urinalysis revealed there are pyuria and positive occult blood urine exam. Urinary sediment evaluation revealed some erythrocytes, leukocytes, and epithelial cells. Abdominal non-contrast CT scan revealed a stone with IUD. Stone and IUD were extracted via cystolithotomy. IUD complications may develop into bladder stone formation caused by IUD migration to the bladder. Stone extraction relieves symptoms and gives a good prognosis.

## 1. Introduction

An intrauterine device (IUD) is one of the most effective and standard contraception methods worldwide, including in Indonesia.<sup>1</sup> IUDs make chronic sterile inflammation which induces cellular unspecific inflammation response and increases mucous production. This inhibiting mechanism is the risk factor for perforation, fistular lesion, and device migration.<sup>2</sup>

A bladder stone is one of the urinary tract forms caused by mineral deposition, inflammation, infection, or genetic defect affecting mineral supersaturation or urine hydrodynamic disturbance. Recurrence of inflammation or infection adds a chance of stone nidus formation.<sup>2</sup>

The urinary stone formation may develop as a complication of IUD migration. Migrated IUD with stone formation is a rare long-term complication of IUD insertion. This report discussed clinical presentation, laboratory, radiological findings, and managing bladder stones caused by IUD migration.<sup>2</sup>

## 2. Case presentation

A 54-year-old woman P2A0 (para 2, abortus 0) presented to the urology outpatient clinic with frequent urination. The patient had suffered from this symptom in the last four months. The manifestations occurred with pain in urination and intermittency with position

changing. The history of using an intrauterine device (IUD) was revealed 26 years ago after a post-second cesarean section. Seven years after second post-cesarean, the patient did not experience such symptoms. The new IUD was inserted to replace the old one. It was placed post-midcycle. However, because the patient had not experienced the symptoms anymore, she had not controlled her IUD.

Pelvic examination results showed suprapubic tenderness—routine hematology examination within normal limits. Urinalysis revealed pyuria and positive occult blood urine exam. Urinary sediment evaluation exhibited some erythrocytes, leukocytes, and epithelial cells, but no bacteria, cylinder, or cast exists. Abdominal non-contrast CT scan showed a stone with IUD in the bladder (Fig. 1).

In the cystoscopy, a urinary tract stone was identified with an IUD stuck in the stone (Fig. 2a).

Cystolithotomy was performed with general anesthesia, and confirmed bladder stone was with IUD. The stone was fixed in the right lateral wall of the bladder and removed quickly with forceps. In post-operative cystoscopy, there were no vesicovaginal fistula and adhesion (Fig. 2b). The bladder stones at 5 cm × 4 cm in size with an IUD (intrauterine device) stuck in the stone was successfully removed (Fig. 3). A Foley catheter was inserted via the urethra, and hematuria was not observed. The patient was discharged on the third day post-operative without any complications. The patient confirmed the disappearance of symptoms at the outpatient clinic two weeks after removal.

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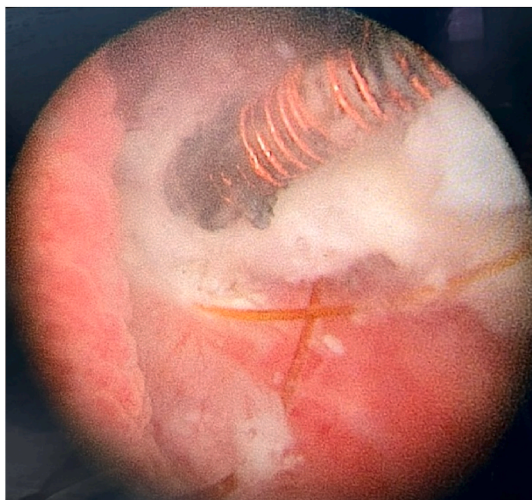
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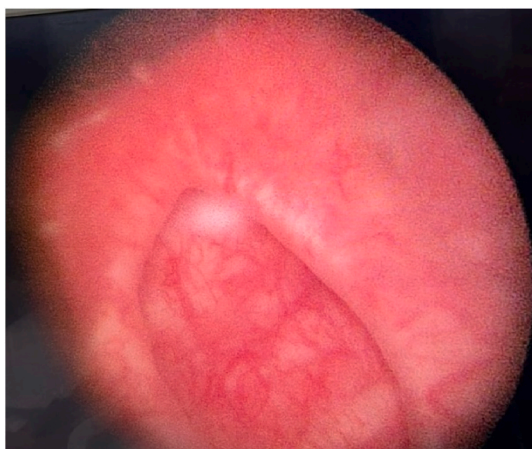
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**Fig. 1.** Abdominal non-contrast CT-scan revealed a stone in the urinary bladder with IUD.



**Fig. 2A.** Cystoscopy appearance of stone and IUD.



**Fig. 2B.** Cystoscopy appearance after stone and IUD extraction.



**Fig. 3.** Post-operative stone appearance.

### 3. Discussion

Frequency, intermittency, and dysuria are the most common complaints of bladder stones due to the intrauterine device (IUD). The patient has all of the symptoms.<sup>2</sup>(3) Caesarean section is a risk factor of device migration from the uterus to the bladder. The patient underwent two cesarean sections.<sup>3</sup> Suprapubic tenderness is the only positive physical examination.<sup>2</sup>

Urinalysis results of the patient indicate a sterile inflammation caused by the stone. Infection stone urinalysis may have a positive result of sediment examination.<sup>2</sup> Abdominal non-contrast CT scan is the most sensitive radiological examination to identify bladder stones. Radiological finding among urinary stone which is caused by inflammation are various but the most common stone is radiopaque.<sup>4</sup> Diagnosis by cystoscopy performed in operating theatre.<sup>2</sup>(4).

Intrauterine device (IUD) use may lead to rare complications as the device's migration to the bladder progressively becomes bladder stone. This rare condition is caused by long-term pathophysiology through uterine inflammation. At first, perforation or inflammation in the uterus is caused by sterile inflammation induced by the device.<sup>4</sup>(5) The next period is a chronic inflammatory condition that causes perforation or fistular formation through the bladder. Device slowly migrates from the uterus to the bladder.<sup>5</sup>

Device migration to the bladder may lead to chronic inflammation. Chronic inflammation in the bladder is the urinary tract infection risk factor. This condition stays over years and induces bladder stone formation. Devices develop as a stone core through chronic inflammation around the bladder and generate acceleration of bladder stone formation. Cystolithotomy was the operative treatment of choice for this case.<sup>2</sup>(4).<sup>5</sup>

### 4. Conclusion

Intrauterine device (IUD) complications may develop into bladder stone formation caused by IUD migration to the bladder. There are no specific symptoms and need further history taking, physical examination, radiology examination, and laboratory examination

comprehensively to diagnose. Stone formation affected by IUD condition after migration. Stone extraction relieves symptoms and gives a good prognosis.

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