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## Serendipitous Discovery of Copper:T Inside The Bladder Stone: An Unusual Case Report

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**Abstract**

Urinary tract infection (UTI) is common in females. Recurrent UTI refractory to antibiotics should lead the practitioner to do further investigation in the form of imaging. Bladder stones in females are rare and the cause should be searched. Stone over foreign body in a female patient should lead a suspicion of migrated intrauterine contraceptive devices (IUCD). IUCDs are associated with many complications like perforation and migration into adjacent structures. We report a case of 40 year old female where we found that copper-T has eroded into the bladder with formation of stone over it and partial penetration of bladder wall, many years after placement of the device and patient underwent hysterectomy before the detection of the migrated IUCD. In this case, we removed the IUCD with calculus via cystoscopic removal (cystolithotripsy).

**Keywords:** Intrauterine Contraceptive Device Migration; Forgotten IUCD; Urinary Bladder Stone over Foreign Body; Stone over Copper-T.

**Introduction**

IUCD is commonly used for contraception for many decades. More than 100 million women world wide have been using the IUCD [1]. Although an IUCD is an effective and safe method of contraception, migration of the device is known complication.<sup>1</sup> Uterine perforation during the insertion is an uncommon complication of IUCD and the incidence ranges from 0.2 to 9.6 per 1000 insertions. In this study, we report the case of a 40-year-old woman with recurrent urinary tract infection who successfully underwent endoscopic calculus fragmentation and IUCD removal.

*Case Report*

A 40 years old female was admitted to our hospital with increased frequency of micturition in day as well as night, urgency, occasional urgency

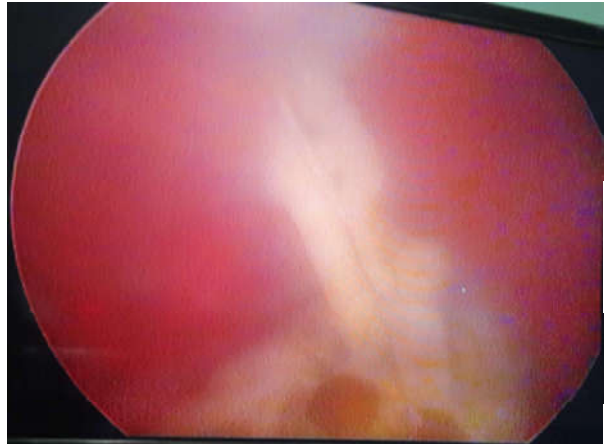
incontinence, straining, burning micturition and chronic pelvic pain. Pelvic examination was normal. Patient's obstetric history was Gravida-6, Para-4, Live-4, and Abortion-0. She gave history of hysterectomy 3 years back. When asked deeply she told H/O IUCD insertion 10 years back, which she forgot. When she presented at our hospital, it was first time she was seen by a urologist. All routine investigations were normal except urine routine microscopy (R/M) and urine culture and sensitivity (C/S). Urine R/M showed abundant pus cells and RBCs, and urine C/S showed growth of *Escherichia coli* >100000. A plain KUB (kidney, ureter and bladder) radiograph showed the presence of approximately 4cm calculus over foreign body [Fig.1]. Ultrasonography shows the presence of 4.3 cm calculus with changes of cystitis. Cystoscopy revealed that the calculus over foreign body at right postero-lateral bladder wall. After complete fragmentation of the calculus we found calculus

with copper at tip (Fig. 2), which gave us doubt of Copper-T IUCD. After complete fragmentation of the stone, we found copper T with one limb and the threads embedded in the wall and the other limb in the stone (Fig. 3,4). The copper-T and the threads were gently pulled and taken out. The length of threads and Copper-T (complete unit) (Fig.5) were

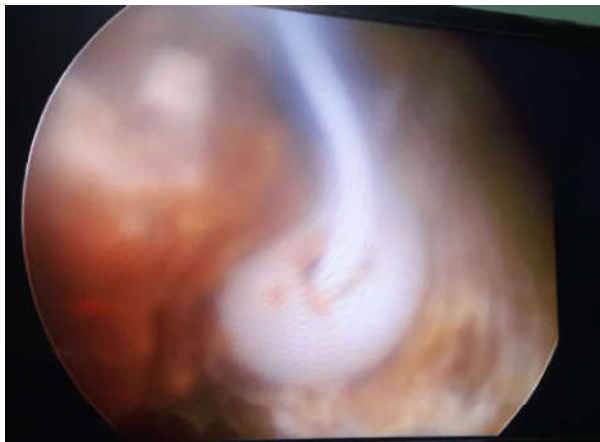
confirmed by gynaecologist although the length of the thread was longer than usually kept. After removal, bladder wall continuity was confirmed. A Foley catheter was left in the bladder for 24 hours. During this period, haematuria was not observed. The patient was discharged on postoperative day 2 without any complication.



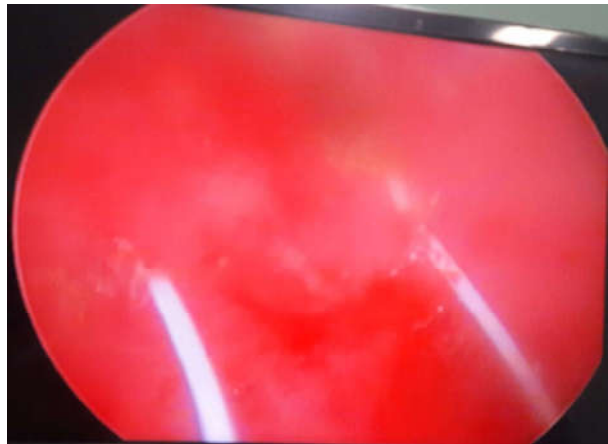
**Fig. 1:** Calculus over foreign body.



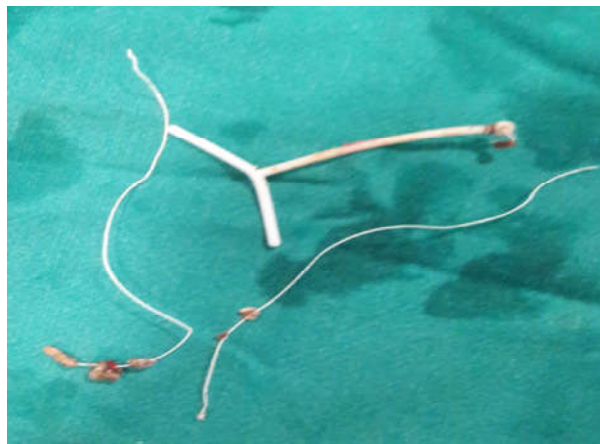
**Fig. 3:** Appearance after 50% stone fragmentation.



**Fig. 2:** Appearance of Copper of Cu-T after fragmentation of the stone started.



**Fig. 4:** Threads of Cu-T embedded in the bladder wall.



**Fig. 5:** Complete Cu-T unit after removal.

## Discussion

IUCD is a contraceptive method that is widely used worldwide because it is cost effective with good efficacy and easy to remove if patient wishes for conception. IUCD is associated with few complications such as migration into adjacent organs including migration to the bladder and calculus formation.<sup>2</sup> Kassab et al. reported 165 cases of IUCD migration. In this study, the IUCD was located at the following sites: omentum, 45; rectosigmoid, 44; peritoneum, 41; bladder, 23; appendix, 8; small bowel, 2; adnexa, 1; and iliac vein, 1.<sup>3</sup>

There are many mechanisms of IUCD migration. These include involuntary bladder or uterine contractions, iatrogenic perforation, bowel peristalsis, etc.<sup>4,6</sup> Factors that increase the risk of uterine perforation are application of IUCD by inexperienced person doing the procedure, small atrophic uterus, fragility of uterine wall, previous surgeries leading to adhesions, physical trauma to vaginal tissue by speculum, low estrogen levels during postpartum and lactation periods, recent abortion, etc.<sup>1,6-7</sup>

Uterine perforation can occur at the time of insertion, although, development of bladder stone before its migration are slow processes as reported by others.<sup>2,8-12</sup> In our case, the IUCD was applied by rural health centre staff nurse. Late appearance of symptoms as in our case pointed out to the slow migration of the IUCD from the uterus into the bladder. In our case patient forgot that IUCD was inserted. She also underwent hysterectomy. This made no doubts about IUCD in our mind until we discovered the IUCD during cystolithotripsy. Also USG and X-ray KUB suggested that the stone was over a foreign body, typical T-shape of copper-T was not seen.

Patients can develop symptoms of urinary tract infection that are generally refractory to antibiotics. In the present case, the patient presented with repeated cystitis. Imaging is then necessary in such cases.

Plain X-ray KUB, abdominal ultrasound, transvaginal ultrasound, and pelvic CT are useful for determining the position of a migrated IUCD in the bladder. In particular, CT is useful for diagnosing whether the IUCD is penetrating surrounding organs.

Endoscopic surgery is the treatment of choice presently because of its minimal invasive nature. We used pneumatic source to fragment the stone. Laser lithotripsy can also be used, if available. Open

surgery is reserved for cases involving large stones or partial penetration of the bladder wall.<sup>5</sup> Recently, laparoscopic surgery has supplanted open surgery owing to its minimally invasive approach. However, with the use of lithotripsy, IUCD migration can be treated easily and appropriately, even if a large stone is present, as in our case.

## Conclusion

In female patients with refractory pyuria and repeated cystitis symptoms, it is necessary to consider the possibility of bladder stone. A migrated IUCD can act as the nidus for the formation of a secondary bladder stone. A high index of suspicion should be kept in mind when managing female patients with bladder stone formed over foreign body.

### *Consent for publication*

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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