

CASE REPORTS

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Giant vesical calculus associated with migrant IUCD: a case report

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Abstract

Background: Intrauterine copper devices are a popular type of contraceptives, being in use for a long time. Migration of IUCD into the bladder is one of the many side effects of this contraceptive measure. Though a rare phenomenon, IUCD acting as a foreign body can cause stone formation in the bladder.

Case presentation: We present a 42-year-old female patient who presented with increased urinary frequency, dysuria, and suprapubic pain. Examination showed mild tenderness in the suprapubic region. On X-ray pelvis, she was found to have a giant stone covering IUCD in the bladder. She ultimately underwent cystolithotomy, and her IUCD with stone was removed. Consequently, she was discharged on the 4th postoperative day with a satisfactory condition.

Conclusion: Vesical calculus can form following migration of IUCD in the bladder. This article highlights the importance of careful insertion and follow-up investigation of IUCD. Radiological modalities like X-rays pelvis provide excellent visualization of the IUCD and can be used to confirm the accurate location of the contraceptive device.

Keywords: IUCD migration, Bladder stone, Vesical calculus

1 Background

Intrauterine copper devices IUCD are widely used contraceptive measures in the last few decades. Their safety and longer duration of action make them an excellent choice for contraceptives. Out of many side effects, movement of IUCD out of the bladder causing uterine perforation is the most severe but least common one. The migration of IUCD is a rare phenomenon, and only a few cases have been reported. The incidence is estimated to be around 0 to 1.6 in 1000 insertions [1]. Once the IUCD transmigrates into the bladder, it acts as a nidus for calculus formation [2, 3]. The typical presentation is quite similar to the vesical calculus. Common symptoms include haematuria, dysuria, increased urinary frequency, and suprapubic pain [3]. This article sheds light on the importance of expertise for IUCD insertion. It also provides

details on the usual presentation of IUCD migration and its treatment modalities.

2 Case presentation

A 42-year-old female patient presented with complaints of lower urinary tract symptoms associated with suprapubic pain for the last two years. Past history revealed that she underwent IUCD insertion around 18 years ago. However, after four years, following an episode of hematuria and suprapubic pain, her IUCD threads were removed and her symptoms settled after few weeks. She delivered a boy a year later.

On her abdominal examination, suprapubic tenderness was noted. Baseline laboratory studies were within normal parameters. However, urinalysis showed pyuria and haematuria. Her urinary culture grew *Escherichia coli*, for which injection ceftriaxone one gram twice a day was started. Ultrasound KUB showed a large vesical calculus. Further evaluation with X-ray KUB revealed a large bladder stone associated with what appeared to be an IUCD (Fig. 1). For detailed investigations and

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Fig. 1 X-rays pelvis showing a large vesical calculus associated with IUCD



Fig. 2 Image showing a giant vesical calculus along with IUCD removed through open cystolithotomy

management planning, a cystoscopy was scheduled which confirmed the presence of a giant calculus covering a part of the intrauterine copper device.

Due to the larger size of the bladder stone and the presence of a foreign body, open cystolithotomy was planned. The patient underwent surgery in spinal anesthesia, and a floating IUCD without the threads covered with a large bladder stone was removed from her bladder (Fig. 2). Neither the IUCD nor the stone was adherent to the bladder wall. On chemical analysis, the stone was found to be composed of calcium oxalate. The patient was discharged on the 4th postoperative day with a satisfactory condition. On her follow-up visit in 2nd week, her urinary catheter was removed. She remained stable and symptoms-free on follow-up visits

at the 4th and 8th weeks. An X-ray pelvis was done at 8th week and was unremarkable.

3 Discussion

Intrauterine copper devices have been in use for around five decades now. Their relative safety and longevity are the most important factors for their preference over other contraceptive measures. As with any other treatment or intervention, IUCD also brings various unfavorable side effects. A few of the potential serious side effects of IUCD include dysmenorrhoea, ectopic pregnancy, pelvic infection, abscess, and septic abortion [3–5]. Transmigration of IUCD into adjacent structures is another side effect that is extremely rare. Typically, migration occurs into the surrounding organs, most commonly into the bladder, but few cases of IUCD migrating into the peritoneum, omentum, and colon are also reported in the literature [4, 6, 7]. In our case, IUCD migrated into the urinary bladder.

Expertise and skills play a significant role in the development of uterine perforation by an IUCD migration. Most of the migrations (86%) result during the procedure of insertion of the intrauterine copper device. A study emphasized the importance of skills by determining the chances of perforation. It showed that doctors with experience of fewer than ten device insertions were more likely to report uterine perforation than those with more experience [8].

Foreign bodies in the bladder can cause vesical calculus formation. Though rare, intrauterine copper devices can act as a nidus to form bladder stones. Calcium accumulation on the intrauterine copper device is also believed to play a role in the development of stones [9, 10]. Vesical calculi are relatively rare in women, as typically they are associated with obstructive urinary symptoms in men. The presence of bladder stones in females should bring suspicion of a foreign body such as IUCD in our patient [4].

Classically, patients present with symptoms like hematuria, irritative voiding symptoms (increased urinary frequency), suprapubic pain, and urinary incontinence [3]. Similarly, our patient had suprapubic pain, hematuria, and increased urinary frequency. Due to the overlapping of symptoms with those of cystitis, these patients should be managed with extreme care. Investigations like USG and X-rays can be beneficial in confirming the suspected diagnosis of migrated IUCD. Timely diagnosis can avoid unnecessary use of antibiotics as many of such patients get multiple antibiotic courses before the actual diagnosis is reached [11]. This is true in our case, as the patient took various antibiotics before she presented to us.

According to the International Planned Parenthood Federation, any perforated IUCD should be immediately

removed [12]. It is even more critical if migration occurs into the urinary bladder with the potential of stone formation. Various methods like vaginal or suprapubic cystotomy can be used to remove IUCD alongside the adherent stone [1]. Literature review shows methods like cystoscopic removal, laser lithotripsy and even laparotomy have been used to remove migrant IUCD. However, open cystolithotomy is the most commonly used procedure [13]. Similarly, open cystolithotomy through a suprapubic approach was preferred in our case due to the significantly larger stone.

4 Conclusions

- X-ray pelvis can provide excellent visualization of IUCD along with the stone. The size and position of IUCD and bladder stone on X-ray can help the surgeons decide the type of surgery.
- Pelvic USG or X-ray should be done after insertion of the IUCD to confirm its position within the bladder.
- Female patients presenting with symptoms related to cystitis, like urinary frequency and suprapubic pain should be investigated for potential migration of IUCD.

4.1 Patient Perspective

I was very frustrated as I remained undiagnosed for many years. Getting various treatments for different possibilities overwhelmed the situation. Once I was admitted here, I was properly guided through all of my workup and management. The surgery relieved my complaints that were present for years and I am very satisfied with the treatment and the overall outcome.

List of abbreviations

IUCD: Intrauterine contraceptive device; USG: Ultrasonography; KUB: Kidneys, ureters, bladder.

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Availability of data and materials

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Declarations

Ethics approval and consent to participate

The patient's data was used anonymously, so approval from ethics committee was waived.

Consent for publication

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

Competing interests

We obtained written informed consent from the patient to use clinical images and data anonymously for publication.

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