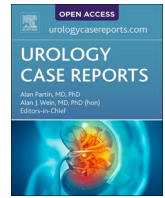


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# Urology Case Reports

journal homepage: <http://www.elsevier.com/locate/eucr>

## Endourology

# A sandwich technique for the removal of stone embedded intrauterine devices in the urinary bladder

Ashok Raj, Sun Xiaolei<sup>\*</sup>, Xie Wenjing, Chen Renfu, Peng Yunpeng

Department of Urology unit-1, The Affiliated Hospital of Xuzhou Medical University, Xuzhou, 221000, China

## ARTICLE INFO

### Keywords:

Cystoscopy  
Intrauterine devices  
Urinary bladder calculi  
Hysteroscope

## ABSTRACT

A urinary bladder stone in young adults is uncommon. Dislocation of an IUD to adjection organs is a rare condition. We present a case of a 28-year female with a chief complaint of right side pelvis discomfort, off and on with the urinary system. In this case, we performed cystoscopy assisted laser lithotripsy, hysteroscopy to localize and remove IUD, transurethral resectoscope for removing IUD residual, and resection sinus tract.

This article's objective states that the multidisciplinary approach to removing dislocated IUD is safe and effective and raises awareness of forgotten contraceptive devices and their potential complications.

## Introduction

Urinary bladder stone in young females is uncommon. Young individuals who present with bladder stones need detailed investigations. The common etiology of bladder stones in young adults include anatomical anomalies, metabolic disorders, and foreign bodies. Various contraceptive devices are used to avoid unwanted pregnancy. IUD is a reversible, cheap, and widely used contraceptive method. Mechanisms of IUD migration include perforation at the time of insertion, uterus and bladder contraction, gastrointestinal peristalsis, peritoneal fluid movement, which can sometimes lead to lethal complications like perforation, fistula formation, migration to nearby organs.<sup>1</sup> IUD migrated to the urinary bladder act as a nidus for stone formation. In this study, we report the case of a 28-year-old woman with a persistent dull aching pain in the right side of the pelvis who successfully underwent cystoscopy calculus fragmentation and IUD removal via a hysteroscope.

## Case presentation

A female of 28 years, a mother of one child, presented to our department with a chief complaint of frequency and urgency of urination, accompanied with a persistent dull aching pain in the right side of the pelvis. She denied fever and hematuria. Her medical history was unremarkable except for an IUD six years ago by her gynecologist, without regular follow-up afterward. Her Physical examination was unremarkable, and no other abnormalities. In her medical history

experienced a standard caesarian section with no complications and IUD insertion six back. In her laboratory work-up CBC, LFT, KFT were all within normal limits. On systemic examination, her cardiac, respiratory, and central nervous were unremarkable. Urinalysis was an indicative slight increase in WBC and RBC, but urine culture was negative for any infection. The ultrasonography examination revealed a bladder cavity hyperechoic suggestive stone. On further investigations with a CT scan revealed the right posterior wall of slightly thickened and dense object penetrating to the uterus and bladder wall [ Fig. 1]. On further study with a CT scan shows the right posterior wall of slightly thickened and dense object penetrating to the uterus and bladder wall. [Fig. 2]. After proper counseling about the disease condition and surgical procedure, written consent was taken from the patient and near relatives.

## Methods and material

Under general anesthesia, the patient's place in the lithotomy position disinfected the surgical field and a sterile drape. A F21 cystoscope entered the urethra smoothly. The bladder compliance was good, and The bilateral ureteral openings were visible. There was no blood or pus found. A stone of about 17\*20 mm in size was found within the bladder's right posterior wall, which did not move with the water flow. No other abnormality was found in the other walls of the bladder under the semi filling state. The forceps inserted to move the stone left and right found that the stone can be moved from its original position. It was fixed to a migrated intrauterine device penetrating the posterior wall of the

<sup>\*</sup> Corresponding author.

E-mail addresses: [rajashoktgu2099@gmail.com](mailto:rajashoktgu2099@gmail.com) (A. Raj), [326916159@qq.com](mailto:326916159@qq.com) (S. Xiaolei), [138703167@qq.com](mailto:138703167@qq.com) (X. Wenjing), [renfu\\_chen@aliyun.com](mailto:renfu_chen@aliyun.com) (C. Renfu), [pyunp1984@163.com](mailto:pyunp1984@163.com) (P. Yunpeng).

<https://doi.org/10.1016/j.eucr.2021.101599>

Received 2 January 2021; Received in revised form 31 January 2021; Accepted 1 February 2021

Available online 10 March 2021

2214-4420/© 2021 Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

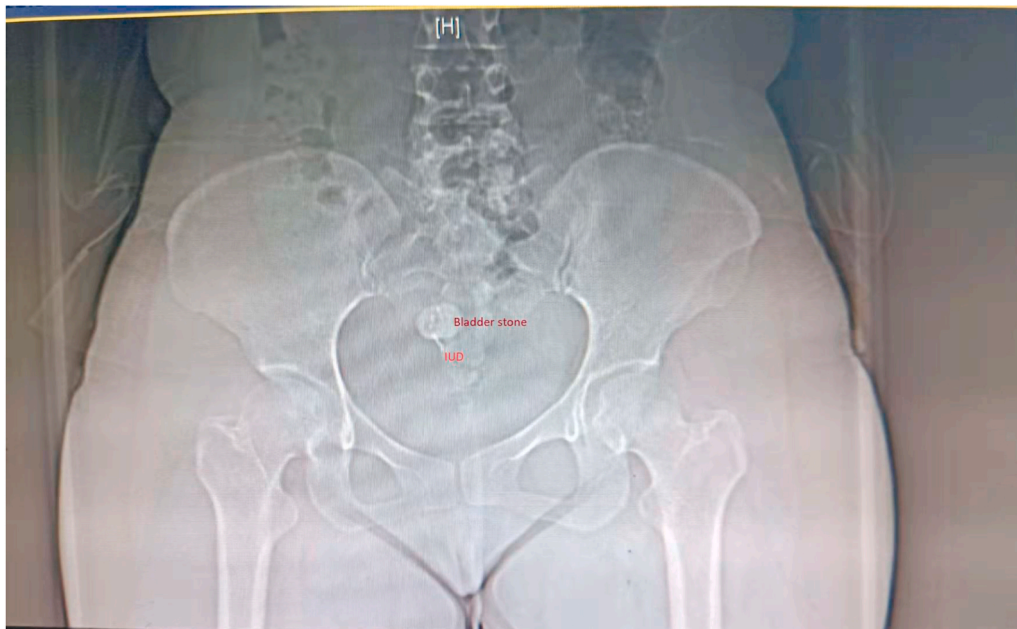


Fig. 1. The above shown is a KUB x-ray of patients demonstrates bladder calculi and foreign bodies.



Fig. 2. The above shown is a preoperative CT scan images revealed The bladder was well-filled, the posterior wall of the bladder was slightly thickened, and dense nodular shadow protrudes into the bladder cavity, with irregular shapes of about 17\*20 mm in size and dense shaped thick shadow extending from the uterine cavity to the bladder cavity.

bladder. IUD was annular, with a silicon rubber ring on the surface, acts as a nidus for the stone formation. Holmium laser optical fiber was implanted, and the power of lithotripsy was adjusted. The energy was 0.8kJ, and the frequency was 15Hz. Then, the stone was crushed and flushed out of the bladder. After that, the uterus was dilated, and a hysteroscopy was inserted. The uterus was inspected after dilatation, and the uterus wall looked inflamed. No other abnormalities are found, except part of the IUD. At this time, the cystoscope was inserted again, and the forceps inserted through the hysteroscope in the uterus. IUD was removed with grasper; we found a silicon coating of IUD debris in the

bladder wall and sinus tract. [Fig. 3]. finally, a resectoscope was used to remove the sinus-like structure on the right posterior wall of the bladder and debris silicone under the mucosa, the wound cautery to stop bleeding. In the end, an indwelling catheter was placed. After recovery from anesthesia, patients returned to the ward.

#### Postoperative care

The patient was discharged with an indwelling foley's catheter on 3rd POD, an uneventful hospital stay.

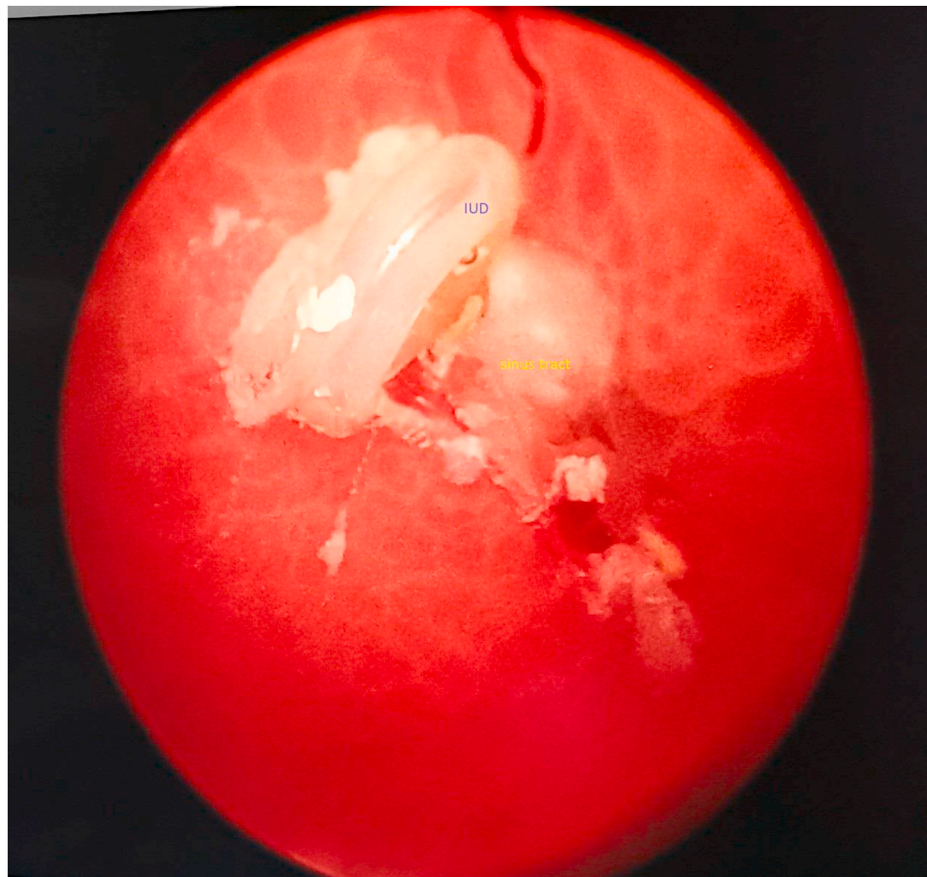


Fig. 3. The above shown is a Cystoscopic view of the intrauterine device migrated embedded in the bladder wall after the lithotripsy.

#### Follow-up

Her symptoms subsided, sign no urine leakage per vagina or fistula, evaluation with urine examination and USG; there was no sign of infection and abnormality in the bladder and uterus. She denies further evaluation with a cystoscope.

#### Discussion

An IUD migration to the bladder and stone formation is rare.<sup>2</sup> The incidence of about 0.87 per1000 insertions.<sup>3</sup> The hypothesis behind the migration of IUD include perforation at the time of insertion, uterus and bladder contraction, gastrointestinal peristalsis, peritoneal fluid movement, and its contributing factor include insertion of the device by inexperienced medical personnel, uterine size, shape and position, inherent anatomic configuration, and resent abortion or pregnancy.<sup>1</sup> Dislocated IUD can present with various urogenital symptoms. In this case, patients had right side pelvis discomfort off and on with the urinary system. In case of IUD dislocation, as per the World Health Organization (WHO) recommendation, any ectopic IUD that perforates the uterine should be done within the abdomen symptomatic or asymptomatic irrespective of location.<sup>4</sup>

IUD that migrates and penetrates to the uterus and bladder wall act as a nidus for stone formation. A further detailed investigation is essential, including urine examination, abdominal USG, trans Transvaginal ultrasound, abdominal ultrasound, KUB x-ray, and pelvic CT are useful for determining the location of a migrated IUD. In particular, CT is useful for diagnosing whether the IUD is penetrating surrounding organs. The management of dislocated IUD depends on the patient's condition and location. In recent years, minimally invasive methods preferred over open in selected cases dislodged IUD and stone, easily

managed with lithotripsy and removal IUD.<sup>5</sup> A stone was immobile in the present case, and IUD was not visible, then the fragmentation of stone with a laser fiber. A cystoscopic forceps were used to remove, but IUD was trapped between the bladder wall, and the uterus felt more resistant to pull. As known, Most IUDs are of "T" shape metallic with or without coated, forceful removal can cause lethal catastrophic complications. Therefore, under the direct vision of hysteroscopy and cystoscopy, IUD is removed safely and efficiently.

In Conclusion, stone embedded intrauterine devices in the urinary bladder with a multi-disciplinary approach removable is feasible. Meanwhile, it avoids complications.

#### Acknowledgement

Ashok raj<sup>1\*</sup>, Sun Xiaolei\*, Xie Wenjing, Chen Renfu, Peng Yunpeng: Project development, Data Collection, Manuscript writing, Data analysis, Thanks to Sun Xiaolei\* and Chen Renfu, essential support and Protocol/project development for this study.

#### References

1. Shin DG, Kim TN, Lee W. Intrauterine device embedded into the bladder wall with stone formation: laparoscopic removal is a minimally invasive alternative to open surgery. *Int Urogynecol J.* 2012;23(8):1129–1131. <https://doi.org/10.1007/s00192-011-1632-8>.
2. Atakan rfan H, Kaplan M, Ertrk E. Intravesical migration of intrauterine device resulting in stone formation. *Urology.* 2002;60(5):911. [https://doi.org/10.1016/s0090-4295\(02\)01883-6](https://doi.org/10.1016/s0090-4295(02)01883-6).

3. Harrison-Woolrych M, Ashton J, Coulter D. Uterine perforation on intrauterine device insertion: is the incidence higher than previously reported? *Contraception*. 2003;67(1):53–56. [https://doi.org/10.1016/S0010-7824\(02\)00417-1](https://doi.org/10.1016/S0010-7824(02)00417-1).
4. Markovitch O, Klein Z, Gidoni Y, Holzinger M, Beyth Y. Extrauterine mislocated IUD: is surgical removal mandatory? *Contraception*. 2002;66(2):105–108. [https://doi.org/10.1016/S0010-7824\(02\)00327-X](https://doi.org/10.1016/S0010-7824(02)00327-X).
5. Christodoulides AP, Karaolides T. Intravesical migration of an intrauterine device (IUD)-Case report. *Urology*. 2020;139:14–17. <https://doi.org/10.1016/j.urology.2020.02.009>.