

Intrauterine Device Malposition Into The Bladder with Stone Formation

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Abstract

Introduction: Intrauterine device (IUD) is accepted and used as an effective contraception globally. Malposition of intrauterine device into the bladder with stone formation was very rare complication. In this study, we report a case in which IUD malposition had caused bladder stone formation in a female patient

Case presentation: Patient was a female, 50 years old, complained of painful urination approximately 1 year before admission and was diagnosed with recurrent urinary tract infection (UTI). Patient also had history of IUD insertion for ten years. Instead of IUD insertion in her uterine, patient had history of 2 times birth delivery. Imaging examination was performed on April 2018, in Hasan Sadikin Hospital, Bandung and found IUD in pelvic area. In ultrasound imaging we found a hyperechoic with acoustic shadow that resembles an IUD. Endoscopic management was performed by cystoscopy instrument. We found a half of IUD in the bladder with encrustation and calcification in the device. We performed lithotripsy with pneumatic lithotripter to disintegrate the encrustation. An IUD extracted from the bladder cavity by cystoscopy grasper. Postoperative evaluation we found no complications and send home the patient 3 days after the procedure.

Conclusion: IUD malposition can be found to bladder cavity. Recurrent UTI needs radiological investigation to provide for any abnormality in urinary tract. IUD extraction could be performed by transvesical approach if the device malposed to the bladder.

Key words: bladder stone, intrauterine device, malposition

Malposisi Intrauterine Device ke Buli Disertai dengan Pembentukan Batu

Abstrak

Pendahuluan: *Intrauterin device* (IUD) merupakan alat kontrasepsi yang efektif dan diterima serta digunakan secara luas. Malposisi IUD ke buli dengan pembentukan batu adalah komplikasi yang sangat jarang terjadi. Pada studi berikut ini, kami melaporkan sebuah kasus malposisi IUD yang telah menyebabkan pembentukan batu buli pada pasien perempuan.

Presentasi kasus: Seorang perempuan usia 50 tahun mengeluh nyeri ketika sedang berkemih sejak 1 tahun sebelum masuk rumah sakit dan didiagnosis dengan infeksi saluran kencing berulang. Pasien memiliki riwayat pemasangan IUD sejak 10 tahun lalu. Walaupun demikian, pasien memiliki riwayat 2 kali melahirkan. Pada pemeriksaan rontgen ditemukan IUD di rongga pelvis. Pada pemeriksaan ultrasonografi ditemukan gambaran hiperekoik dengan *acoustic shadow* dengan bentuk menyerupai IUD. Tata laksana endoskopik dilakukan dengan alat sistoskopi. Kami menemukan sebagian IUD berada di dalam buli disertai dengan enkrustasi dan kalsifikasi pada IUD. Kami melakukan litotripsi dengan litotripter pneumatik untuk menghancurkan enkrustasi. *Intrauterine device* dikeluarkan dari dalam buli dengan pinset sistoskopi. Evaluasi pascaoperasi tidak ditemukan komplikasi dan pasien pulang 3 hari setelah prosedur.

Simpulan: Malposisi IUD dapat terjadi ke dalam buli. Infeksi saluran kemih berulang memerlukan pemeriksaan radiologis untuk mencari abnormalitas pada saluran kemih. *Intrauterine device* dapat dikeluarkan dengan pendekatan transvesika jika mengalami malposisi ke buli.

Key words: batu buli, intrauterine device, malposisi

Introduction

Intrauterine device (IUD) is accepted and used as an effective contraception globally. Nevertheless, IUD might perforate the uterus and penetrate the bladder. Once an IUD has penetrated the bladder, it usually becomes encrusted with stone formation. Actually, perforation of the uterus and migration of intrauterine device into the bladder with stone formation are very rare complication. Overall reported incidence of IUD perforation is about 0.87 per 1,000 insertions.^{1, 2} The treatment options for migration of IUD to bladder are endoscopic and open surgery. Open surgery increases morbidity because of extensive surgical procedure. Endoscopic surgery was performed to reduce morbidity besides the availability of tools in our hospital.^{1, 3, 4}

Previously there is no sufficient case of report reporting an intrauterine device migration into the bladder with stone formation at Department of Urology, Hasan Sadikin Hospital. Currently, there are no available data regarding the incidence of IUD migration to bladder in Indonesia.

Case Presentation

A female patient, 50 years old, complained of painful urination approximately 1 year ago. The pain appeared intermittently. Patient had a history of intrauterine device usage approximately 10 year ago and the device has not yet been removed until the present day. There were no red-colored urine and no stones passed during urination. There were no complaints of fatigue, swelling of extremities, shortness of breath and decreased consciousness. Previous pelvic x-ray examination had found an IUD in pelvic region.



Figure 1 Pelvic x-ray examination

No previous history of urologic surgery was confirmed. Patient had no history of hypertension and diabetes mellitus. No previous history of disease in the family was found.



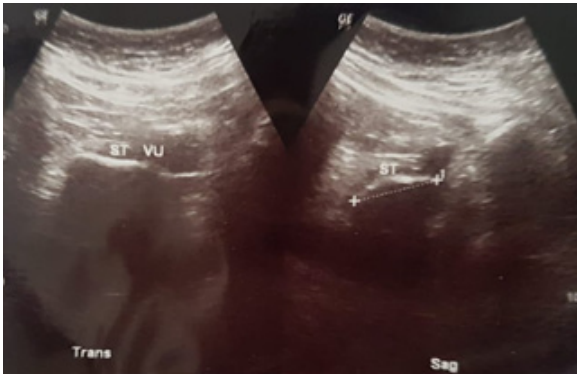


Figure 2 Abdominal ultrasonography of the uterus and kidneys

Discussion

Intrauterine devices (IUD) are a commonly used, highly effective, and rapidly reversible form of contraception. There are several mechanisms involved in providing contraception to women using IUD, such as production of chronic inflammatory changes in endometrium and fallopian tubes, spermicidal effects, inhibition of fertilization, and creation of uterine environment that inhibits implantation. Other type of IUD, particularly levonorgestrel-releasing IUD, alters and may partially inhibit ovulation cycles. The overall percentage of success of IUD in preventing pregnancy are approximately 98-99%. Inserted IUDs can be kept for up to 10 years for copper IUDs and 5 years for levonorgestrel-releasing IUD.^{3,5}

There are several diagnostic modalities that may aid in IUD placement and identification of complications. Ultrasonography is widely used in the evaluation of IUD. The advantages conferred by this method include wide availability, inexpensive, and safe (no radiation). Ultrasonography is used to determine the position of IUD and to identify IUD-related complications. By ultrasonography alone, IUD displacement and myometrial perforation may be fully evaluated. Anteroposterior and lateral abdominal radiography may be used

to detect extrauterine IUD and to confirm IUD expulsion. Unlike ultrasonography, this method exposes patient to, albeit minimal, radiation. The IUD may be readily identified as radiopaque object residing in the x-ray film. Usage of computed tomography (CT) scans may be occasionally used. The CT scan is particularly useful in detecting intraabdominal IUD, which may be associated with several complications such as visceral perforation, abscess formation and bowel obstruction. The CT scan however exposes patients to higher amount of radiation compared to the plain abdominal radiography. Usage of magnetic resonance imaging (MRI) in determining the position of the IUD is not routinely used, although it may be safely used.^{2,3,6}

Despite the relative efficacy in preventing unwanted pregnancies and its relative safety, several complications associated with IUD insertion may still be found. One of such complications are perforation and intravesical migration of IUD. Uterine perforation occurs in up to one every 1,000 cases. Although it is relatively rare, uterine perforation brought by IUD may progress into migration of the IUD into peritoneal cavity.³ In very few cases, it may migrate towards the bladder after the occurrence of perforation. According to a study by Kassab et al⁷ from 165 cases of IUD migration, there were 45 cases of migration to omentum, 44 to rectosigmoid, 41 to peritoneum, 23 to bladder, 8 to appendix, 2 to small bowel, 1 to adnexa and 1 to iliac vein. The migration of IUD to bladder may appear asymptomatic or yield several abdominal or pelvic signs and symptoms according to its severity and location of the IUD. The signs and symptoms of IUD migration to the bladder may resemble persistent lower urinary tract symptoms (LUTS), such as irritative voiding symptoms, recurrent urinary tract infections and/or hematuria. Additionally, the symptoms generally do not improve even after administration of antibiotics.⁷ The interval between insertion and occurrence of

symptoms varies, from 6 months up to 16 years.^{1,8}

There are two main mechanisms of uterine perforation. First, perforation may occur during IUD insertion, of which termed misplacement. The signs and symptoms of IUD misplacement often present with acute pelvic pain, bleeding, or lost thread although asymptomatic causes are not uncommon. Second, perforation may occur gradually and spontaneously after a long time of insertion, termed migration. There are several explanations regarding spontaneous migration of IUD, such as undetected iatrogenic uterine perforation, spontaneous uterine contraction, involuntary bladder contraction, gut peristalsis and peritoneal fluid movement. Several risk factors associated with failure of IUD placement including inexperience in performing IUD insertions, inappropriate positioning of the IUD, susceptible uterine wall due to multiparity and recent abortion or pregnancy. Voiding symptoms, such as pain during urination, combined with a history of unretrieved IUD may be indicative of possible perforation of the uterus and intravesical IUD.⁸

There are several risk factors associated with uterine perforation by IUD. Insertion by a less experienced physician, lactation, postpartum insertion (< 6 months since delivery), lower parity and higher number of previous abortions are associated with risk of uterine perforation. Higher risk of perforation during lactation may be caused by higher levels of β -endorphins, which may cause higher pain tolerance to a woman, indirectly increasing the risks of asymptomatic IUD uterine perforation. In The European Active Surveillance (EURAS) study, lactation or breastfeeding was associated with six fold risk of perforation.⁹ One of the unstudied, yet possible risk factor in IUD perforation was the patient had forgotten their contraceptives. In a single case report in Turkey, a woman was found to have an IUD migration to her bladder due to pelvic pain and hematuria refractory to treatments for urinary tract infections. A physical examination had found a dislocated IUD, with subsequent pelvic ultrasonography had found that her IUD had migrated to the bladder. The case report had discussed that diagnostic delay was probably caused by several supporting examinations

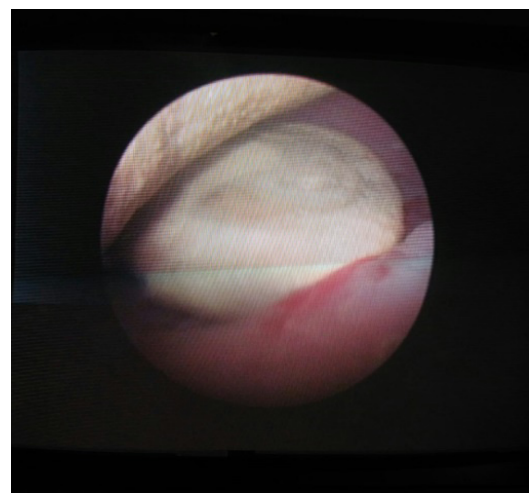
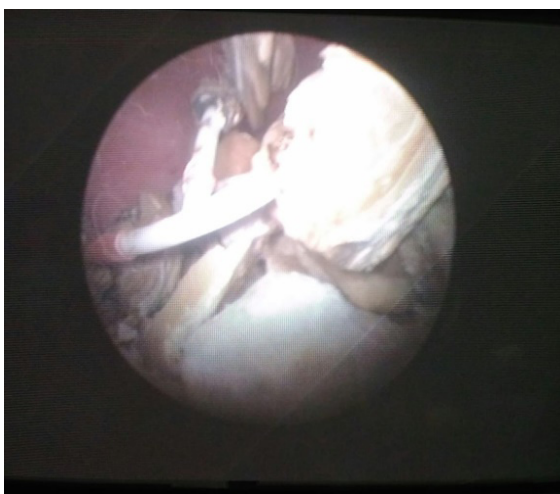


Figure 3 Cystoscopy and pneumatic lithotripsy were performed to disintegrate encrustation.

were not routinely used in pregnant women. Additionally, IUD perforation is a relatively rare complication, the author of the said case report had surmised the true incidence of the perforation may be higher due to several cases may had little to no symptoms.¹⁰



Figure 4 An IUD extracted from the bladder cavity by cystoscopy grasper

Minimally invasive management procedures may be used in treating IUD migrations. After confirmation of the IUD in bladder, laparoscopic removal of an intravesical IUD and stone (if calculi formation was found) should be performed. A case report had successfully removed the adhesions, IUD, and bladder stone via laparoscopic partial cystectomy. The bladder was closed using fine absorbable 4.0 sutures in two layers. The case had not found any leakage after the bladder was filled with approximately 200 mL isotonic NaCl.¹ Another case report had successfully removed the stones with laser lithotripsy and removed the IUD with laparoscopic extraction of the device from the bladder. The availability of minimally invasive surgery for this case meant that open surgery may not longer be necessary in order to manage such cases.^{4, 7, 11}

CONCLUSION

Intrauterine device (IUD)

perforations occur as a rare complication. After perforation, the device may migrate into other organs, such as to the bladder. Due to its location, the patient may present with persistent lower urinary tract infection symptoms. The complaints remained even after consumption of antimicrobials. Plain radiography had detected the IUD in the bladder. The IUD may be used for several years, up to 10 years in copper IUDs, and such long-term duration may increase the risk of forgetting the implementation of IUD device.

There are several risk factors that may increase the risk of uterine perforation by IUD, such as insertion by a less experienced physician, lactation, postpartum insertion, lower parity and higher number of previous abortions. The risk factors (lactation and postpartum insertion) were associated with morphological changes in uterus that may cause the patient to felt less or no pain during perforation in the former and lower structural integrity of the uterus that may be more easily perforated during insertion for the latter. The patient was recommended to undertake a laparoscopic removal of the IUD and calculus. The availability of laparoscopic surgical techniques meant that open surgery may not be required to remove the IUD and manage the calculi formed due to the device.

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