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Early-onset complete spontaneous migration of contraceptive intrauterine device to the bladder in a post C-section patient: A case report

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ABSTRACT

INTRODUCTION AND IMPORTANCE: Spontaneous migration of a contraceptive intrauterine device (IUD) to the bladder is very rare. It usually takes years for the IUD to migrate completely from the uterine cavity to the bladder. We report a case of early-onset complete spontaneous migration of contraceptive IUD to the bladder in a post C-section patient.

CASE PRESENTATION: A 30-year-old woman presented with suprapubic pain and dysuria three weeks prior to hospitalization. She had C-section three months prior and underwent copper IUD insertion two months after the surgery. One week after IUD insertion, radiography showed that the IUD remained in the uterus, but the patient felt suprapubic pain and dysuria. Computed tomography (CT) three weeks after IUD insertions showed IUD migration to the bladder with its tips embedded in the uterine wall. Cystoscopy was performed one week later and the IUD was completely inside the bladder. By then, the IUD was removed completely via forceps with no complication.

CLINICAL DISCUSSION: The exact pathophysiology of spontaneous IUD migration is unknown, but migration always starts with uterine perforation. In our case, uterine perforation was probably caused by immediate traumatic perforation. CT is the preferred radiological examination. IUD removal was performed one month after IUD insertion showing complete migration of the IUD, though CT one week prior suggested that the tips of the IUD remained embedded.

CONCLUSION: In cases of early-onset complete spontaneous migration of contraceptive IUD to the bladder, CT is the preferred radiological examination, and delaying removal procedure may be beneficial.

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1. Introduction and importance

Migration of a contraceptive intrauterine device (IUD) where the IUD spontaneously migrates from the uterine to other periuterine areas, such as the bladder, is rare and with unknown etiology. Approximately 1–3 of 1000 IUD insertions result in migration [1]. Migration to the bladder may cause symptoms, such as suprapubic pain or discomfort, dysuria, recurrent urinary tract infections, and stone formation. Those symptoms require a visit to a urologist where migration of an IUD to the bladder is usually found years after the IUD was inserted. Migration may also be incomplete, i.e., the IUD has not fully migrated to the bladder. Removal of an IUD that has not completely migrated requires a more complicated surgery

[1]. We report a case of a complete spontaneous migration of an IUD to the bladder in a patient one month after IUD insertion. To our knowledge, no prior reports have discussed a complete IUD migration to the bladder earlier than three months after IUD insertion. This report presents a case of complete IUD migration one month after insertion, indicating that delaying IUD removal in such a case may be beneficial. This case has been reported in line with the Surgical Case Report (SCARE) 2020 criteria [2].

2. Case presentation

A 30-year-old woman with suprapubic pain and painful micturition (dysuria) for 3 weeks was admitted to our hospital. The patient delivered her firstborn via the C-section surgery by senior obstetrician at our hospital 3 months prior. Two months after the surgery, the patient had a copper IUD, which is a “T-shaped” device, inserted by the same physician at another hospital. The patient then started to experience pain in the suprapubic area especially

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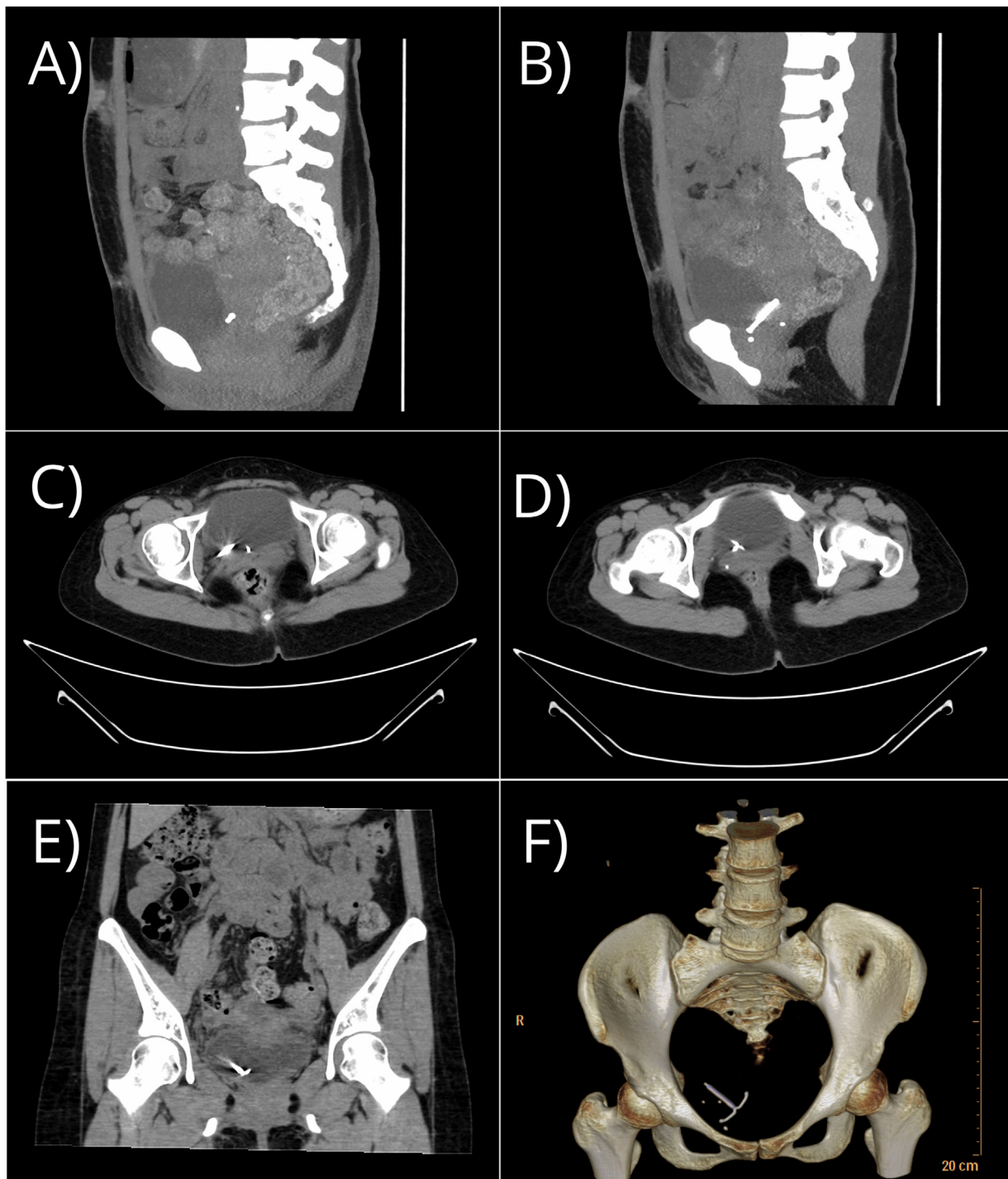


Fig. 1. Computed tomography (CT) scan of the pelvis 1 month after intrauterine device (IUD) insertion. (A) Sagittal view of the pelvis showed an embedded tip inside the bladder wall (B) Sagittal view of the pelvis showed that the IUD was mostly inside the bladder (C) Transversal view of the pelvis showed two tips embedded in the bladder wall (D) Transversal view showed that parts of the IUD were inside the bladder (E) Coronal view showed that the IUD was inside the bladder (F) 3D scheme showing that the IUD was still in the pelvic area.

during voiding five days after IUD insertion. One week after the IUD was inserted, the patient consulted with the physician and underwent radiography. The results showed that the IUD was still in the uterus (the bladder was not full when radiography was performed). The pain remained even after medication with a nonsteroidal anti-inflammatory drug. The patient underwent diagnostic hysteroscopy three weeks after the IUD was inserted at another hospital, but the IUD was not found in the uterus. The IUD was suspected to have migrated to the bladder. The patient was then

referred to the urology department of our hospital for further treatment and IUD removal.

We performed computed tomography (CT) and found that the copper T IUD had migrated to the lateral vaginal wall. The IUD went through the bladder from the inferior lateral side of the right vesicoureteral junction. Both arms of the T-shaped IUD were embedded in the bladder wall, with each tip protruding by 2 mm (Fig. 1). No other disorders were found on CT. The patient was still breastfeeding her baby. We then scheduled the patient for IUD removal via

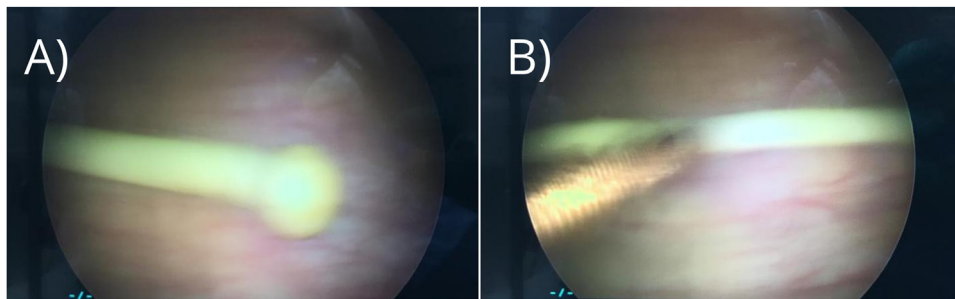


Fig. 2. Endoscopy (A) showed that the intrauterine device (IUD) tip was not embedded to the bladder wall (B) IUD in complete form without fragmentation and no stone formed around the IUD.



Fig. 3. Complete intrauterine device (IUD) removal without fragmentation.

cystoscopy 6 days after CT. All preoperative laboratory and imaging tests outside the abdominal CT area were unremarkable.

Cystoscopy procedure was performed by senior urologist at our hospital. We used 22.5 French cystoscopy with 30° lens. When cystoscopy was performed, the IUD was completely floating in the bladder. No tip was embedded into the bladder wall (Fig. 2). We removed the IUD with forceps using a cystoscope (Fig. 3). Cystoscopy was performed after removal to reevaluate the bladder and ensure that no stones or foreign bodies were present. No fistula was found on the bladder wall. We then emptied the bladder, and the surgery was concluded. The patient was discharged several hours after the procedure in good condition. There were no complications during the procedure. During follow up visitation, the patient had neither symptoms nor remarkable clinical findings.

3. Clinical discussion

Spontaneous migration of the IUD to the periuterine area is a rare case. IUD migration may cause serious complications, such as peritonitis, appendicitis, bowel obstruction and perforation, obstructive nephropathy, infertility, vesica-uterine fistula, and even death because of sepsis. The bladder is the most common destination of IUD migration. Kart et al. reported a total of 200 IUD migration cases with 90 cases involving migration to the bladder [3].

IUD migration to the bladder requires removal procedure, usually with cystoscopy but may also require a more complicated procedure. IUD migration may lead to bladder stone formation, which is managed via stone fragmentation and removal procedure. Other complications include incomplete migration of the IUD, where some parts of the IUD remain embedded in the bladder wall or have fragments inside the uterus. Removal of an IUD with the tips still embedded in the bladder wall may cause bleeding or even tear, which may require reconstruction surgery. A previous case in 2007 reported removal of an IUD that was embedded in the calculus that resulted in the rupture of the bladder wall [4].

IUD migration usually takes place years after IUD insertion. Kart et al. reported a case of pregnancy 3 months after the IUD was inserted, which may suggest IUD migration. IUD was not found on obstetric examination and was thought to have been expelled spontaneously. The patient had urinary symptoms 9 years after, and findings showed that the IUD migrated to the bladder. Upon further examination, the IUD complicated by bladder stone was detected in the bladder and the tips of the IUD embedded in the bladder wall. Other cases of IUD migration were found at least 2 years after insertion [3].

In the present case, the patient had an IUD inserted 1 week after the C-section procedure. She experienced suprapubic pain and lower urinary tract symptoms one month after IUD insertion. Radiographs one week after insertion might have been misinterpreted because the bladder was not full. CT findings obtained three weeks after IUD insertion showed that both tips of the copper IUD were embedded in the bladder wall, protruding by 2 mm. In theory, conventional radiography is the definite diagnostic tool if an IUD is located above the pelvic brim, far lateral (on anteroposterior view), or far anterior (on lateral view); in contrast, when the IUD is embedded, it would be difficult to detect using conventional radiography [5].

The exact pathophysiology of spontaneous IUD migration is unknown, but migration always starts with uterine perforation; Esposito et al. suggest that uterine perforation might be caused by (1) immediate traumatic perforation and (2) late “secondary” perforation by gradual erosion through the myometrium [6]. Factors that might increase the risk of immediate traumatic perforation are the rigidity of the IUD insertion instrument, materials used, and force exerted to insert the IUD. The force required to insert an IUD ranges from 1.5 N to 6.5 N, while 50 N might cause uterine perforation [7]. In our case, uterine perforation was probably caused by immediate traumatic perforation because the patient had experienced abdominal pain 5 days after the IUD was inserted.

Physiological events, such as spontaneous uterine contraction, bowel peristalsis, and bladder contraction, might result in uterine perforation. Post-partum, hypoestrogenism occurs, causing uterine atrophy and thinning of the uterine walls, thereby increasing the risk of uterine perforation. The soft consistency of the uterus in breast feeding women is also a risk factor for uterine perforation

[8]. Therefore, physicians should consider delaying IUD insertion, especially in patients post C-section surgery. Literature suggests that IUD should be inserted at least four weeks after surgery. The progressivity of migration when found in early-onset IUD migration should be observed (less than 1 year after IUD insertion) [9]. A patient should undergo serial radiological examinations with at least 1 week interval to determine if any part of the IUD is embedded in the bladder wall [10].

Vesico-uterine fistula might occur as a result of the migrating IUD, but its occurrence is rare. Although perforation of the uterus by the IUD is often asymptomatic, erosion of the bladder often shows symptoms [11]. Progressive devitalization of the posterior bladder wall in the formation of a vesico-uterine fistula might have delayed presentation. Spontaneous closure of the fistulous tract occurred in several cases, although mostly the size of the fistulas were relatively very small [12].

Delaying treatment to wait for complete migration of the IUD is beneficial as it causes easier removal and fewer complications. However, it depends on patients' clinical symptoms. Immediate removal is necessary when patients experience any discomfort, severe pain, or other complications.

The limitation of this study is the absence of clear radiologic evidence of IUD migration. Radiography should be performed with a full bladder, and CT is preferred when radiography findings are inconclusive.

4. Conclusion

We presented a case of early-onset complete spontaneous migration of contraceptive IUD to the bladder in a post C-section patient. Proper technique and periodical evaluation are needed for patients with contraceptive IUD to prevent similar complications. CT is the preferred radiological examination in such cases, and delaying removal procedure may be beneficial.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

The Ethics Committee of the Faculty of Medicine, Universitas Indonesia approved the study protocol (KET-1327/UN2.F1/ETIK/PPM.00.02/2020).

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Registration of research studies

Not applicable.

Guarantor

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References

- [1] M.A. Nouioui, T. Taktak, S. Mokadem, H. Mediouni, R. Khiari, S. Ghozzi, A mislocated intrauterine device migrating to the urinary bladder: an uncommon complication leading to stone formation, *Case Rep. Urol.* 2020 (2020) 1–4.
- [2] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, for the SCARE Group, The SCARE 2020 guideline: updating consensus Surgical Case Report (SCARE) guidelines, *Int. J. Surg.* 84 (2020) 226–230.
- [3] M. Kart, T. Güleçen, M. Üstüner, S. Çiftçi, U. Yavuz, C. Özkürkçügil, Intravesical migration of missed intrauterine device associated with stone formation: a case report and review of the literature, *Case Rep. Urol.* 2015 (2015) 1–4.
- [4] M. Rajaie Esfahani, A. Abdar, Unusual migration of intrauterine device into bladder and calculus formation, *Urol. J.* 4 (2007) 49–51.
- [5] D. Zakin, W.Z. Stern, R. Rosenblatt, Complete and partial uterine perforation and embedding following insertion of intrauterine devices. II. Diagnostic methods, prevention, and management, *Obstet. Gynecol. Surv.* 36 (1981) 401–417.
- [6] J.M. Esposito, D.M. Zarou, G.S. Zarou, A. Dalkon, Shield imbedded in a myoma: case report of an unusual displacement of an intrauterine contraceptive device, *Am. J. Obstet. Gynecol.* 117 (1973), 578–1.
- [7] N.D. Goldstuck, D. Wildemeersch, Role of uterine forces in intrauterine device embedment, perforation, and expulsion, *Int. J. Womens Health* 6 (2014) 735–744.
- [8] S. Goyal, S. Goyal, Displaced intrauterine device: a retrospective study, *JMR* 2 (2016) 41–43.
- [9] C. Cwiak, S. Cordes, Postpartum intrauterine device placement: a patient-friendly option, *Contracept. Reprod. Med.* 3 (2018) 3.
- [10] S. Rowlands, E. Oloto, D. Horwell, Intrauterine devices and risk of uterine perforation: current perspectives, *Open Access J. Contracept.* 7 (2016) 19.
- [11] A.S. El-Hefnawy, A.R. El-Nahas, Y. Osman, M.A. Bazeed, Urinary complications of migrated intrauterine contraceptive device, *Int. Urogynecol. J. Pelvic Floor Dysfunct.* 19 (2008) 241–245.
- [12] B. Mahmoud, S. Sataa, Post-cesarean vesicouterine fistulae: a report on a case and an update of the literature, *UroToday Int. J.* 5 (2012) 4.