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Case report

Rare case of rectal perforation by an intrauterine device: Case report and review of the literature

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ABSTRACT

Introduction and importance: Intrauterine devices (IUDs) are safe, highly effective and reversible forms of contraception. Reliance on IUD has been increasing and as such, it is the responsibility of the healthcare provider to be aware of the complications associated with it. IUD rectal migration is one of the rare but serious complications that may lead to detrimental sequelae.

Case presentation: A 30-year-old asymptomatic woman presented to the gynaecology clinic two months after a difficult insertion of an IUD. On examination, the device was not localised in utero with transvaginal sonography. Computed tomography scan and colonoscopy revealed the position of the IUD within the rectum. It was successfully retrieved with a combined laparoscopic-colonoscopic approach. Follow-up flexible sigmoidoscopy showed a well-healed rectal wall.

Clinical discussion: IUD perforation can increase the risk of morbidity and necessitates early surgical intervention even if the patient is asymptomatic. Combined laparoscopic-colonoscopic approach allows for safe retrieval of IUD that has perforated the intraperitoneal rectal segment or is firmly embedded within the mucosa. Recognising the risk factors and adhering to the principles of IUD insertion could significantly lower the risk of perforation.

Conclusion: This case report highlights the importance of a physician's vigilance regarding a perforating IUD in a patient with a history of a difficult insertion. It is imperative to undertake additional steps to rule out such a complication in these cases. Uterine perforation can be avoided with implementation of safe IUD insertion practice.

1. Introduction

According to the World Health Organisation (WHO) and the American College of Obstetricians and Gynaecology (ACOG), intrauterine devices (IUDs) are one of the most safe, effective and long-lasting forms of contraception [1,2]. These attributed benefits contributed to the increase in the use of IUD worldwide [2]. The trend is expected to continue its rise as it gains further advocacy from large organizations. Therefore, one must be able to recognise and manage potential complications associated with IUDs. Fortunately, serious complications remain uncommon and these include expulsion, pelvic inflammatory disease, unplanned or ectopic pregnancies and uterine perforation (0.4–1.6 per 1000 insertions) [3]. Herein, we present a unique case of a laparoscopic-colonoscopic surgical approach for the retrieval of an IUD that was incidentally discovered to penetrate the rectum. This case report has been reported in line with the SCARE criteria [4].

2. Case

A 30-year-old previously healthy woman, P3 + 0, had a copper T intrauterine contraceptive device inserted one year after her last delivery. The procedure was noted to be difficult, the patient experienced

Abbreviations: IUD, intrauterine device; CT, computed tomography; US, ultrasound sonography.

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dizziness and diaphoresis immediately after. She was under observation in the clinic for an hour before being reassured with ultrasound (US) showing an intrauterine IUD and discharged home. In the following five days, she had pelvic discomfort which then subsided.

Two months later, the patient presented to the same clinic due to her worries of conceiving. She has been otherwise asymptomatic during the past two months. Due to a history of difficult insertion and as part of routine assessment, a pelvic exam was performed where missing IUD threads were discovered. Transvaginal US revealed an unexpected finding of an empty uterine cavity. Further investigations were warranted.

The patient underwent an abdominal X-ray revealing the presence of a misplaced IUD within the abdomen, anterior to the sacral bone (Fig. 1A). Computed tomography (CT) of the abdomen further delineated the position of the misplaced device which appeared to pierce the anterior rectal wall (Fig. 1B and C). Colonoscopy showed a penetrating IUD in the upper anterior rectum about 11 cm from the anal verge. The patient was admitted and a combined laparoscopic-colonoscopic surgical intervention was carefully planned by the colorectal surgeon, gynaecologist and gastroenterologist.

Laparoscopic exploration revealed threads of the IUD present within the left pelvic region protruding from the rectum (Fig. 2A). Colonoscopy was performed and the vertical arm was found in the same position as previously stated with the horizontal arms of the device firmly embedded within the mucosa (Fig. 2B). An endoscopic grasping forceps was used to pull the device with additional guidance provided by laparoscopy (Fig. 2C). It was successfully retrieved trans-anally and a leak test was negative. The site of micro-perforation was secured with an over-the-scope-clip (OTSC® System, Ovesco Endoscopy AG, Germany) for haemostasis and closure of the defect (Fig. 2D). Leak test was repeated to rule out significant perforation, which was negative under laparoscopic visualisation. The retrieved IUD is illustrated in Fig. 3.

Subsequently, the patient was monitored for two days as an inpatient where she had led an uneventful recovery. After discharge, she was followed in the outpatient clinic 1 month post-operative. There were no complications noted. A flexible sigmoidoscopy, scheduled 9 weeks following the operation, showed a well-healed rectal wall (Fig. 4).

3. Discussion

IUD perforation could be partial where the device penetrates only into the myometrium [3]. Complete perforation is when the device lays within the peritoneal cavity or migrates to invade the adjacent structures [3]. The former is more frequent resulting in infertility, chronic pain, and intestinal obstruction [3]. Invasion of the surrounding structures is a more serious complication encountered in only 15 % of uterine perforations [5]. Intestinal penetration may occur mostly at the level of the sigmoid colon (40.4 %), small intestine (21.3 %) or rectum (21.3 %) [5]. The focus of this case report will be on rectal perforation where its rarity was reflected in our literature review. Only 15 cases were reported in the literature [1,2,6–18].

To understand the risk factors associated with this, one must reflect on the mechanisms behind uterine perforation. It can be divided into primary, secondary or a combination of both [3,19]. Primary occurs at the time of insertion by the uterine sound, inserter tube or the IUD itself [3,19]. Risk factors include insertion <6 months postpartum, lactation, extremes of uterine posture, atrophic uterus, clinician's experience and possibly the shape of device used [3,19]. Secondary perforation occurs when the device has been in-situ ≥8 weeks where the cumulative forces of the myometrial contractions cause gradual erosion [19]. It has been postulated that an imbalance between the size of the IUD and that of the uterine cavity or displacement could evoke such a mechanism [19].

When analysing the literature, insertion prior to 6 months postpartum was clearly documented in 5 of the reviewed cases [1,7–10]. In our case, the patient was lactating and noted to have a retroverted uterus, both of which could serve as risk factors. It is also the first case in comparison to the other 15 cases, where there was documentation of significant signs and symptoms at the time of insertion that could have indicated primary perforation. However, this primary process might have been partial given that the thread was emerging from the cervical os and the US showed an intrauterine IUD. The complete perforation into the abdominal cavity could be explained by the secondary mechanism. Migration of the IUD into the rectum is suspected to be aided by a series of visceral contractions and inflammation [3].

It is important to note that the majority of the patients exhibit non-specific symptoms [3]. A missing IUD is usually identified later after accidental pregnancy or during routine examination, where it is often misdiagnosed as expulsion [1,2,6,10–14]. In our case, the patient only experienced pelvic discomfort during the first five days following insertion. Yet, it was due to the gynaecologist's high index of suspicion that an early diagnosis was made. Unfortunately, this is not always possible which could lead to life-threatening sequelae including peritonitis, infection, macroscopic bowel perforation, bowel obstruction, fistula and abscess formation [7,11]. This demonstrates the importance of IUD retrieval regardless of whether the patient is symptomatic or asymptomatic, as proposed by the WHO [1,2].

Methods for retrieving IUDs that have perforated the rectum include endoscopy, laparoscopy and laparotomy. The optimal approach depends on the location of the device, the degree of embedment within the rectal wall, involvement of other organs and presence of superimposed complications. Patients with evidence of rectal perforation would benefit from an endoscopic assessment. If a major part of the device is lying within the lumen and loosely embedded within the wall of the rectum, endoscopic retrieval may be attempted [6,9–11,14–18]. However, if the device is firmly embedded within the wall, endoscopy alone is not safe. The embedded part of the device might break or lead to significant

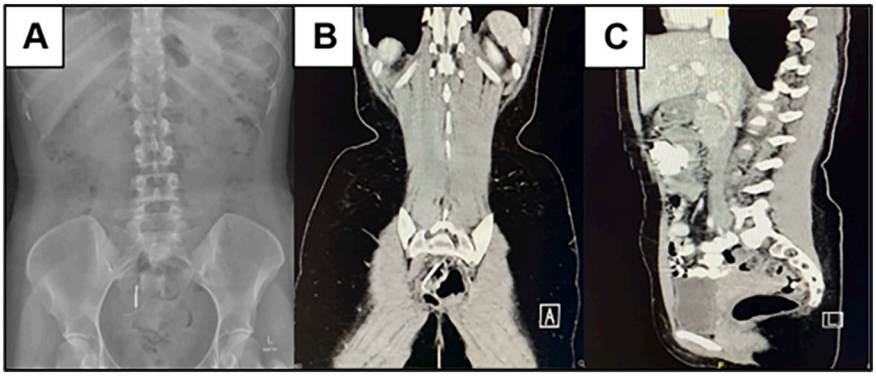

Fig. 1. Findings on imaging. (A) Abdominal X-ray showing an IUD within the lower abdomen, outside the uterine cavity, (B and C) CT scan localising the misplaced IUD which appears to be perforating the anterior rectal wall.

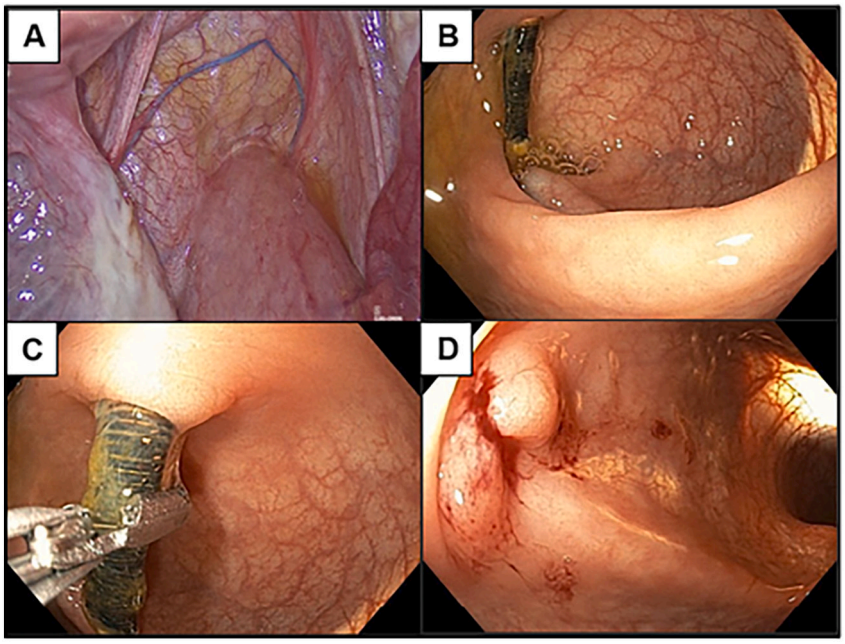

Fig. 2. Intraoperative findings. (A) Laparoscopic view of the IUD threads within the left pelvic space, (B) colonoscopic image of the IUD protruding through the upper anterior rectum, (C) attempt to retrieve the device with an endoscopic grasper, (D) site of minimal rectal wall defect after IUD removal.

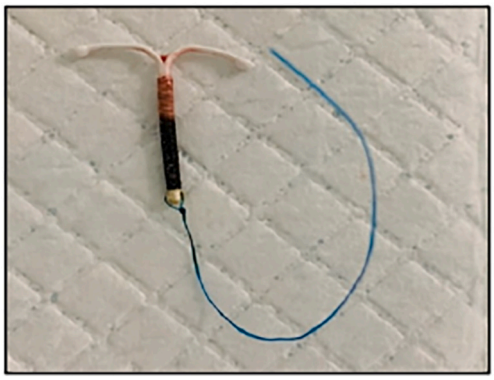

Fig. 3. Retrieved Copper T IUD.

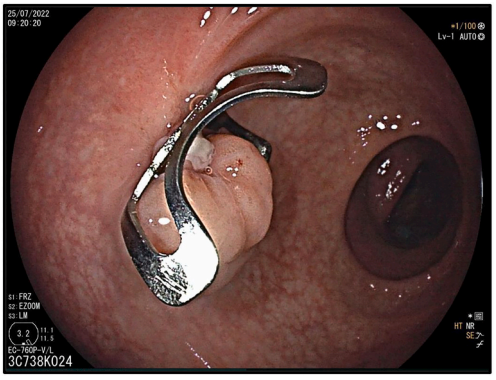

Fig. 4. Well-healed rectal wall 9 weeks after operation with OTSC in place.

perforation [8]. In our case, the device was not only embedded within the mucosa but also perforating the upper anterior segment which is intraperitoneal. This puts the patient at an increased risk of peritonitis. This is where assisted laparoscopy can play a major role. A combined laparoscopic-colonoscopic approach was clearly demonstrated here. Careful traction applied with the endoscopic grasping forceps to release the embedded IUD was supported with a laparoscopic external view of the rectum. This helped guide and reassure the gastroenterologist that the traction applied was not leading to the complications mentioned. To the knowledge of the authors, this is the first case of a combined laparoscopic-colonoscopic approach to the retrieval of IUD perforating the rectum.

A rather interesting part of our case is that the first pelvic US performed after insertion, failed to reveal our suspicion of primary partial perforation. Several reasons could stem from such an outcome including the experience of the gynaecologist and the efficacy of the pelvic US alone in diagnosing early perforation [2]. Ultimately, we recommend that in cases where there are significant signs and symptoms during insertion, additional steps are justified. These include a transvaginal US assessment by a skilled sonologist and closer follow-up of the patient. This was a pitfall in the management of our patient as neither of the steps took place. If accessible, a three-dimensional ultrasound is a superior method of determining the position of the IUD and its relationship to the uterine wall [20]. A hysteroscopic retrieval could have been established if the IUD was discovered during the presumed partial uterine perforation phase [6].

Finally, routine precautionary steps physicians should implement in their IUD practice include the assessment of uterine position, size and depth prior to insertion [19]. Traction of the cervix with a tenaculum can help straighten the uterine axis [19]. Least force should be applied and if resistance is encountered, the operator should abandon the procedure [19]. Recognising the risk factors, planning a judicious timing of insertion, care in examining the patient and adherence to the principles of IUD insertion will certainly help in decreasing the risk of perforation.

4. Conclusion

IUD perforation of the rectum is a rare complication although it may lead to significant morbidity. There are two recognised mechanisms behind IUD migration: primary and secondary. With our patient, we suspect a combination of both mechanisms that resulted in her presentation. A penetrating IUD is a definite indication for its removal even in asymptomatic patients. A successful trans-anal retrieval of an IUD was

demonstrated here with a combined laparoscopic-colonoscopic approach. A bimodal technique was conducted as the device was in an intraperitoneal segment of the rectum (upper anterior) and embedded within the mucosa. This has allowed for a safer and more controlled retrieval. It is only prudent to highlight that additional steps are justified if primary perforation is suspected particularly if the insertion process was challenging. Finally, perforation could be avoided by conforming to safe IUD insertion practice.

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Ethical approval

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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.

This report does not contain any personal information that could lead to the identification of the patient.

CRediT authorship contribution statement

Reem Boushehry: literature review, writing, editing, manuscript drafting.

Talal Al-Taweel: patient management planning, performed endoscopic retrieval, critical review.

Asya Bandar: patient management planning, assisted in decision-making during surgery, critical review.

Maryam Hasan: patient management planning, performed diagnostic colonoscopy, critical review.

Mario Atnuos: patient management planning, assisted in laparoscopy.

Ahmed Alkhamis: patient management planning, performed laparoscopy, critical review, supervision, final approval.

Guarantor

Ahmed Alkhamis.

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Declaration of competing interest

There are no conflict of interest including any financial or personal relationships with other people or organisations or any work influencers.

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