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CASE REPORT

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Far migration of an intrauterine contraceptive device from the uterus to the small bowel

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Abstract

A sexually active, asymptomatic 44-year-old presented for Intrauterine device (IUD) removal that had been in place for 13 years. IUD removal was unsuccessful as the strings could not be located. Imaging revealed an extrauterine IUD and at surgical removal of the abdominal IUD a small bowel perforation requiring bowel resection was required. Uterine perforation is a rare complication of IUD use occurring in approximately 1–1.3 in 1000. Risk factors for perforation include provider inexperience, retroverted uterus, immobile uterus, and myometrial defect from a previous cesarean delivery or myomectomy.

KEYWORDS

expulsion, intrauterine contraceptive device, intrauterine device, medicated

1 | INTRODUCTION

Intrauterine devices (IUDs) are the most commonly used form of long-acting, reversible contraception. In fact, approximately 23% of contraceptive users have IUDs. The IUD's popularity is likely due to its safety, low maintenance, and similar efficacy to that of surgical sterilization. In the United States, two types of IUDs are available: the Copper IUD and the levonorgestrel IUD. The mechanism of action of IUDs involves a foreign body reaction as well as local effects of medications released by the IUD frame.[1] Once placed in the uterus, the foreign body (IUD) leads to a sterile inflammatory response which is inhospitable to sperm and ova. Progestin-containing IUDs have the additional benefit of causing a thickening of cervical mucus, making it more difficult for sperm to meet egg.[2] Progestins can also cause decidualization of the endometrium and gland atrophy, both of which disrupt implantation.[1] The benefits of IUD use include efficacy (>99% effective), lack of need for adherence, avoidance of exogenous estrogen, reversibility, and cost-effectiveness.[1] The most common side effects of IUDs are irregular bleeding and pain. Rarely, IUD use can be complicated by pelvic inflammatory disease, contraceptive failure, expulsion, perforation at insertion, or migration.[3,4] Despite the safety and efficacy of IUD usage, there are notable contraindications including

undiagnosed vaginal bleeding, pregnancy, acute pelvic infection, and others that are device specific.[5] Women with purulent cervicitis should not receive an IUD until her condition is diagnosed and treated, but if women have already been screened according to the center for disease control's sexually transmitted disease treatment guidelines they do not require additional STD screening at the time of IUD insertion.[6] The efficacy of the IUD is only present if the device is properly sited in the uterine cavity, consequently, it is important to teach the patient how to check for the presence of the IUD strings on her initial visit. The purpose of this paper is to report the unusually long time from insertion to discovery of a complication. Also, to emphasize the importance of teaching the patient how to successfully self-check for the strings on the first visit and monthly which could increase efficacy and decrease expulsion and migration.

2 | CASE PRESENTATION

A 44-year-old Gravida 2 Para 2 with no significant past medical or past surgical history presented for surgical IUD removal. She reported a history of a Copper IUD (TCu380A, Teva Pharmaceutical Industries Ltd.) placement 13 years prior to presentation which had never been removed or expelled to her knowledge. She first visited her primary care provider where her initial history and physical examination were performed and were unremarkable. She was completely asymptomatic with regard to the IUD, and she had never self-checked for the IUD string presence. She was sexually active and had not conceived. She was not experiencing any abnormal or irregular bleeding and denied any pelvic or abdominal pain. Her pelvic examination revealed a small, mobile uterus which was anteverted and no IUD strings visible or detected on gentle probing with a cervical cytology brush. Adnexa were negative. A pelvic ultrasound was ordered at that time and noted a midline 8 cm uterus with an IUD abnormally extending into the left uterine myometrium, possibly extending beyond the uterine serosa. A computed tomography (CT) scan performed at an outside imaging center approximately 1 month after the initial ultrasound demonstrated an IUD perforating the uterine serosa. The CT scan noted the distal aspect of the stem in both arms of the IUD appeared to abut or possibly be within a distal small bowel loop. There was no free intraperitoneal air or peritoneal fluid identified. At this point, the patient was referred to our center for a gynecological surgical consultation. A repeat history, examination, and data review were performed, and the patient was scheduled for a diagnostic laparoscopy for bilateral salpingectomy, removal of IUD, and hysteroscopy. She had undesired fertility and requested that bilateral salpingectomy be performed at the time of any procedures needed to remove her IUD. During the diagnostic laparoscopic portion of case, there was a loop of small bowel adhered to the left fundal aspect of uterus. Upon mobilization of bowel and lysis of adhesions in this area, both arms of IUD were suspected to be within the small bowel, with the body of the IUD still within the uterus. General surgery was consulted intra-operatively and it was determined that the patient would need a small bowel resection to remove the IUD. A mini lower transverse laparotomy was performed. After the bowel was mobilized off of the uterus, it was noted that the body as well as the arm of the IUD had perforated the small bowel in multiple areas (Figure 1). The patient ultimately underwent a five-centimeter small bowel resection with primary reanastomosis. After the bowel resection, the IUD was inspected and was noted to be intact and complete (Figure 2). Bilateral salpingectomy was also performed, as requested by the patient. At the conclusion of the case, a hysteroscopy was performed, and no remaining copper coil was seen within the intrauterine cavity or myometrium. The defect in the uterine myometrium was closed from above in a running fashion. Surgical pathology demonstrated a perforated segment of small bowel with serosal adhesions,

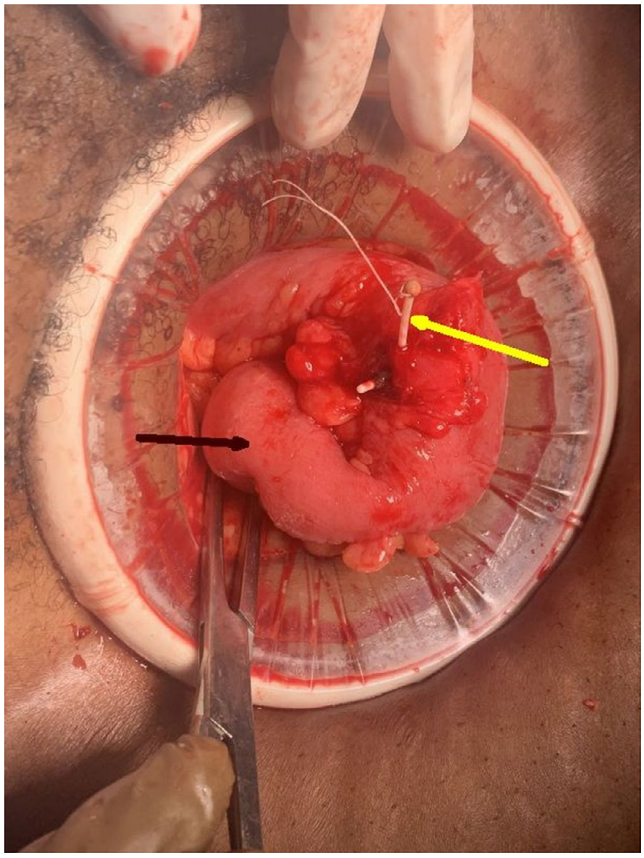

FIGURE 1 Intrauterine device (IUD) perforating small bowel, in situ. Section of small bowel removed (black arrow) with IUD (yellow arrow)

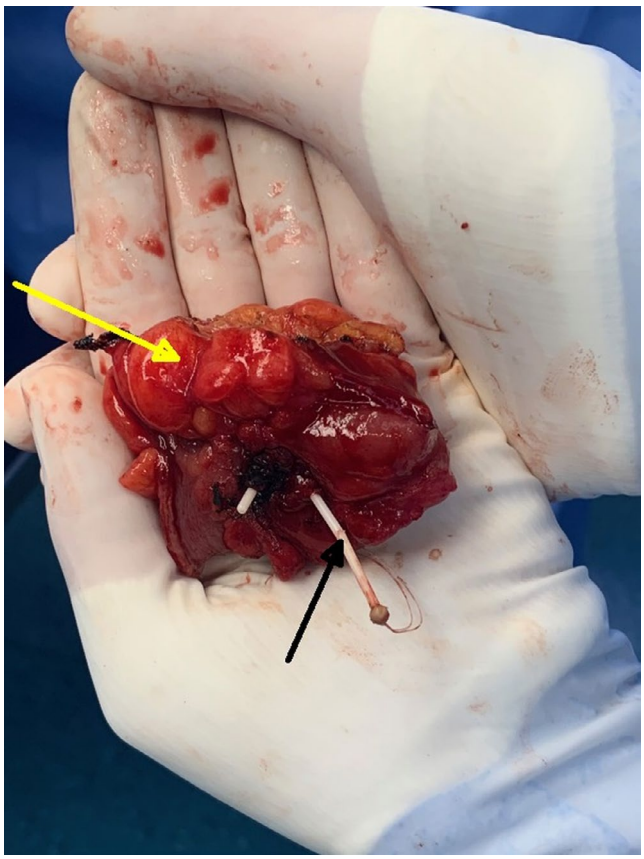

FIGURE 2 Section of small bowel (yellow arrow) after removal. Stem of intrauterine devices (IUD) is at black arrow

associated with the IUD as well as two fimbriated fallopian tubes, one with acute and chronic salpingitis and actinomyces. The patient tolerated the procedure well and was discharged home on post-operative day two.

3 | DISCUSSION

Intrauterine devices are one of the most commonly used long-acting contraceptives worldwide. Uterine perforation is a rare complication of IUD use occurring in approximately 1–1.3 in 1000 regardless of the type. Perforation can be detected if the patient is self-checking for strings, which require instructions on the first visit. Perforation usually occurs at the time of IUD insertion, but rarely can occur later.[4,7,8] The management of a perforated IUD is straight forward. In one of the largest retrospective reviews of a surgical database, Kho[9] reported on 37 women found to have a perforated IUD located in the intraperitoneal cavity and advocated prompt laparoscopic surgical removal of all perforated IUDs.

Risk factors for perforation include provider inexperience, retroverted uterus, immobile uterus, and myometrial defect[7] from a previous cesarean delivery or myomectomy. A 2018 report suggested the weakened scar may lead to migration of the IUD.[10] After perforation, IUDs can migrate to any location in the pelvis, including but not limited to adhesions, the omentum, pouch of Douglas, or adherent to the sigmoid colon. Less commonly, migrated IUDs can penetrate the bladder, small bowel, appendix, or colon.[7] Amsriza even reported a far-migrated intrathoracic IUD that was detected incidentally.[11] Their case described a 30-year history of a 'lost' IUD compared to our 13 years. Another case of 30 years from insertion to discovery was reported by Aydogdu who described an asymptomatic woman with a left upper quadrant mesentery IUD migration.[12] Approximately 30% of patients with uterine perforation are asymptomatic, while approximately 70% experience abdominal pain or abnormal uterine bleeding.[8,13] The most common finding associated with IUD migration is "missing strings".[8] If strings are not visualized or felt on examination, it is vital to proceed with ultrasound or available imaging before assuming that the IUD has been expelled through the cervix and vagina. If migrate on is identified, the next step would be to obtain cross-sectional imaging with CT or MRI (magnetic resonance imaging) to evaluate for involvement of other organs. If there is high suspicion for colonic involvement, a colonoscopy could be considered.[7] Unless the patient is a poor surgical candidate, extrauterine IUDs should be removed surgically without delay due to risk of significant injury to adjacent organs.[14] If involvement of adjacent organs is identified, the IUD should be removed regardless of whether the patient is symptomatic or asymptomatic. IUD removal can be performed laparoscopically or via laparotomy.[7,15] Gill[16] described 179 cases of attempted laparoscopic removal of perforated IUDs and noted a success rate of 64.2% (115/179) of cases. In our case, the IUD was embedded in both the uterus and small bowel with notable adhesions, making laparotomy the safest approach. Unfortunately, our patient's diagnostic imaging was performed at an offsite location and image copies were not obtainable for academic purposes. Clearly, there was no extramural toxic small bowel leaking suggesting the perforation had either walled itself off or had only recently occurred. Other possible pathological processes that could involve a concurrent uterine and bowel perforation could be trauma, neoplasm, or even aggressive infectious disorder.

4 | CONCLUSION

If IUD strings are not visualized on examination, appropriate workup is necessary. This could include hysteroscopy, pelvic ultrasound, or abdominal imaging with X-ray. If migration is suspected, cross-sectional imaging is needed to better assess for involvement of nearby organs prior to surgical intervention which can be accomplished laparoscopically or via laparotomy. This case illustrates that asymptomatic IUD users may conceal evolving morbidity if the strings are

not routinely checked. This patient was asymptomatic for 13 years with a perforated IUD. If she had been given proper instructions on self-checking for the strings as part of her initial visit, it is likely the perforation would have been detected before a small bowel resection was necessary. Patients can be taught to check for the strings very easily and this education should be part of the insertion visit.

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None.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

AUTHOR CONTRIBUTIONS

AR was the primary house staff provider and wrote the initial drafts. CP identified the case and interacted with the patient and also was the minimally invasive surgeon. She wrote the gynecologic surgical component. KS was the general surgeon who performed the bowel surgery wrote the portion pertaining to the specifics of the general surgical portion of the paper. SS provided guidance and direction during data collecting and writing the first draft. SC, SS, and CP wrote the final manuscript versions. SC coordinated the flow of information between the different services revised the successive versions and was corresponding author. All authors read and approved the final manuscript. All authors had access to the data and a role in writing the manuscript, no disclaimers.

ETHICAL APPROVAL

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore was exempt.

CONSENT

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

DATA AVAILABILITY STATEMENT

Access to data is possible with permission from the responsible author.

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APPENDIX 1

Name	Location	Contribution
Alexandria Carroll, MD	Orlando Regional Healthcare Orlando, Florida, USA Department of Obstetrics and Gynecology	Writing the initial draft of the manuscript, clinical management of the case, revising the manuscript critically, and literature review.
Courtney Paradise, MD	Orlando Regional Healthcare Orlando, Florida, USA Department of Obstetrics and Gynecology, Division Minimally Invasive Surgery	Writing the initial gynecologic surgical draft of the manuscript, management of the case, approving the manuscript
Katie Schuemann, MD	Orlando Regional Healthcare Orlando, Florida, USA Department of General Surgery	Writing the initial general surgical draft of the manuscript, clinical management of the case, approving the manuscript, and critically reviewing.
Shannon Scott Schellhammer, MD	Orlando Regional Healthcare Orlando, Florida, USA Department of Obstetrics and Gynecology	Provided guidance and direction during data collecting and writing the first draft
SJ Carlan, MD	Orlando Regional Healthcare, Orlando, Florida, USA Department of Obstetrics and Gynecology, Division of Academic Affairs and Research	Coordinated the flow of information between the different services revised the successive versions and was corresponding author.