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Case Report

Perforation of the appendix and the sigmoid colon by an ectopic IUD

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ABSTRACT

The perforation of both appendix and sigmoid colon by an ectopic Intrauterine device (IUD) by an intrauterine device is a rare occurrence. We present a case of a patient is a 47- year- old hispanic woman who presented at the Gynaecology clinic with complaints of chronic right sided pelvic pain. She had an intrauterine device inserted 10 years prior with no recent gynaecological follow-up. The device was identified by ultrasonography and she was planned for a hysterectomy and IUD retrieval by the gynaecology team. An intra-operative finding of sigmoid colon and appendiceal perforation by an IUD during a total abdominal hysterectomy and emergent involvement of the general surgery team. She underwent a segmental resection of the involved sigmoid colon, appendectomy and removal of the IUD. All missing Intrauterine devices should be accurately localized by tomographic or magnetic imaging preoperatively.

Keywords: Intrauterine device, Appendix, Sigmoid colon, Perforation

INTRODUCTION

We report an atypical case of a perforation of an Intrauterine device through the posterior uterine wall into adjacent sigmoid and appendix without gastrointestinal symptoms. The missing device was diagnosed by ultrasonography and she was underwent an elective abdominal hysterectomy with resection of the sigmoid colon and appendectomy with a diverting loop ileostomy and subsequent reversal.

CASE REPORT

47 yr. Hispanic woman g7 para 5 and no significant medical or surgical history resident in New York City who presented at our facility with complaints of chronic right- sided pelvic pain and painful heavy menstruation. The pain was non-specific but persistent with worsening quality of life and limitation of daily activities. She denied chronic constipation or changes in bowel habits. There was a history of IUD insertion at external facility for birth control 10 years prior to presentation.

Her vital signs at presentation were 132/82mmHg pulse: 82/min Respiratory rate 14/min white count was nine thousand, haematocrit was 42%, no medical or surgical problems. A vaginal examination at initial presentation could not identify the string of the IUD. A trans-vaginal ultrasonography revealed that there was no intrauterine device in the uterine cavity. Beta human chorionic gonadotropin test was negative. Her coagulation profile at presentation was normal.

An abdominal sonogram (Figure 1) revealed that adjacent to the right ovary was an approximately three cm linear structure demonstrating bright echogenicity, which was an intrauterine device which had perforated the uterus. There was no documentation on ultrasonogram of presence or absence of small or large bowel involvement. No abdominal tomographic scan was done.

She was scheduled by the Gynaecology team for an elective total abdominal hysterectomy and retrieval of the IUD on account of her complaints of poor quality of life from the chronic pelvic pain. The abdominal cavity was entered through a pfanesteil surgical incision and a mass

of cecum, appendix, right ovary, fallopian tube and adjoining sigmoid colon was noted to be densely adherent to the posterior wall of the uterus. During exploration, the missing IUD was noted to have penetrated the sigmoid colon and the closely adherent appendix in a through-through fashion and was protruding distally about three cm distally from the entry site with an oblique lie (Fig. 2).

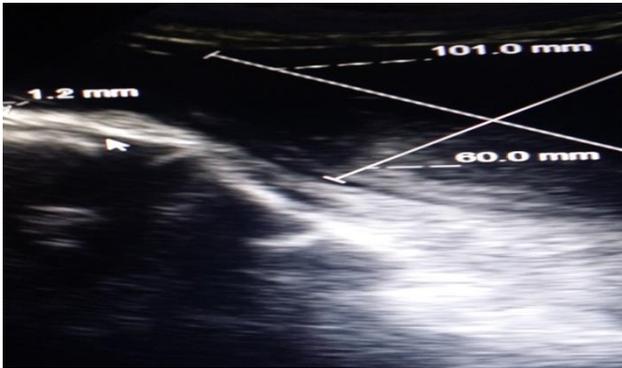


Figure 1: IUD with Bright echogenicity adjacent to 10cm by 6cm uterus and ovary.



Figure 2: White IUD protruding through base of appendix and sigmoid (arrow) retracted.

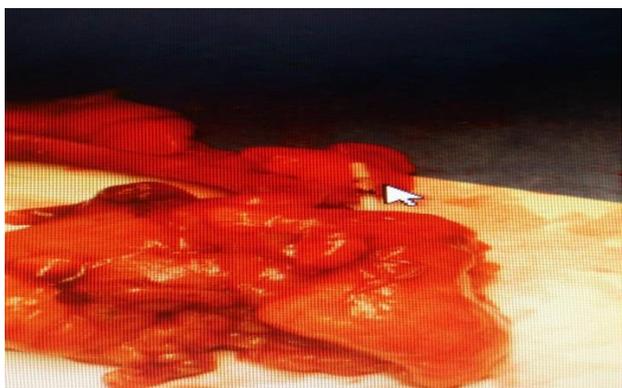


Figure 3: Resected appendix and sigmoid colon with the IUD in situ.

The cecum and ovary was successfully dissected off the sigmoid colon the posterior wall of the Uterus and the

sigmoid colon and adherent appendix was resected using EndoGIA @staplers. The specimen included a four cm segment of sigmoid colon containing the IUD and adherent appendix (Fig 3). The total abdominal hysterectomy was completed by the Gynecology Surgical team followed by a hand-sewn sigmoid colon anastomosis and a diverting loop ileostomy by the general surgery.

Pathology showed IUD perforation of resected sigmoid and appendix and uterus. Post-operative recovery was normal, Bowel function returned on second day following surgery. She was discharged home and had her ileostomy reversed after six weeks. She developed early small bowel obstruction which failed conservatively management. She underwent resection of stenosed small bowel segment and an uneventful recovery.

DISCUSSION

Intrauterine devices are presently the most widely used form of reversible contraception worldwide.¹ Approximately half of all patients with translocated intrauterine devices are reported as asymptomatic and unaware of their missing IUD until incidental discovery on routine imaging or onset of pregnancy.¹ There are an estimated 1.3 to 1.8 uterine perforation by IUDs per 1000 insertions^{1,2} with an average age at discovery below 30yrs of age.¹

Appendiceal or Sigmoid colon injury from an IUD penetration is a rarity Intrauterine device migration is typically into the pelvic cavity or into surrounding structures such as the sigmoid colon, appendix, urinary bladder, omentum and retroperitoneum.¹ Acute appendicitis or appendiceal perforation as a complication of intrauterine device insertion has been documented in the literature.³ Lack of features of perforated bowel or abdominal sepsis in our case might be due to a chronically sealed perforation with associated phlegmon.

Clinical presentations to medical providers suggestive of intra-uterine device migration or translocation may be early or late following insertion. IUD migration with associated ileal perforation as early as four weeks following insertion has been reported.⁴ Factors such as insertion in the puerperal insertion, a retroverted uterus and technical know how of medical personnel can be attributed as risk factors for IUD perforation.⁵ Early presentations are most often symptomatic and most frequently include complaints of abdominal and pelvic pain, while late presentations are usually asymptomatic with complaints of missing IUD strings on self-examination or pregnancy.^{1,6,7}

According to Balci et al. the diagnosis of ectopic Intrauterine device can often made with ultrasonography as first line and pelvic radiography should be recommended when ultrasonography fails to locate the missing device.⁷ Taras and Kaufman recommended either

abdominal ultrasonography or abdominopelvic CT scan to locate translocated IUDs.⁸ When mechanical complications such as uterine perforations by IUDs or infectious complications such are suspected, a computed tomography (CT) or magnetic resonance imaging (MRI) is a useful and life-saving additional diagnostic modality.⁵ In our case, bowel injury was not suspected and abdominal tomographic imaging was not requested due to a low suspicion for bowel involvement.

The current evidence for a migrated IUD is surgical removal. Delayed removal may lead to a more technical surgical intervention and possibly increased morbidity from multiple surgical procedures and complications.⁶ Symptomatic patients may present with abdominal pain or features suggestive of abdominal sepsis. There have been reports of sigmoid colon or small bowel perforation with peritonitis,⁴ colo-colonic fistula^{6,7} peri-colonic or tubo-ovarian abscesses with complaints of fever, abdominal pain and diarrhoea depending on site of the collection.⁴

Moseley et al in 2012 conducted a systematic review for removal of migrated intrauterine devices in publications, case reports, and case series worldwide from 1948 – 2011. They identified 129 cases in 30 studies from 14 countries with Turkey having the highest number of cases. Majority of the migrated IUDs are either copper-based or the lippes loop. They identified 120 cases (93.0%) that were retrieved by laparoscopic surgery [120/129]. 22.5% (27/120) of the laparoscopic procedures were converted to open operations.¹

With increased world-wide laparoscopic utilization and training, minimally invasive laparoscopic removal is presently considered as the main surgical approach for retrieval of a lost IUD. Laparoscopic retrieval is easily achieved for the IUD located freely in the pelvis and may also be utilized in cases of bowel or urogenital organ involvement.⁸⁻¹⁰ The benefits of laparoscopy includes reduced tissue handling and trauma, shorter duration of procedure, rapid post-operative recovery and less adhesive small bowel obstructions.^{1,2} Laparoscopic retrieval would have potentially have been technically difficult in our case with high consideration for conversion to a laparotomy due to urogenital and multiple bowel involvement from dense adhesions encountered by the surgeons during exploration and dissection.¹¹

Laparoscopic removal of ectopic intrauterine devices has its downsides. Technical know-how is a limitation considering the rarity of uterine perforation by intrauterine devices and most retrievals are often the first for most surgeons involved.^{1,11} Difficult laparoscopic cases often result in intra-abdominal spillage of bowel contents and intra-abdominal sepsis and increased patient morbidity.^{6,11} Careful consideration for laparotomy versus laparoscopic retrieval should be individualized based on an accurate pre-operative identification of the location of the device.^{6,8} Laparoscopic removal might not

be an option in cases with dense adherence of bowel and urogenital organs to the missing IUD, such cases might benefit from a laparotomy from the outset.¹¹ The most common post-operative complication following laparotomy and bowel resection for translocated intrauterine device include adhesive small bowel obstruction as seen in our case.¹

Other adjunctive managements during laparoscopy or following unsuccessful laparoscopy may include the intra-operative use of cystoscopy and sigmoidoscopy.¹ These adjunct procedures are of high utility especially with large bowel and bladder involvement. Colonoscopic retrieval with snares may be indicated in cases where the missing IUD has fully penetrated large bowel, is grossly visualized on colonoscopy and is potentially retrievable without large bowel perforation.^{1,12} Laparotomy is usually considered the last option for retrieval when all other modalities fail.

An abdominal tomographic scan is of necessity in cases of missing IUDs to identify bowel or bladder involvement that might have been missed by abdominopelvic sonography or radiography. Open surgery is also recommended in complex cases involving urogenital organs adherent to small and large bowel.

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