

Case Report

Sigmoid Colon Perforation as a Result of a Migrated Intrauterine Device: A Case Report and Literature Review

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A 23-year-old female patient presented to the emergency department with abdominal pain two years after placement on a copper-T intrauterine device. Initial computerized tomography scan revealed an IUD perforating the posterior wall of the uterine wall. The device was removed via the transvaginal approach. The patient returned three days later with worsening abdominal pain with multiple intra-abdominal abscesses on CT. She was treated surgically and recovered well. Extrauterine organ involvement due to IUD migration is a well attested occurrence in medical literature. Approaches of IUD removal and management of associated injuries involve endoscopic, laparoscopic and hysteroscopic techniques depending on the specific location of the IUD.

Keywords: Intrauterine device; Perforation; Migration; Peritonitis; Sigmoid colon; Abscess; Laparoscopy

Case Description

The Intrauterine Device (IUD) has become a common method of long-term contraception, with increasing rates of use in the United States [1]. Migration of the IUD and uterine perforation represents one of the more serious complications. Reported uterine perforation rate is 1.4 per 1000 insertions for levonorgestrel releasing IUDs and 1.1 per 1000 insertions for copper IUDs within 12 months after initial placement [2]. Uterine perforations however can take place decades after placement [3]. Breast-feeding at the time of insertion is well-investigated risk factor for uterine perforation. Studies report that the risk is up to 6 to 10 times higher if a woman is breast-feeding at time of insertion [4]. This may be due to a thinner posterior uterine wall during lactation. The migrated IUD may be found in the rectum [5], sigmoid [6], small intestine [7], appendix [8], urinary bladder [9], ovary [10] and small bowel mesentery [11]. Management of a migrated IUD depends on the location of the IUD, structures involved and patient symptomology. Various techniques for the management removal and an IUD and repair of associated injuries have been reported and include employment of endoscopic [5], laparoscopic [11] and hysteroscopic [12] approaches. Case reports exist where asymptomatic patients with no significant organ injuries are treated conservatively [13]. We present a rare case of a missed sigmoid injury due to an IUD perforation and describe subsequent management.

A 23-year-old female, gravida three, para three, presented to the Emergency Department (ED) with epigastric abdominal pain for two days which later migrated to the right lower quadrant. Her history included three Cesarean sections and placement of a copper-T IUD two years prior. She denies any fever, nausea, vomiting, diarrhea, vaginal bleeding, vaginal discharge or urinary complaints. In the ED the patient was afebrile with right lower quadrant tenderness on exam but no rebound tenderness or guarding. The white blood cell count was 17.1 thousand/ μ L and pregnancy test was negative. The abdominal CT scan report noted an IUD which was implanted

in the posterior uterine wall with the horizontal part of the T-shape perforating the uterine body posteriorly. No inflammatory changes were reported on CT with a normal appendix. The Obstetrics and Gynecology service was consulted, and the physician deemed it safe to remove the malpositioned IUD trans-vaginally. The IUD strings were easily visualized, and the IUD was removed with no immediate complications. The patient was discharged home with instructions to follow-up with her primary care physician in one day.

On the third day after her discharge the patient returned to the ED with worsening lower abdominal pain and watery diarrhea. She had a fever of 38.9 Celsius and her abdominal exam revealed the lower abdominal tenderness, but now with guarding. Her white blood cell count was 22.9 thousand/ μ L. A repeat abdominal CT scan revealed fluid collections and fat stranding around the uterus and in right lower quadrant, as well as multiple small abscesses posterior to the uterus and around the cecum. The appendix was measured at 1.3-centimeter diameter (Figure 1). The surgical service was then consulted. Upon secondary review of the original CT scan from 3 days prior it was discovered that the horizontal position of the copper-T IUD is actually resting within the lumen of the sigmoid colon (Figure 2). It was hypothesized that the cause of the patient's original abdominal pain and intra-abdominal infection was sigmoid perforation caused by the migrated IUD. The patient was taken to the operating room for laparoscopic drainage of intra-abdominal abscesses. Intra-operative findings included extensive omental, small bowel and cecal inflammation. No obvious source of infection or bowel injury was noted. The appendix was not visualized due to significant inflammation of tissues. Multiple abscesses were drained, and a Jackson-Pratt drain was placed. The patient recovered well after surgery. She was kept on antibiotics and was discharged home after ten days.

Discussion

The IUD has become a common method of contraception with 13.9% of women using this method around the world [14]. IUDs

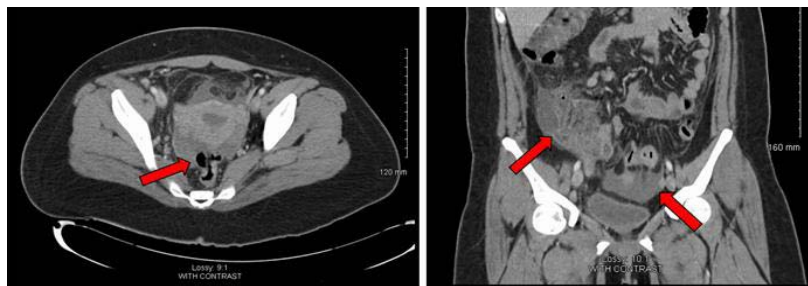


Figure 1: Retro-uterine abscess, transverse view (left). Fluid collections in pelvis and right lower quadrant abscesses, coronal view (right).



Figure 2: IUD perforating posterior wall of uterus with horizontal portion of the IUD resting in the lumen of the sigmoid colon (transverse view, coronal view and sagittal view).

for contraception were first introduced in 1909 by Richter [15] and then were further developed by Gräfenberg [16] in the 1920s. There was a resurgence of their use in 1959 when flexible plastic IUDs were introduced to the market.

Although rare, our literature review found seventy-seven case-reports in the international literature, with the most remote report of a Gräfenberg ring migration dating back to 1933 [17]. The most commonly reported organ to be involved are the rectum [5,18-23], comprising 21 of 77 case reports, and the sigmoid colon [24-29], comprising 20 of the 77 case reports. However, reports of migration to the ileum [7], jejunum [30], appendix [8], urinary bladder [9], ovary [10] and small bowel mesentery [11] were also found. When a bowel perforation occurs a triad of abdominal pain, fever, and intermittent diarrhea have been described [33], which were all present in this patient. However, in some patients an extrauterine IUD is an incidental finding with no obvious symptoms [29]. Complications of an extrauterine IUD include embedment within the bowel wall with a potential risk of bowel perforation, appendicitis [34], small bowel obstruction [35,36] and two cases where an IUD caused a colocolic fistula [37,38] were also found.

Various approaches to extraction of the IUD and management of associated injuries have been implemented. These approaches depend on the location of the IUD, extent of injuries, acuity of the presentation and patient symptomatology. If the IUD is embedded within the rectal or sigmoid wall then removal via endoscopy is feasible in select cases [21,23]. The mucosal defect can then be closed with hemoclips [23] or endoscopic overstitching [31]. If the IUD is close enough to the anal verge the extraction can be performed during a rectal examination under general anesthesia [20]. Commonly laparoscopic removal is necessary if a significant bowel injury is suspected [32] or a bowel resection is required. Hysteroscopic removal is feasible if the body of the IUD is primarily embedded with within the uterine wall [32].

Successful removal of an IUD which was embedded in the small bowel mesentery via single-site laparoscopic approach is also reported [11].

Our care report is unique in that it presents the consequences of a sigmoid perforation caused by a dislodged IUD removed via the transvaginal approach. This case is a prime example that an IUD which has migrated outside the uterine cavity must be assumed to involve intra-abdominal or pelvic organs until proven otherwise. Management of an extra-uterine IUD must involve a multidisciplinary approach as safe extraction and repair of associated injuries may involve the surgical, gynecological and urological services.

Conclusion

Migration of the IUD can cause potentially life-threatening complications. We present a case of a 23-year-old female who presented with sigmoid perforation causing pelvic and right lower quadrant abscesses after a trans-vaginal removal of a migrated IUD. Careful evaluation of the patient, involvement of the multidisciplinary team, identification of the exact location of the IUD and associated organ involvement is imperative to the proper management of this complication. An extrauterine position of any portion of an IUD must be assumed to involve any of the intra-abdominal or pelvic organs until proven otherwise.

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