

## Case Report

# Laparoscopic Removal of Migrated Intra-uterine Device Case report and literature review

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**The intrauterine device (IUD) is one of the most used mechanical contraceptive methods. Its pose is a simple medical gesture. However, complications such as trans-uterine intra-abdominal migration can occur which can be serious. This complication is infrequent. Insertion of an IUD is associated with complications such as abdominal pain, pelvic inflammatory disease, expulsion, retraction into the cervix or uterus, and uterine perforation. Laparoscopic removal of the IUD migrating from the uterine cavity to the abdominal cavity is the method of choice in the treatment of this group of patients, avoiding the development of intra- and postoperative complications and a shorter length of stay in the hospital. We report the case of intra-abdominal intrauterine IUD migration, which was performed laparoscopically.**

**Keywords:** Intrauterine device, Laparoscopic removal, Contraception, Perforation, Intra-Abdominal migration.

## INTRODUCTION

Intrauterine devices (IUD) are one of the most common forms of reversible contraception used in developing countries, with the United Nations reporting that around 14% of women worldwide were relying upon this method of birth control in 2009. Its Pearl Index is less than 1 for 100 years woman (Treiman et al., 1995). It is the most used around the world: about 100 million users. However, its insertion can cause certain complications, such as infection, expulsion or perforation essentially when the rules of use are poorly applied. The perforation remains exceptional, but one of the most serious complications. Indeed, after a perforation, the IUD can migrate to different neighboring organs. Migrations at the cul-de-sac of Douglas, omentum, mesentery, colon and bladder have been described (Ibghir et al., 1995). Though IUD use is generally safe, effective and tolerable, the expulsion or migration of an IUD has been reported rarely, with potentially serious complications. Uterine perforations are rarely encountered following IUD implantation, and can result in the IUD migrating

to the pelvic or intra-abdominal cavity due to uterine rupture (Aydogdu and Pulat, 2012; Carmody et al., 2011). Patient with uterine perforation might present with different signs and symptoms, depending on the distance of IUD migration and the intra-abdominal organ(s) it may have interfered with. Some individuals might appear symptomless, while others may suffer from severe symptoms. A migrated IUD that has perforated the uterus, regardless of the severity of symptoms, however, should be promptly removed surgically in order to avoid further bowel perforation or obstruction (Gill et al., 2012). Traditionally, ectopic IUDs were not removed in asymptomatic patients; however, today, most experts advise removal of any perforated IUD (Ozgun et al., 2007). If an IUD is found within the peritoneal cavity or deeply embedded in the myometrium, laparoscopy is indicated to allow for adequate removal (Heinberg et al., 2008; Mosley et al., 2012). In cases in which the IUD has penetrated adjacent organs, the increased complexity of the case can lead to laparoscopy not being an option, necessitating a laparotomy for safe removal of the IUD (Chen et al., 1998; Gill et al., 2012; Arslan et al., 2009). Herein, we report a case of intra-abdominal IUD that utilized laparoscopic removal.

## Case report

A 37 years old, gravid 4 para 3 woman with no particular medical or surgical history, had an intrauterine device that had been placed for four years by a midwife. During this period, the patient presented with several low genital infections and some pelvic pain that were treated with local antibiotic therapy and minor analgesics. The first test performed one month after insertion of the IUD did not reveal any abnormalities. The routine check in the fourth year did not find the intrauterine IUD threads. Radiography of the abdomen shown the IUD in the abdominal cavity, thereby eliminating the possibility of expulsion (Figure 1). The abdominal and pelvic CT scan revealed an IUD sitting in the inter-utero-rectal space in close contact with the posterior wall of the uterine body and the anterior wall of the rectum without a fatty edge (Figure 2, 3). After preoperative investigations the patient was scheduled for surgery for laparoscopic removal of the IUD. The procedure was performed under good conditions (Figure 4-7). Removal of the IUD was done without any incident. The patient was discharged in good general condition. She was seen in OPD at day 8 and three months later she was doing well.

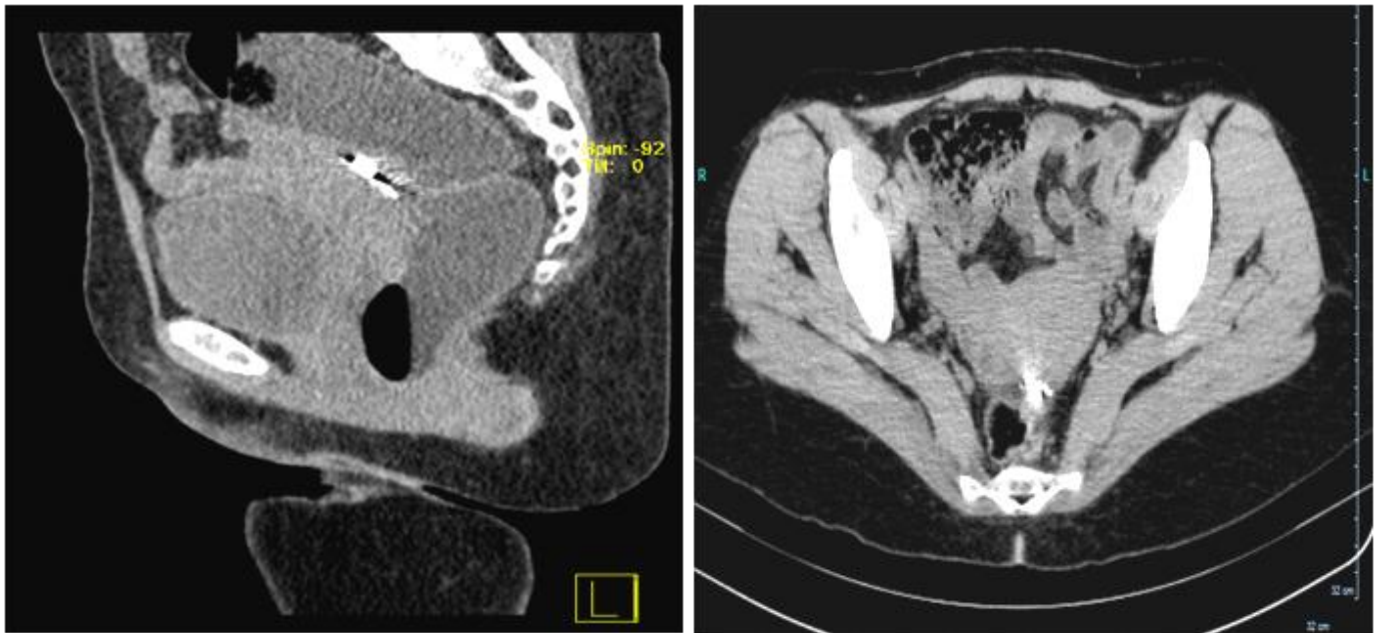
## DISCUSSION

Though IUD use is a safe, well tolerated choice of long-term contraception for women, associated issues such as lower urinary tract symptoms, stone formation around the IUD, uterovesical fistula and even stricture of the recto-sigmoid colon have been seen (Aydogdu and Pulat, 2012; Carmody et al., 2011). Uterine perforation is one of the most serious complications associated with IUD implantation, as the device can perforate through the uterine wall and into the digestive, gynecologic or urinary system organs (Cetinkaya et al., 2011). Most uterine perforations are asymptomatic and therefore unrecognized at the time of insertion (Mederos et al., 2008). Nonoperative management of a migrating IUD has been recommended in the past because of the morbidity associated with its removal (Mederos et al., 2008). However, this complication can lead to pain, fibrosis, and adhesion formation and in some situations may result in penetration into adjacent organs including the urinary bladder, sigmoid colon, appendix, and small bowel (Mederos et al., 2008; Chi et al., 2005). Perforation into the bowel can result in abscess formation, intestinal ischemia, or volvulus (Mederos et al., 2008). Therefore, it has been suggested that surgical exploration and IUD retrieval should be the primary therapeutic approach for patients with an IUD-related complication (Mederos et al., 2008; Chi et al., 2005). Patients present with a variety of symptoms following uterine perforation of an IUD, albeit predominantly pelvic pain and/or vaginal bleeding, while others might be asymptomatic with a missing IUD string at pelvic

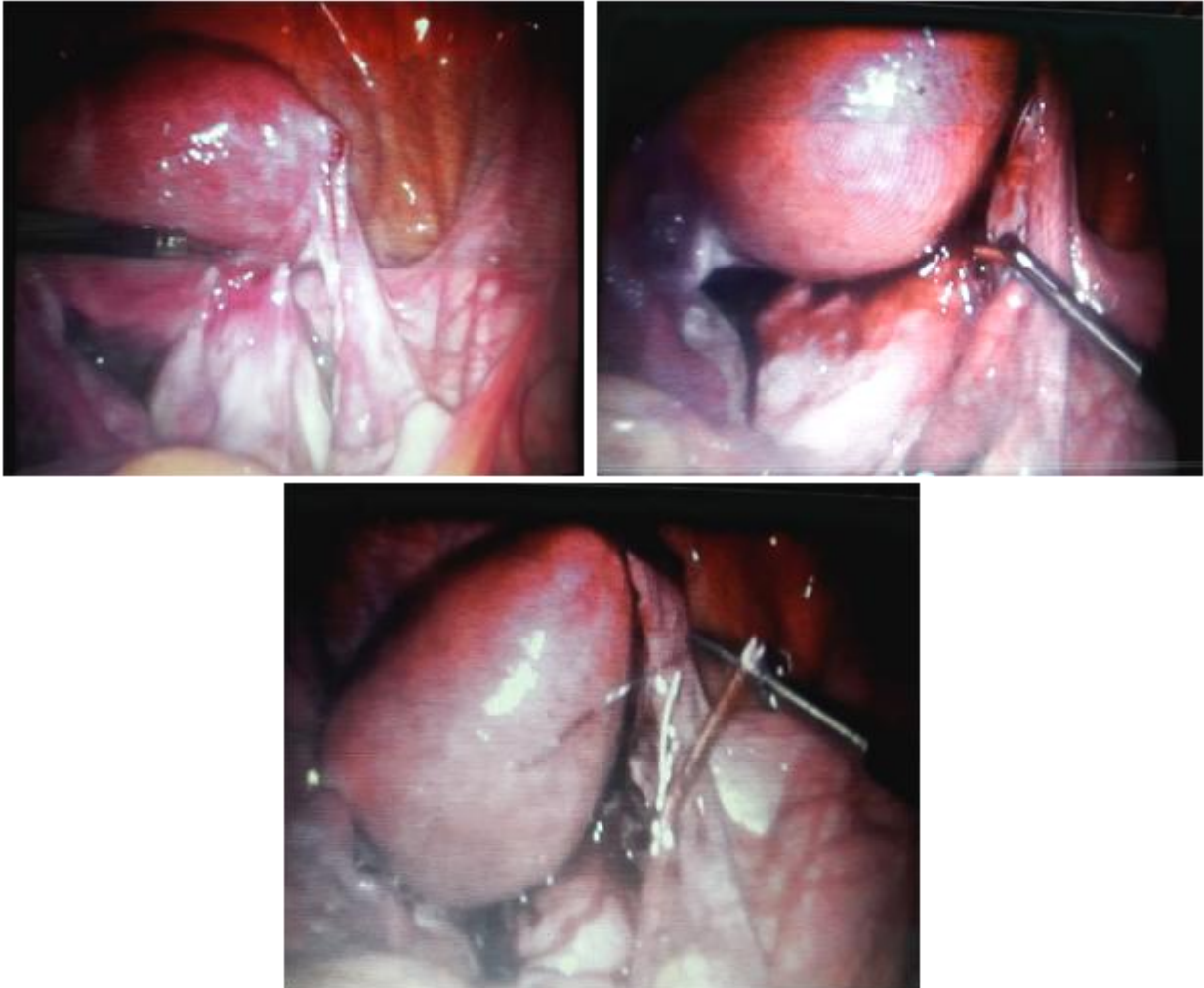
examination (Gill et al., 2012; Carmody et al., 2011; Kaislasuo et al., 2013). Severe associated morbidities have been reported, including infection with abscess formation, intravesical calculi, bowel infarction, rectal strictures and recto uterine fistula (Carmody et al., 2011; Cetinkaya et al., 2011; Boortz et al., 2012). Although vaginal spotting is a common symptom of the micronized progesterone effect that occurs following Mirena® (Bayer, Leverkusen, Germany) insertion, vaginal spotting due to a misplaced IUD should as well be associated with other signs of device migration, such as missing threads, abdominal pain or pregnancy (Hidalgo et al., 2002). Further examinations such as X-ray are warranted (Arslan et al., 2009; Cetinkaya et al., 2011; Mederos et al., 2008; Chi et al., 2005). To differentiate between the progesterone effect and IUD misplacing, most commonly, patients found to have an IUD partially or completely embedded in the colonic wall were managed with a laparotomy. With advances in laparoscopy, these situations are being increasingly managed with minimally invasive techniques. Previous reports of laparoscopic exploration and removal of the translocated IUD from the sigmoid colon have had variable clinical outcomes (Chi et al., 2005). Risk factors contributing to uterine perforation include type of IUD (i.e., copper), insertion technique, insertion in the postpartum period, lactation and amenorrhea (Heinberg et al., 2008; Mosley et al., 2012; Chen et al., 1998; Gill et al., 2012; Arslan et al., 2009; Cetinkaya et al., 2011; Mederos et al., 2008; Chi et al., 2005; Kaislasuo et al., 2012; 2013; Boortz et al., 2012; Hidalgo et al., 2002) Compared with copper intrauterine devices (Cu-IUDs), newer levonorg-estrel-releasing intrauterine systems (LNG-IUS) have been utilized significantly for years (Shih-Chun et al., 2017). Asymptomatic patients were diagnosed during follow-up in OPD or because of unintended pregnancy. Common symptoms were abnormal bleeding and/or abdominal pain and pregnancy. Intra-abdominal adhesion and pregnancy are more common among women using Cu-IUDs than those using LNG-IUS (Kaislasuo et al., 2013). In addition to the known risk factors attributed to intra-abdominal IUD presence, other possible considerations associated with IUD uterine perforation are breastfeeding at time of insertion and time of less than 36 weeks since previous delivery. Clinicians and women who decide to use IUD contraception should be aware of the risk factors, and should adjust the timing of insertion accordingly. Mirena® insertion should be delayed until six weeks after delivery (Heinemann et al., 2015). If a misplaced IUD is suspected, the diagnosis of IUD/IUS perforation is usually straightforward. If no IUD string can be visualized on speculum examination, a combination of trans-vaginal ultrasound and abdominal X-ray are often sufficient to successfully diagnose a uterine perforation. Abdominal CT scan/magnetic resonance imaging are also good options to help locate a migrated IUD, and to assess for complications such as perforation of the



**Figure 1.** Abdominal x-ray shown misplaced IUD



**Figure 2.** Abdominal & pelvic CT scan showing the IUD located in the space between uterus & rectum



**Figure 4.** Per-laparoscopic extraction of the IUD

uterus or nearby organs, the presence of adhesions, or abscess formation, in a hospital setting (Kaislasuo et al., 2013; Derrick et al., 2013). The World Health Organization recommends that an intra-abdominal IUD should be removed as soon as possible after the diagnosis has been made, regardless of type, locations or symptoms (WHO, 1987). Misplacement of the IUD usually occurs at time of insertion and is recognized during the first year in 90% of women (Mahajan and Mahajan, 2007). In our patients we cannot conclude the cause, but we thought it was probably due to a uterine rupture. If IUD strings are not visible during gynecologic examination, ultrasound should be tried to locate the IUD and pelvic X-ray used only when USG fails to locate the IUD. Trans-vaginal sonography was combined with abdominal X-ray to reach a definitive diagnosis (Mülayim et al., 2006; Şengül et al., 2014). According to the literature, laparoscopic surgery should be the first option in removing a perforated IUD, as improvement of the technique of minimally invasive surgery has been widespread, and it is typically safer and with fewer

complications. Conversion to laparotomy after attempted laparoscopic removal may be needed in cases involving bowel perforation, sepsis, or major adhesion (Sharifiaghdas et al., 2007). Currently conservative management is not without significant risks (19 cases of bowel perforation associated with IUDs have been documented in world literature) (Mahajan and Mahajan, 2007; Mülayim et al., 2006; Ingec et al., 2005). The laparoscopy offers a secure and easy surgical procedure to locate and remove the IUD. Recovery is often excellent and can perform the procedure in ambulatory surgery extremely safe (Mahajan and Mahajan, 2007; Mülayim et al., 2006). It is necessary to visualize the entire device before it is removed because applying force to a partly visible device may cause serious damage to nearby structures if the device is partially embedded. Preoperative localization of the device can lower the risk of organ injury and the need to change to open surgery. The risks of open surgery conversion mostly depend on the final site of the misplaced IUD. The removal of a displaced IUD that involves both

abdominal and pelvic organs has a higher risk of open surgery and those related only to pelvic organs had the lower risk (Cetinkaya et al., 2011; Mosley et al., 2012).

## CONCLUSION

Use of proper technique in IUD insertion is important to avoid primary uterine perforation. However, spontaneous migration can occur rarely, and it is unpredictable. The symptoms of IUD migration can be nonspecific, requiring a high degree of suspicion. Imaging techniques such as pelvic X-ray or abdominal CT are recommended to check for adjacent organ involvement or perforation if IUD migration is suspected. Laparoscopic removal of intra-abdominal IUD is feasible and beneficial in most cases. For this reasons in cases of intra-abdominal IUD, laparoscopic removal of the IUD must be the first choice of therapy. Laparoscopy, even during pregnancy, has proven to be a safe and simple tool for managing a variety of surgical conditions (such as the IUD involving in colon and ileum, ovarian migration).

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