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Removal of an incarcerated intrauterine device in the sigmoid colon under the assistance of hysteroscope and laparoscope: a case report

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Summary

Background/Aims: To explore the value of hysteroscope and laparoscope in removing an incarcerated or ectopic intrauterine device (IUD). *Materials and Methods:* A 33-year-old woman was admitted to the present hospital on May 22nd, 2013. An incarcerated IUD was proven by ultrasonography. An IUD had been implanted in October 2011. Clinical case report of an incarcerated IUD in the sigmoid colon. *Results:* An IUD was successfully removed with the assistance of hysteroscope and laparoscope. *Conclusion:* Ultrasonography should be performed in the follow-up of the patients after IUD implantation. Ectopic or incarcerated IUD can be successfully removed with the assistance of hysteroscope and laparoscope with minimal trauma.

Key words: Intrauterine device; Ectopia; Hysteroscope; Laparoscope.

Introduction

Intrauterine device (IUD) is most commonly used in Chinese women of child-bearing age for contraception. [1] IUD has been proven to be a safe, effective, and cost-effective contraceptive method. [2] However, as a greater number of IUDs have been used for longer periods of time, the incidence of ectopic IUD has increased over the past few years. The incidence of uterine perforation is about 0.05 to 0.13%. [3, 4] Invasive surgical procedures are generally required to remove the ectopic IUD. As a newly developed surgical method, laparoscopic surgery is widely used in clinical practice, particularly gynecologic surgery. Therefore, the removal of ectopic IUD can be completed with the assistance of a laparoscope. The authors report a case of ectopic IUD that has been successfully removed under the assistance of a laparoscope.

Case Report

Medical history

A 33-year-old woman was admitted to the present hospital on May 22nd, 2013 with vaginal bleeding of 25 days duration. An incarcerated IUD was proven by ultrasonography. In this patient, an IUD had been implanted in October 2011 and regular menstrual cycles were reported thereafter (4-5 / 24-25). The date of the last menstrual period was April 27th, 2013. The patient presented to the affiliated Shenzhen Nanshan People's Hospital of Guaongdong Medical University on May 20th, 2013 with continuous vaginal bleeding after the last menstrual period. Outpatient ultrasonography revealed the abnormal position of the IUD. A strong echo of the IUD was found *in utero* and the myometrium of the fundus, a strong echo of 8 x 5 mm in size was also found at the outer serosa layer of the uterus at the left side of the fundus. The patient was hospitalized for incarcerated IUD. The patient exhibited a normal appetite and control over urinary and fecal discharge as usual. No other serious disease was noted prior to hospitalization. The woman had conceived three times and had given birth to two children in total, her youngest child was born via cesarean delivery in 2010.

Clinical examination

On admission, the woman's temperature was 36.4°C, heart rate (P) was 76 beats/minute, respiration (R) was 20 times/minute, and blood pressure (BP) was 130/56 mmHg. No other symptoms were noted. Apart from all over the body yellow skin, no other abnormalities were noted on presentation. All cardiopulmonary investigations were normal. The abdomen of the woman was flat and soft and no pressing or rebound pain was noted. A scar of approximately ten cm in length was found in the lower abdomen. The liver and spleen were not examined, and no shifting dullness was detected. Gynecologial examination revealed normally developed vulva. The vagina was normal vagina for a women having given birth to child, with a small amount of bloody discharge. The cervix was smooth and soft without lifting pain and no IUD tail was found. The posterior fornix was not full and without tenderness. Retroposition of the uterus of normal size and range of motion was detected with slight tenderness. Slight tenderness was also detected in the right adnexal region, with no obvious masses. In contrast, masses without pressing pain were detected in the left adnexal region. Plain abdominal radiograph on May 23rd, 2013 showed the IUD in the pelvic cavity (Figure 1).

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Figure 1. — Plain abdominal radiograph shows the IUD located in the pelvic cavity.

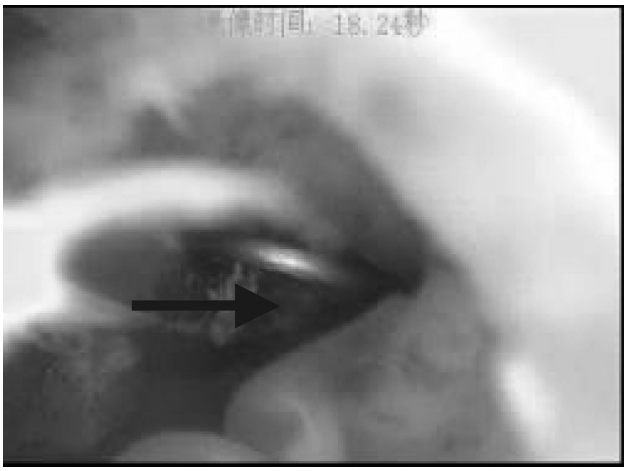

Figure 2. — A U-shaped IUD incarcerated in the myometrium of the left fundus.

Clinical management

Clinical examination with the assistance of hysteroscope and laparoscope were performed on May 24th, 2013. The results of hysteroscopic examination revealed a U-shaped IUD incarcerated in the myometrium of the left fundus. The uterus was a normal size and shape, and the bilateral openings of the fallopian tubes could be clearly seen (Figure 2). Examinations during the operation revealed a posterial uterus of normal size, and dense adhesions between the sigmoid colon and the left posterior uterine wall which filled the rectouterine fossa (Figure 3), No abnormalities were found for the bilateral adnexa. The patient's family requested that the operation be performed after the enteroscopic examination for the adhesion between the posterior uterine wall and the lower rectum. Enteroscopy examination was performed on May 28th, 2013, and the results revealed a metallic material in the enteric cavity (Figure 4). The operation to remove the incarcerated IUD with the assistance of hysteroscope and laparoscope was performed on June 4th, 2013; rectal repair, lysis of pelvic adhesions, and bilateral tubal ligation were also performed. An ultrasonic knife was used to carefully divide the adhesion between the uterus and the rectum. Part of the IUD could be seen during the division, and the IUD was then removed by vessel forceps part by part and then pieced together (Figure 5). Monopolar electrocoagulation was performed to stop any bleeding of the uterus. Damage to the rectum was identified and repaired with full-thickness continuous suture using size 1-0 Vicryl suture. Bilateral tubal ligation was also performed. Oral food intake was resumed after the anal exsufflation at day 2 after the operation. Plain abdominal radiograph was taken for the reexamination and no IUD was found. The patient was discharged on June 10th, 2013.

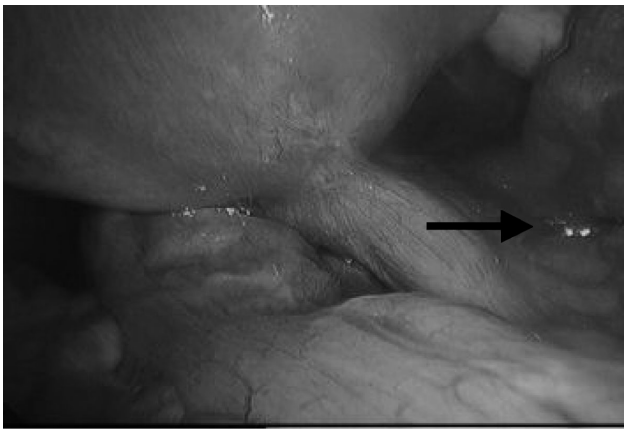

Figure 3. — Close adhesions between the sigmoid colon and the posterior uterine wall.

Discussion

Ectopic IUD is a very rare condition in clinical practice. Ectopic IUD may occur for a number of reasons. The uterus wall is very soft and easily perforated in breastfeeding and pregnant women. Ectopic IUD is more common in women with hyperflexion or scarring of the uterus, and also in postmenopausal women with metratrophia. In some cases, severe abdominal pain during IUD implantation may be the sign of perforation of the uterus. Inexperienced clinicians may not identify the position of the uterus correctly, resulting in incorrect placement of the IUD. In some women, only X-ray but not ultrasonography is used to re-examine the implantation of IUD.

A number measures could prevent the development of ectopic IUD. Clinicians should strictly comply with the recommended surgical procedures, and correctly identify the position and size of the uterus. An IUD of appropriate type and size should be used. For breast-feeding women, the uterus is very soft and tiny perforations may not be easily identified, therefore clinicians should implant the IUD carefully and gently. For postmenopausal women with metratrophia, incarcerated IUD occurs more easily when the uterus is smaller, therefore the IUD should be removed within one year after the onset of menopause. Using estrogen before the removal of the IUD may improve atrophy of the cervix, thus the authors recommend that misoprostol be used be-

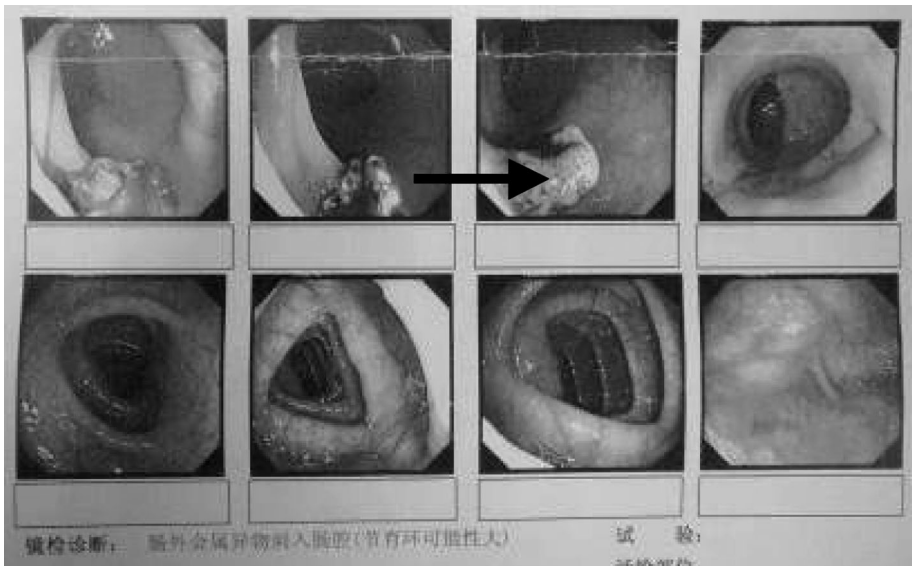

Figure 4. — Enteroscopic examination reveals metallic material in the enteric cavity; no other changes were found.

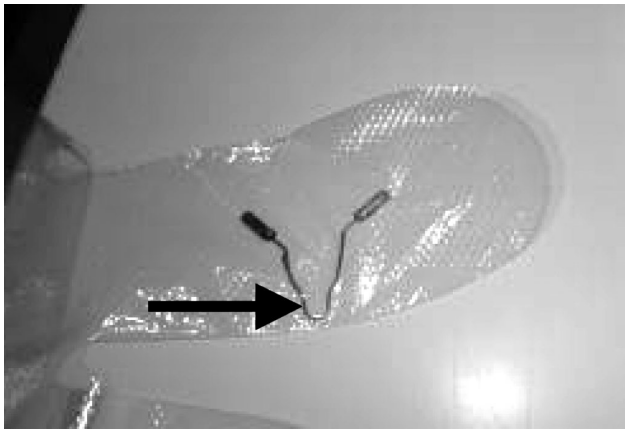

Figure 5. — Each part of the broken IUD was pieced together to form a whole.

fore removal of the IUD to soften the cervix and relax the uterine orifice. This practice may increase the success rate and decrease the risk of complications. Removal of the IUD under the assistance of hysteroscope should be performed for some cases with ectopic IUD. Ultrasonography should be performed regularly after the implantation of the IUD to clearly identify the position of the IUD and help choosing the treatment methods correspondingly. [5]

For most cases of ectopic IUD, no obvious symptoms are reported. Migration of the IUD through a perforation into the intestine could cause abscess formation, intestinal ischemia, or volvulus. [6, 7] Several methods including ultrasonography, X-ray, hysterosalpinography, and hysteroscopic examination are currently used for the diagnosis of ectopic IUD. Ultrasonography can display the uterine cavity and uterine profile, thereby identifying the location of the IUD in the uterus. However, ultrasonography cannot clearly identify ectopic IUDs made of plastic or silica gel, or IUD that have migrated a long distance from the uterus. X-ray examination is more suitable for identifying IUD made of metallic materials. CT and MRI examinations could also facilitate the diagnosis of ectopic IUD by accurately positioning the IUD. However, for patients with suspected ectopic or incarcerated IUD, hysteroscopic examinations should be performed to identify the position and shape of the IUD in the uterine cavity, help diagnose the adhesion of the IUD in the endometrium, and incarceration of the IUD in the myometrium. These examinations can further identify the position of the adhesion, the depth of the invasion of the IUD into the uterus wall, the size of the adhesion, and the location of the broken IUD, and whether there is IUD in the uterus before the removal of the IUD. Ectopic IUD can also be diagnosed if no IUD is found in the uterus by hysteroscopy examination. A imaging system is used in laparoscopic surgery to obtain a wider-exposed surgical field than conventional surgical procedures, which could facilitate the identification of migrated IUD and determine consequent treatment. Operation with the assistance of hysteroscope and laparoscope were successfully used in the present report to identify and remove the ectopic IUD in the sigmoid colon.

The IUD can migrate to any position within the pelvic cavity, thus it is very difficult to identify the migrated IUD. Ultrasonography or X-ray examination should be performed before the removal of the IUD to identify the position of the IUD and to determine whether the IUD has migrated beyond the myometrium. The clinicians should carefully search for the IUD in clockwise or counterclockwise direction with the assistance of hysteroscope and laparoscope. X-ray images should also be used to help identify the IUD. In some cases, the IUD could migrate into the greater omentum, which makes it more difficult to iden-

tify the exact location of the IUD. In these cases, the patients should be placed in a head-low feet-high position, which could allow the greater omentum to move upward into the abdominal cavity and cause the upward movement of the IUD. Then dynamic X-ray images should be used to help identify the IUD.

There has been debate about whether an ectopic IUD must be removed. Most researchers believe that the migrated IUD could cause adhesion of the surrounding tissues and should be removed as early as possible after diagnosis. However, other researchers believe that ectopic IUDs do not need to be removed for patients without obvious symptoms [8-11]. In the present case report, although no obvious symptoms were found, the patient feared that dry stools could aggravate the effects of the migrated IUD on the rectum, and requested that the IUD be removed. Traditionally, laparotomy or operation through the posterior vaginal fornix is generally used. However, these operative methods only provide a limited surgical field, and increase the risk of intestinal adhesion, require a longer hospital stay, and lead to severe damage to the patients. In recent years, the development of laparoscopic technique has made it possible to remove the migrated IUD with the assistance of a laparoscope. Several researchers have performed a temporary colostomy following the removal of the incarcerated IUD in the sigmoid colon [12, 13], resulting in significant damage. In the present case report, part of the IUD in the perimetrium was removed first, then the adhesive serous layer of intestines was resected, and the remaining portion of the IUD was carefully removed. The patient recovered well after the incision was sutured.

In summary, as a minimally invasive technology which can help examination, diagnosis and treatment, surgery under the assistance of hysteroscope and laparoscope can facilitate the diagnosis and removal of ectopic IUD. It provides a wide and clear surgical field, helps with the division of adhesions and treatment of other complications, shortens operating time, reducing blood loss, accelerating postoperative recovery, and reduces the risk of developing complications with minimal trauma.

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