

## Original article

# Clinical Presentation, Diagnosis and Management of Intra-Abdominally Dislocated Intrauterine Devices

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**Abdomen içerisinde disloke olan intrauterin cihazların klinik prezentasyonu, tanısı ve yönetimi"**

## ÖZET

**Amaç:** Uterin perforasyon, intrauterin kontraseptif aletlerin en ciddi komplikasyonudur ve hayatı tehdit edici olabilir. Bu çalışmada intraabdominal olarak disloke olmuş intrauterin kontraseptif aletlerin klinik prezentasyonları, tanıları ve cerrahi tedavileri ile ilgili tecrübemizi rapor ediyoruz.

**Materyal ve Metot:** İntraabdominal olarak disloke olmuş intrauterin kontraseptif aletleri olan toplam 17 hasta retrospektif olarak incelendi. Hastaların tanıları jinekolojik muayene, transvajinal ultrasonografi ve abdominal X-ray ile konmuştu.

**Bulgular:** Jinekolojik muayene sırasında iplerin görüle-memesi perforasyonun ilk bulgusu idi. Sadece 3 hasta karın ağrısından şikayetçi idi. Aletlerin 12 tanesi sertifikalı aile hekimleri tarafından, 5 tanesi de jinekologlar tarafından yerleştirilmişti. Aletler bütün hastalarda laparaskopi ile başarılı bir şekilde çıkarıldı fakat 4 hastada kolonik defektlerin tamiri için laparotomiye geçildi.

**Sonuç:** Jinekolojik muayene sırasında intrauterin kontraseptif aletin ipi görülemezse, aletin lokalize edilmesi önemlidir. Histeroskopi ve ileri laparaskopi, perfore olan aletlerin tanısı ve tedavisine en uygun minimal invazif yaklaşımlardır.

**Anahtar Kelimeler:** Uterin perforasyon; intrauterin kontraseptif alet; laparaskopi

## ABSTRACT

**Background:** Uterine perforation is the most serious complication of intrauterine contraceptive devices (IUDs) and could be life threatening. We report on our experience in the clinical presentations, diagnosis and surgical treatment of patients with intraabdominally, dislocated IUDs.

**Materials and Methods:** A total of 17 patients with an IUD located intraabdominally were retrospectively analyzed. Diagnosis was based on gynecologic examination, transvaginal sonography, and abdominal X-ray.

**Results:** Missing strings during gynaecologic examination were the first sign of an expulsion. Only 3 patients complained of any abdominal pain. Twelve were inserted by general practitioners and five by specialist gynecologists. The successful removal of IUD was performed in all patients by laparoscopy, but four of the patients needed additional laparotomy to repair colonic defects.

**Conclusions:** If the string of the IUD is not observed during gynecologic examination, it is important to locate it. Hysteroscopy and advanced laparoscopy, are ideally suited minimally invasive techniques, to the diagnosis and surgical management of the perforated IUD.

**Key Words:** Uterine perforation; intrauterine contraceptive device; laparoscopy

## INTRODUCTION

The idea of placing a device into the uterus for contraception was first pronounced in 1900s. Since then, intrauterine devices (IUD), primarily in the form of the copper IUD, has been the most commonly used approach for reversible contraception. Because it is safe, long acting highly effective and economic<sup>1,2</sup>.

Although there are many advantages of IUD usage, it sometimes causes complications such as expulsion of the IUD, heavy bleeding, painful cramps, infection, insertion into the cervix or uterus<sup>3,4</sup>. Uterine perforation is a rare complication and seen at a rate of 1-2/1000 and could be life threatening<sup>5</sup>. 15% of such perforations lead to complications in the adjacent visceral organs, primarily the intestines and the bladder.

The risk of IUD perforation is affected by several factors including the type of IUD, uterine size and position, timing of the insertion in relation to the last delivery or abortion, and the experience of the operator<sup>6</sup>.

Transvaginal sonography combined with abdominal X-ray, is necessary to reach a definitive diagnosis. Laparoscopy is the method of choice for the treatment<sup>7</sup>.

## MATERIAL and METHODS

Between June 2005 and July 2010 fifty-six consecutive patients who reported with absent or snapped strings and failed attempts at removal of IUDs by hooks or curette were posted for hysteroscopy/laparoscopy following a plain X-ray of the pelvis. The IUD was extrauterine in 17 patients and incarcerated in the uterine cavity in the remaining 39 patients.

In this retrospective study seventeen patients with an IUD located intraabdominally and

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managed through laparoscopy and laparotomy were included into the study group. Patient data were collected from the written records and an electronic database. The demographic characteristics, complaints, duration of IUD use, hemoglobin (Hb), hematocrit (Hct), white blood cell (WBC), and sedimentation measurements, as well as the diagnostic methods and the surgical techniques used for each patient, were documented.

The local ethics committee of Dr. Zekai Tahir Burak Women Education and Research Hospital, Ankara, Turkey approved this retrospective descriptive cross sectional study. Statistical analysis was carried out by using Statistical Package for Social Sciences software (SPSS, version 11.5). Data were presented as mean±SD.

Descriptive statistics were performed for each variable and proportion is used to describe categorical and numerical variables.

## RESULTS

Over a 5 year period, 17 women had a translocated IUD removed from the peritoneal cavity under general anaesthesia.

The demographic data of the women are presented in Table 1. The mean age of the patients was 31.0 years (range 19-57). The mean time interval between insertion and diagnosis of translocation was 66.5 months (range 1-240). Each patient included in the study had a TCu-380A-type IUD. Nine women were asymptomatic at the time of diagnosis, four women had complained of excessive bleeding or missed periods, one was pregnant and 3 complained of pelvic pain.

**Table 1.** Demographic characteristics, hematological and infectious parameters of the seventeen patients with intra-abdominal IUD

|                          | Patients with intra-abdominal IUD (n=17) |
|--------------------------|------------------------------------------|
| Age (years)              | 31.0±10.7 (19-57)                        |
| Gravida                  | 2.6±2.0 (1-9)                            |
| Parity                   | 2.0±1.7 (1-8)                            |
| Duration of IUD (months) | 66.5±88.1 (1-240)                        |
| Hb                       | 13.1±0.9 (11.1-15.0)                     |
| Hct                      | 39.0±2.5 (34.2-44.0)                     |
| WBC                      | 7841.1±1661.7 (5600-11000)               |
| Sedimentation            | 17.8±14.9 (2-52)                         |

Values are expressed as mean ± SD, minimum and maximum values are also shown in all parameters

Missing strings during gynaecologic examination were the first sign of an expulsion. In 5 patients the translocated devices were palpated in the pouch of Douglas during gynaecologic examination, and 1 was located by ultrasound. Whereas additional X-ray performance was needed in 12 patients. Twelve were inserted by general practitioners and five by specialist gynecologists

either in the puerperal period (n=13) or within 1 year after puerperium (n=4).

For all patients the primary surgical approach was the laparoscopy. Laparoscopic examination of intra-abdominal IUD locations yielded the following results: eight were on/around the sigmoid colon; five were in the parametrium; and three were on the omentum. Four patients were diagnosed as having a perforated rectosigmoid bowel intraoperatively. In the remaining 13 cases, the IUD only migrated into the abdominal cavity without any organ perforations. Lysis of peritoneal adhesions was undertaken in only two cases with a history of previous Caesarean section.

The successful removal of the IUD was performed in all patients by laparoscopy, but four of the patients required additional laparotomy to repair colonic defects. In two cases colon resection was performed due to defect formation during IUD removal, and also the colonic serosa repair was needed in two other patients. Thirteen other women completed the surgery without any complication. The postoperative course was uneventful in all patients.

## DISCUSSION

Uterine perforation is the most serious complication of IUDs and could be life threatening<sup>8</sup>. There were more than 5 cases in which death occurred in relation to uterine perforation by IUD<sup>7</sup>.

The diagnosis is made when the absence of the string at the cervix is noted at routine gynecologic examination, and may be proved by radiological examination of the uterine cavity. The most common reported places for this migration were the omentum, rectosigmoid colon, peritoneum, and bladder. Other rare places were the appendix, small intestine, adnexes, iliac veins, secum, perirectal fat, retroperitoneal space, Douglas pouch and ovaries<sup>9-12</sup>.

The primary rupture of the uterus has been reported at the time of IUD insertion; however, the secondary or delayed rupture is more common and seems to be due to the spasms of the uterus<sup>13</sup>.

Various factors responsible for uterine perforation by IUDs; the most important are the consistency and flexion of the uterus (immobile, fixed, or retroverted uterus, and cervical problems), the type and the rigidity of the IUD and its inserter, early puerperal insertion (within 12 weeks of delivery) the experience of the clinician and the amount of force exerted at insertion, with the result that the IUD stops at a certain point rather than proceeding to complete perforation<sup>7,8</sup>.

Symptoms of perforation are generally non-specific. The suspicion of a perforating IUD should

arise when patients present with abdominal pain, diarrhea, and fever accompanied by missing IUD strings and no detection of the IUD in the uterine cavity by a transvaginal ultrasound scan. Upon perforation into an adjacent organ, symptoms may present as acute inflammation of the perforated organ<sup>12</sup>. Once the string of an IUD is missing, it is important to locate it. In our study, even with an intra-abdominal location, most of the patients were free from any kind of complaint. The laboratory measurements of infective markers did not support the presence of inflammation or infection. These results may be explained by the substantial time it takes for the IUD to travel from the uterus into the abdominal cavity. While this process would not trigger an acute event, a misinserted IUD might be moved from the myometrium into the abdomen via chronic uterine contractions<sup>13</sup>.

Laparoscopy is still the method most used to diagnose uterine IUD perforation<sup>14</sup>. Laparoscopy was the preferred surgical approach in our study also and was sufficient to visualize the IUD and led to 100% success with IUD removal. Since laparotomy is accompanied by more scarring, and longer hospitalization, and has a more limited view during the operation, laparoscopy has now become the method of choice for the treatment. Injury to the intestine needing repair and sepsis have been considered as the contraindications for laparoscopy<sup>15</sup>.

Most of the authors and World Health Organisation recommend removal of the copper IUD by laparoscopy in case of migration, because inflammatory responses can cause intestinal obstruction and visceral perforation<sup>16,17</sup>. Adhesion formation was also observed in our study, but all of adhesions except for the ones located on or in

the colonic tissue were firmly positioned. However recently conservative management of mislocated IUDs has also been suggested<sup>18</sup>. Adoni et al. concluded that removal of an intra-abdominal IUD was not necessary because of the minimal risk of developing intra-abdominal defects caused by the presence of the IUD<sup>19</sup>.

The best prevention of uterine perforation is a meticulous and well executed insertion technique, done only by an experienced operator and after a careful pelvic examination. Uterine size, consistency and position must be exactly known; IUD insertion is easier during or immediately after menstruation.

Persons who insert IUDs should receive adequate training before certification, because inadequate pelvic examination before insertion and inexperience of the inserting person might be predisposing factors for uterine perforation. If IUD strings are not visible during gynecologic examination, USG should be tried to locate the IUD and pelvic X-ray used only when USG fails to locate the IUD. Laparoscopy can be the first choice for removal<sup>15</sup>.

In conclusion, intraabdominal dislocation of IUD is a rare complication and may be diagnosed years after insertion. It may not be a worrisome condition because most of the patients carried this foreign body for a long time without symptoms. If the string of the IUD is not observed during gynecologic examination, it must be located precisely, and should be removed even if considered innocuous, although this is a matter still debated by the specialists

However, our advice is based only on our limited experience and should be supported through multi-centre studies.

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