CLINICAL VIGNETTE

Exercise Induced Hematuria Due to a Wayward Intrauterine Device

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A 42-year-old female presented to the office with the complaint of blood in her urine whenever she walked for exercise for more than 30 minutes. She also reported a pressure sensation in her bladder and pain at the end of urination. There was no relationship of this hematuria to her menstrual cycle. She did not have a history of frequent urinary tract infections or of kidney stones. She had no fever or other systemic complaints. She had already sought care from another physician who had prescribed a recent 7-day course of the antibiotic levofloxacin.

On physical examination, her vital signs were temperature of 97.3; blood pressure of 108/72; heart rate of 68/minute; and respiratory rate of 16/minute. She was in no distress, and examination of the heart, lungs and abdomen was within normal limits. The uterus was enlarged on bimanual pelvic examination and fibroids were suspected.

The patient was advised to increase her fluid intake and obtain an ultrasound of the pelvic organs as well as of the kidneys, ureters and bladder. A urine specimen was sent for urinalysis and culture.

The patient returned for a follow-up visit one month later. She had stopped exercising because of the hematuria and was complaining of weight gain. Her urine culture from the first visit was negative. The ultrasound testing had not yet been done. She thought that her new intrauterine device (IUD) was giving her some problems. She had had an IUD for many years and she guessed it had fallen out by itself, although she never had actually seen it or recovered it. Her new Mirena IUD had been placed by her gynecologist about 4 months previously to help improve her heavy periods. Examination that day revealed minimal suprapubic tenderness.

Ultrasound testing was finally accomplished. The kidneys and ureters were unremarkable. An intramural fibroid was noted in the uterus, which contained an IUD. However, there was a peculiar linear filling defect in the bladder. The radiologist, questioning whether there had been a prior intervention or procedure, described the filling defect as possibly artificial or representing retained blood products. Cystoscopy was recommended.

After urologic consultation, the patient had a CT urogram study performed. An IUD was again noted inside the uterus. A second IUD was also noted in the urinary bladder. The tip of the “T” was projecting into the left anterolateral bladder dome. During a cystoscopic procedure, the urologist was able to remove this IUD which was seen projecting from the posterior bladder wall.

Worldwide since 1965 the IUD has been increasing in usage as a method of contraception. It is estimated that the number of users is 110 million. It is less popular, however, in the United States of America than in other countries due to concern about side effects and complications. Elsewhere it is considered to be a reversible, relatively reliable, fairly safe, low cost, convenient, and long-term method of birth control[1-6].

Most IUDs are inserted by non-physician specially trained nurse practitioners or other health care personnel. Current IUDs are either copper or hormone containing.

Complications of IUDs can be short term or delayed for many years. Complications include irregular vaginal bleeding, heavy periods, dysmenorrhea, pelvic pain, abdominal pain, dysuria, increased risk of spontaneous abortion and of pelvic inflammatory disease in the presence of STDs, colonization by Actinomyces bacteria (usually asymptomatic, but may progress to infection), accidental pregnancy, ectopic pregnancy, spontaneous expulsion of the IUD and perforation. Pelvic inflammatory disease is estimated to be 2-4 times more common in IUD users[1, 7-10].

The risk of perforation of the uterus is uncommon and has been estimated as between 0.05-13 per 1000 of IUD insertions[1]. The actual risk of perforation is probably higher as many patients remain asymptomatic and may never come to medical attention[11].

Most perforations are immediate, occurring at the time of insertion. A perforation may be partial; the IUD may become embedded in the uterine wall, endocervical canal, or cervix. Delayed perforations may develop from gradual erosion of the uterine wall and transmigration to other locations. Long-term perforations have been reported after many years (18 or more). Both immediate and delayed perforations may remain asymptomatic[7,8,11-13].

The risk of perforation correlates with the expertise of the health care inserter; various uterine factors including the presence of fibroids, cervical canal stenosis, uterine scarring, and nulliparity; possibly recent pregnancy or abortion; if a patient undergoes labor with an IUD in place; and during lactation. Perforation risk is higher in women who have a history of pelvic inflammatory disease, cervical or uterine malignancy, and ectopic pregnancy[1,3,7,14,15].

Signs and symptoms include bleeding, pain, urinary symptoms, infection, fever, chills, nausea and vomiting and acute abdomen and peritoneal symptoms. Peritoneal symptoms are more common if the uterine rupture has occurred during or soon after placement. Symptoms of fever, intermittent diarrhea, and abdominal pain in the setting of a misplaced IUD are suggestive of bowel injury[2]. A migrating IUD can lead to adhesions, fistula formation, bowel obstruction and obstructive nephropathy[8].

The various signs and symptoms of uterine perforation depend upon the site to where the IUD has migrated. The literature reports numerous possibilities including adjacent to the uterus and the Pouch of Douglas; free floating in the peritoneal cavity (80% of perforations); the retroperitoneum; the subdiaphragmatic space; the ovary and adnexa; the intestines including the cecum, rectum, colon, small bowel and appendix (and this can cause appendicitis); the omentum; iliac veins; anterior abdominal wall; and bladder[1,3,8,16,17].

Perforation of the urinary bladder by an IUD occurs rarely[14]. As of 2008 there have been about 80 cases of perforation of the bladder by an IUD reported[18]. Symptoms can include urinary frequency, dysuria, hematuria, incontinence, recurrent urinary tract infections,

pelvic pain, menouria, vaginal discharge and bladder stones. (Bladder stones are more common in male patients; a bladder stone in a female patient may represent the presence of a foreign body). An IUD in the urinary bladder can act as a nidus for stone formation[7-9,19-22].

In diagnosing a misplaced IUD the most important finding on physical examination is a missing IUD string. This can occur with expulsion of an IUD, either known by the patient or unrecognized. Or, a missing string could actually be curled up in the endocervical canal. Even if the string is still visible an IUD could be mispositioned too low in the uterus or partially embedded in the uterus or endocervical canal[1, 2,13]. A gynecologist may be able to extricate a curled up string and leave it in a visible position, and ultrasound can be used to determine if an IUD is inside the uterus and if it is in the correct position. Also raising suspicion of a lost or misplaced IUD is the finding of an unexpected pregnancy, although pregnancies have been reported with an IUD still inside the uterus.

Ultrasound and plain x-rays of the abdomen and pelvis can be used to determine the location of a migrated IUD[1]. The IUDs in current use are radio-opaque. CT% or MRI scans are usually not required; an MRI scan for a copper containing IUD is felt to be safe[1,23].

Recommended treatment for a migrated IUD, even if asymptomatic, is usually removal of the IUD. This is to prevent possible complications such as infection, peritonitis, abscess formation, organ injury, the development of adhesions, and fistula formation. Fatalities have been reported due to intestinal obstruction and sepsis[5,7,9,12,24].

Complications of bladder perforation include vesicouterine fistula, vesicoenteric fistula, ureteral obstruction, hydrouereter, ureteronephrolithiasis and bladder stones[7,25].

The patient should be referred to the necessary specialist or surgeon indicated by the location of the errant IUD. Various methods are used to remove such an IUD including hysteroscopy, cystoscopy, colonoscopy, laparoscopy, cystotomy, and laparotomy[1,2,9,16].

Our patient's IUD was found in her bladder more than ten years after original placement; it must have perforated both her uterine and bladder walls during that time. It is unknown how long it may have remained in her bladder before causing the hematuria. The blood in her urine with exercise resolved following the removal of the bladder IUD. The patient still has the uterine IUD and is satisfied with it as a method of contraception and control of heavy periods.

Conclusion

Perforation of the uterus is an uncommon complication of an IUD. The patient may be asymptomatic or have abdomino-pelvic complaints such as fever, infection, bleeding and pain. The primary care physician should emphasize to the patient the importance of checking monthly for the presence of her IUD string and to report immediately if unable to find it[4,8,12]. A first gynecologic exam should be done six weeks after IUD placement and then at least yearly[3,5]. If the string is missing or if she becomes pregnant, prompt diagnostic efforts tailored to the situation should ensue. The location of the IUD can often be determined by plain xray films and ultrasound. The ectopic IUD should then be removed by the appropriate gynecology or surgical specialist.

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