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Case Report

A ruptured ectopic pregnancy in a patient with an intrauterine device: A case report ^{☆,☆☆}

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ABSTRACT

Intrauterine devices (IUDs) are used worldwide. The 2 types that are used are the levonorgestrel IUD and a copper containing IUD. This is a case study of a 30-year-old female with a levonorgestrel IUD who was diagnosed with a ruptured ectopic pregnancy in the emergency department (ED). Point-of-care urine pregnancy test and point-of-care ultrasound (POCUS) were vital in making this diagnosis and should be utilized in patients assigned female at birth who present with abdominal pain.

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Introduction

Intrauterine devices (IUDs) are one of the most effective forms of birth control available today [1]. Two types of IUDs are used, a copper-containing IUD, and a levonorgestrel-containing IUD. They are both effective against preventing pregnancy 99% of the time whether it be an intrauterine pregnancy or an ectopic pregnancy [1]. The IUDs, however, still have a small percent of device failure that can lead to a pregnancy with the device in place [2]. The levonorgestrel IUD has about a 0.2% chance of pregnancy 1 year after device placement, and the Cooper IUD

has a slightly higher failure of about 0.8%; with this in mind, it is quite rare for a person to have a pregnancy while an IUD is in place [3]. This case report discusses a 30-year-old female who presented to the Emergency Department (ED) with abdominal pain and vaginal bleeding that had an IUD and was diagnosed with a ruptured ectopic pregnancy.

Case report

A 30-year-old female who had 2 prior full-term pregnancies presented to the ED for non-radiating, lower abdominal pain

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for the prior week that was worsening. The patient reported that the pain started with no precipitating event, and she described it as sharp, and aching. She also reported intermittent lightheadedness and intermittent vaginal bleeding for the past 3 weeks. She had not had any periods since her IUD (the levonorgestrel-releasing Intrauterine system) was placed 2 years prior. The patient denied any vaginal discharge or prior history of sexually transmitted diseases. She reported being sexually active with her husband. The patient denied fevers, chills, chest pain, shortness of breath, diarrhea, or constipation. The patient also denied dysuria, hematuria, frequency, or urgency.

Prior to arrival in the ED, the patient was seen by her obstetrician and gynecologist (OB/GYN) about 3 months earlier in the office due to her inability to find her IUD string. At that visit, an ultrasound was ordered, and confirmed that the IUD was in the correct position. Of note, the patient also went to her OB/GYN's office 3 days prior to arrival in the ED complaining of abdominal pain and vaginal bleeding. On pelvic exam at that appointment, the providers were unable to see the IUD string, and scheduled a repeat ultrasound. Upon ED arrival, she had not had these images done.

On physical exam in the ED, the patient had abdominal tenderness in the right lower quadrant, and suprapubic area. There was no guarding or rebound. There was no costovertebral angle tenderness. The patient's initial vital signs were blood pressure 99/62 mm hg, pulse 99/minute, temperature 98.4°F temporal, respiratory rate 16/minute, and oxygen saturation of 99%.

The patient's point-of-care urine pregnancy test was positive. Formal ultrasounds and lab work were ordered for this patient. While labs were in process, the patient's heart rate began to rise, initially up to 110/minute and later in her ED stay, to 130/minute. Her blood pressures were still within normal range. One liter of normal saline was ordered as an intravenous (IV) bolus. A quick point-of-care bedside ultrasound (POCUS) in the ED was performed, and it showed free fluid in the pelvis (Fig. 1). The on-call obstetrics and/or gynecology team was consulted. A large, heterogeneous mass within the right adnexa was found concerning for a ruptured ectopic pregnancy (Fig. 2). The intrauterine device was noted to be within the expected endometrial canal.

The patient was then taken to the operating room (OR) for a diagnostic laparoscopy. In the OR, there was evacuation of hemoperitoneum, right salpingectomy, and removal of the IUD. The findings in the OR were a ruptured right ectopic pregnancy, 100ml hemoperitoneum, and filmy adhesions to the bowel to the right pelvic side wall. The uterus was normal as was the bilateral ovaries and left fallopian tube. The IUD was in the correct position prior to removal. The patient remained in the hospital for a few hours and was discharged home with outpatient follow up. The patient had no further complications postoperatively.

Discussion

Ectopic pregnancies are an important diagnosis because of the high morbidity and mortality rates [4]. Ectopic pregnancy is

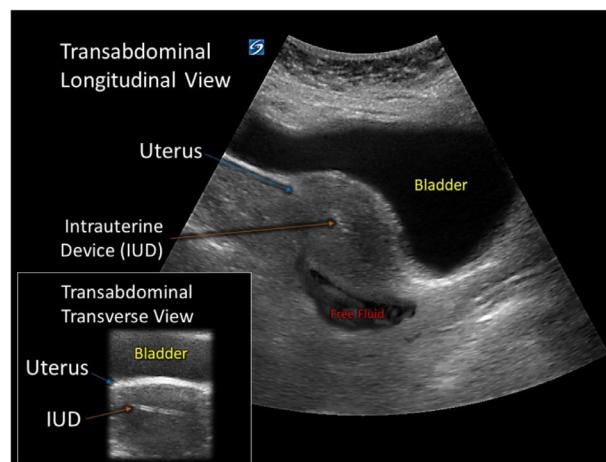


Fig. 1 – This is a transabdominal longitudinal view and a transabdominal transverse view using ultrasound. This shows the uterus and bladder with free fluid in the pelvis. The IUD is also shown.

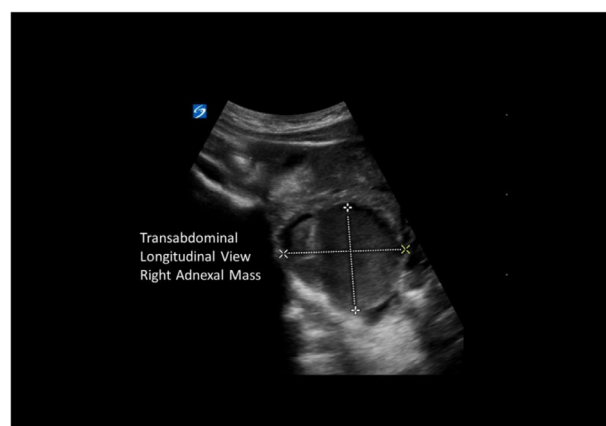


Fig. 2 – This image is the right adnexa in the transabdominal longitudinal view on ultrasound. It depicts a large heterogeneous mass in the right adnexa. Concern for ruptured ectopic pregnancy.

when the fertilized ovum implants outside of the uterine cavity, and the prevalence of this disease is about 1%-2% in the United States [5]. Ruptured ectopic pregnancies, which is the feared complication of ectopic pregnancies, can lead to hemodynamic instability, and death; ectopic pregnancies account for 2.7% of pregnancy related deaths [5]. Therefore, it is important to effectively diagnosis, and treat this disease process. In the case described, the patient was diagnosed with a ruptured ectopic pregnancy. Fortunately, her diagnosis was made quickly, and she was taken to the OR for definitive care.

This case in particular, brings to light the importance of utilizing bedside tests like urine pregnancy, and POCUS in the ED to help combat the potential anchoring bias when considering patients with abdominal pain that have IUDs. Anchoring bias, or the tendency to rely too heavily on an initial piece of information presented when making decisions, can lead to

inappropriate clinical assessments [6]. Physicians know that IUD pregnancies are rare; therefore, the ectopic pregnancy diagnosis is sometimes placed lower on the differential diagnosis; however, IUDs are a risk factor for ectopic pregnancies, and this diagnosis should always be considered when appropriate [5]. Importantly, while the levonorgestrel containing device has only about a 2% chance of pregnancy at 1 year after device placement, the device, if placed longer than 5-7 years, has an associated increasing risk of pregnancy due to device failure [7].

Another point to discuss is IUD migration. One of the reasons an IUD will not work as effectively at preventing pregnancy is if the device moves out of position [8]. There are many different ways this can happen. The IUD can get expelled from the uterus, can become displaced inside the uterine cavity, can migrate outside of the intrauterine cavity, can migrate into the abdominal cavity, can get embedded in the myometrium or endometrium, and lastly, the IUD could perforate through the uterus [9]. Some of these complications, like expulsion (10% of patients with an IUD), displacement (25% of patients with an IUD), and the IUD becoming embedded (18% of patients with an IUD) happen quite often, while perforation, and migration outside of the uterus are rare [9].

With this in mind, any of these complications can lead to a patient becoming pregnant while using an IUD, and the risk of that being an ectopic pregnancy becomes close to 50% [7]. A possible future research project could study anchoring bias in cases of IUD pregnancies in multiple emergency departments, urgent cares, and outpatient offices. IUD migration was considered in the differential initially for this patient since she was unable to find her IUD string and was having abdominal pain with vaginal spotting. Ultrasound is the mainstay for confirming placement, and having this imaging done confirmed the placement of her device [9].

Conclusions

It is important to consider pregnancy on the differential in patients of reproductive age with abdominal pain. It is imperative to acknowledge that patients with an IUD can become pregnant, and if they do, there is a substantial risk that the pregnancy could be ectopic. Authors stress the importance of

pregnancy tests and early utilization of POCUS in physician evaluation.

Patient consent

No identifying information in the text or image appears in this case report so while patient consent was waived per institutional IRB rules, the patient did consent to this publication and has seen a draft of the original submission.

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