



# Visual Diagnosis in Emergency Medicine

## ECTOPIC PREGNANCY DIAGNOSED BY FAST EXAMINATION IN THE SETTING OF INTRAUTERINE DEVICE USE

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### CASE PRESENTATION

A healthy 36-year-old woman presented with onset of pelvic pain that began about 8 h prior to arrival in the emergency department (ED). She described the pain as cramping but intermittently sharp. It was throughout her pelvis and made worse with movement. The patient had no reported medical or surgical history. On initial evaluation, the patient's vital signs included a blood pressure of 122/78 mm/Hg and a heart rate of 76 beats/min. Remaining vital signs were unremarkable. The patient appeared uncomfortable but was not in severe distress. She had tenderness to palpation in both her left and right lower quadrants without rebound or guarding. Laboratory tests had not yet resulted at the time of initial evaluation, though initial findings when reported included a hemoglobin level of 10.5 g/dL and a normal serum chemistry panel. A bedside focused assessment with sonography in trauma (FAST) examination was performed and showed free fluid in the right upper quadrant (Figure 1), as well as an intrauterine device (IUD) in place in the uterus (Figure 2).

Shortly after the FAST examination was completed, the patient's pregnancy test resulted as positive. The

gynecology team was consulted for presumed ruptured ectopic pregnancy. At the request of the consulting team, a radiology-performed transvaginal ultrasound was obtained at the bedside in the ED, which confirmed the diagnosis of ruptured ectopic pregnancy. The patient remained clinically stable in the ED, then was subsequently transported to the operating room, where she underwent right salpingectomy, removal of ectopic pregnancy, and evacuation of nearly 2 L of blood from the peritoneal cavity. The patient was discharged later the same day, without complication.

### DISCUSSION

Emergency clinicians play a key role in diagnosing ectopic pregnancy, as pregnant patients presenting to the ED in the first trimester with vaginal bleeding or abdominal or pelvic pain have a rate of ectopic pregnancy as high as 18% (1). According to the Centers for Disease Control and Prevention, 8% of women aged 14–55 years use some form of long-acting reversible contraceptives, including IUD (2). An estimated 53% of pregnancies in patients with IUDs are ectopic in location (1). Copper IUDs are associated with a higher rate of ectopic pregnancy compared with levonorgestrel-releasing IUDs, likely due to the higher overall rate of pregnancy associated with copper IUDs (3).

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**Figure 1.** Right upper quadrant (RUQ)/Morison's pouch view obtained by screening bedside ultrasound. Free fluid (indicated by arrow) noted between liver (^) and right kidney (\*).

Ectopic pregnancy is a high-risk diagnostic consideration for emergency clinicians and gynecologists alike, and accounts for 2.7% of all pregnancy-related deaths (1). The case presented demonstrates the importance of maintaining a high level of suspicion for ectopic pregnancy as a cause of abdominal pain in all reproductive-aged women. The presentation prompted early evaluation for ectopic pregnancy based on the findings of an IUD, free fluid, pelvic pain, and degree of patient discomfort.

Previous ED-based studies have demonstrated that pregnancy-focused bedside ultrasound may aid in the diagnosis of ruptured ectopic pregnancy. One retrospective study found that patients with a confirmed diagnosis of ruptured ectopic pregnancy received a diagnosis over 2 h earlier than patients who had a radiology-performed pelvic ultrasound (4). Similarly, another study prospectively enrolled patients with suspected ectopic pregnancy and found that free fluid in Morison's pouch seen on bedside, point of care ultrasound (POCUS) predicted the need for operative intervention (5).

This case illustrates the effective use of bedside POCUS—FAST examination in particular—to expedite care for a selected high-risk patient in the emergency care setting. The use of POCUS assisted in rapidly prioritizing the approach to a patient that may have otherwise occurred with less urgency. It is prudent for emergency



**Figure 2.** Suprapubic view obtained by screening bedside ultrasound. Complex free fluid (arrow) noted behind the uterus (\*). Intrauterine device is identified as the hyperechoic line within the uterus (marked on either side by < and >).

clinicians to maintain vigilance for the possibility of ectopic pregnancy, particularly in the setting of an identified IUD with or without the finding of intraperitoneal fluid. The identification of these findings renders further evaluation, including results of pregnancy testing, that much more urgent.

## REFERENCES

1. The American College of Obstetricians and Gynecologists (ACOG). Tubal ectopic pregnancy. ACOG practice bulletin: clinical management guidelines for obstetricians and gynecologists (March 2018). Available at: <https://www.acog.org/Clinical-Guidance-and-Publications/Practice-Bulletins/Committee-on-Practice-Bulletins-Gynecology/Tubal-Ectopic-Pregnancy>. Accessed July 2, 2019.
2. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics. Contraceptive use (U.S.; 2016). Available at: <https://www.cdc.gov/nchs/fastats/contraceptive.htm>. Accessed July 2, 2019.
3. Heinemann K, Reed S, Moehner S, Minh TD. Comparative contraceptive effectiveness of levonorgestrel-releasing and copper intrauterine devices: the European Active Surveillance Study for Intrauterine Devices. *Contraception* 2015;91:280–3.
4. Rodgers JD, Heegaard WG, Plummer D, Hicks J, Clinton J, Sterner S. Emergency department right upper quadrant ultrasound is associated with a reduced time to diagnosis and treatment of ruptured ectopic pregnancies. *Acad Emerg Med* 2001;8:331–6.
5. Moore C, Todd WM, O'Brien E, Lin H. Free fluid in Morison's pouch on bedside ultrasound predicts need for operative intervention in suspected ectopic pregnancy. *Acad Emerg Med* 2007;14:755–8.