EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

Author: Alexis Damish | Editor: Rita Zeidan DO PGY3

January 2020 | Vol 7 | Issue 1

Ovarian Torsion

A 35-year-old woman undergoing ovulation induction for in vitro fertilization (IVF) presents to the ER for lower abdominal pain that began earlier this morning. The pain is located in the right lower quadrant and radiates across the lower abdomen. She admits to mild nausea, and states she vomited once this morning. She is unsure of her LMP, as she was diagnosed with PCOS several years ago and does not have regular periods. She denies any fever, vaginal bleeding, or changes in bowel function. On physical exam the patient appears in moderate distress, and has marked abdominal tenderness throughout the lower abdomen without rebound or guarding. There are no palpable masses in her abdomen. Except for a heart rate of 101 and a mildly elevated blood pressure, vital signs are within normal limits. The remainder of the physical exam is unremarkable. What is the best initial management for this patient?

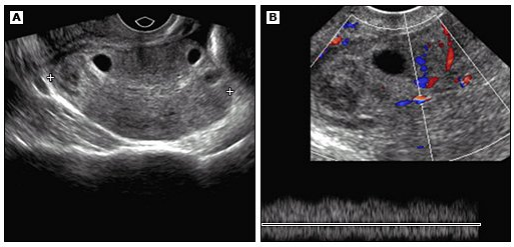
A. Transabdominal ultrasound

B. Transabdominal and transvaginal ultrasound

C. CT scan of the abdomen/pelvis with contrast

D. Qualitative and quantitative serum HCG

E. Page the on-call OBGYN and run away



Ovarian torsion occurs when the ovary rotates on its pedicle around the infundibulopelvic ligament (IP) and/or the utero-ovarian ligament. This rotation compromises the patency of the IP, causing collapse of the thin walled ovarian vein that runs within it. The loss of venous outflow to the ovary results in edema, enlargement, infarction, and necrosis of ovarian tissue.

Images courtesy of UpToDate
(A) Right ovary, edematous and enlarged to 7cm, shown via transvaginal ultrasound.
(B) Normal arterial and venous flow to the right ovary shown via color Doppler.

EM Case of the Week is a weekly "pop quiz" for ED staff.

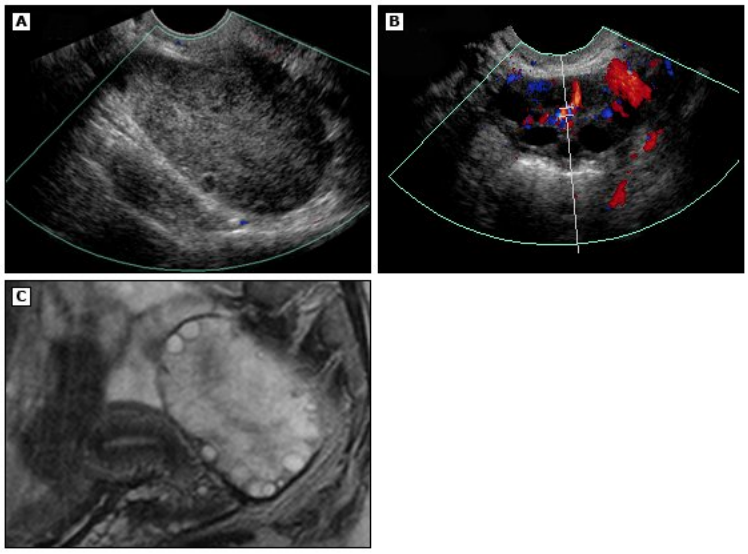
The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

Department of Emergency Medicine
1625 SE 3rd Avenue
Fort Lauderdale, FL 33316

Correct answer: **B. Transabdominal and transvaginal ultrasound**

Ovarian torsion is a surgical emergency that results when the ovary rotates around one of its structural support ligaments in the pelvis. The IP, also known as the suspensory ligament of the ovary, contains the ovarian artery, vein, and lymphatic vessels. Constriction of this ligament most often results in compression of the ovarian vein, causing edema, ovarian enlargement, and infarction and necrosis of ovarian tissue. If unrecognized, ovarian torsion can progress to hemorrhage, peritonitis, adhesion formation, and sepsis [3]. Ovarian torsion can occur in normal ovaries in patients of any age, however it is most commonly seen in reproductive aged females with any ovarian mass causing ovarian instability, or an ovarian diameter greater than 5 cm. Common predisposing factors include pregnancy, use of assisted reproductive technologies (ART), ovarian cysts, ovarian neoplasms, and even PCOS. Approximately 2.7% of emergent surgeries will involve an ovarian torsion [4], and more than 80% of patients with torsion have a pelvic mass larger than 5 cm [2].



Images courtesy of UpToDate
(A) Right ovarian torsion shown via color Doppler ultrasound
(B) Normal left ovary with blood flow (Doppler)
(C) MRI of right ovary showing ovarian enlargement with peripheral cysts

Diagnosis

Definitive diagnosis of ovarian torsion can only be made by visualization of the torsed ovary during surgical exploration. However, ultrasound is a noninvasive first-line test employed in the setting of a convincing clinical vignette. Yet it is important to note that negative ultrasound findings cannot exclude ovarian torsion [3], and physician gestalt should always be a driving factor in diagnosis. A thorough and complete history and physical exam are key to catching a torsion; the majority of patients will present with acute-onset pelvic pain, an adnexal mass, and/or fever, nausea, and vomiting. In the reproductive-aged female population it is also necessary to exclude other serious conditions, such as ectopic pregnancy and tubo-ovarian abscess [3]. Though much less common, children and pre-pubertal females can also experience ovarian torsion, and in this population it is important to exclude appendicitis as a cause of lower abdominal pain. Finally, every patient with suspected torsion should be tested for a baseline hemoglobin and hematocrit, white blood cell count, electrolyte panel, and serum HCG level upon presentation to the ED [1].

Treatment

Patients with suspected ovarian torsion should receive intravenous fluids and appropriate pain medications while in the ED. The definitive treatment for ovarian torsion is surgical, whether performed via laparoscopy or laparotomy is at the discretion of the surgeon and dependent on the stability of the patient. Some studies have reported that in as high as 80% of patients, early diagnosis of ovarian torsion can be treated with surgical detorsion or cystectomy alone and lead to viable ovarian function [2]. Unstable patients, postmenopausal women, or a delayed diagnosis may result in need for salpingo-oophrectomy (SO). However, studies have shown that unilateral SO does not decrease a woman's future fertility, and patients desiring future pregnancy should be reassured [3].

Warriors

BROWARD HEALTH MEDICAL CENTER

Pelvic causes of abdominal pain in women

Pelvic causes of abdominal pain in women	Lateralization	Clinical features	Comments
Ectopic pregnancy	Either side or diffuse abdominal pain	Vaginal bleeding with abdominal pain, typically six to eight weeks after last menstrual period.	Patients can present with life-threatening hemorrhage if ruptured.
Pelvic inflammatory disease	Lateralization uncommon	Characterized by the acute onset of lower abdominal or pelvic pain, pelvic organ tenderness, and evidence of inflammation of the genital tract. Often associated with cervical discharge.	Wide spectrum of clinical presentations.
Ovarian torsion	Localized to one side	Acute onset of moderate-to-severe pelvic pain, often with nausea and possibly vomiting, in a woman with an adnexal mass.	Generally not associated with vaginal discharge.
Ruptured ovarian cyst	Localized to one side	Sudden-onset unilateral lower abdominal pain. The classic presentation is sudden onset of severe focal lower quadrant pain following sexual intercourse.	Generally not associated with vaginal discharge.
Endometriosis		Associated with dysmenorrhea, pelvic pain, dyspareunia, and/or infertility, but other symptoms may also be present (eg, bowel or bladder symptoms).	Patients may present with one symptom or a combination of symptoms.
Acute endometritis		Most often preceded by pelvic inflammatory disease.	Diagnostic criteria the same as pelvic inflammatory disease.
Chronic endometritis		Present with abnormal uterine bleeding, which may consist of intermenstrual bleeding, spotting, postcoital bleeding, menorrhagia, or amenorrhea. Vague, crampy lower abdominal pain accompanies the bleeding or may occur alone.	
Leiomyomas (fibroids)		Symptoms related to bulk or infrequently acute pain from degeneration or torsion of pedunculate tumor. Pain may be associated with a low-grade fever, uterine tenderness on palpation, elevated white blood cell count, or peritoneal signs.	
Ovarian hyperstimulation		Abdominal distention/discomfort, nausea/vomiting, and diarrhea. More severe cases can have severe abdominal pain, ascites, intractable nausea, and vomiting.	Women undergoing fertility treatment.
Ovarian cancer		Abdominal or pelvic pain. May have associated symptoms of bloating, urinary urgency or frequency, or difficulty eating/feeling full quickly.	
Ovulatory pain (Mittelsmerz)		Occurs mid-cycle, coinciding with timing of ovulation.	May be right- or left-sided, depending on site of ovulation during that cycle.
Pregnancy and related complications*			

* Refer to the UpToDate topics on abdominal pain.

UpToDate®

Most likely to present to the ED

ABOUT THE AUTHOR

This case was written by Alexis Damish. Alexis is a 4th year medical student at NSU-KPCOM. She completed her emergency medicine rotation at BHMC in February 2020. Alexis plans on pursuing a career in Obstetrics and Gynecology after graduation.

Take Home Points

- ✓ While there are many causes of abdominal pain in females, ovarian torsion is a surgical emergency that must be ruled out in a female of any age with acute-onset abdominal pain and tenderness (+/- nausea and vomiting)
- ✓ Ultraasound imaging with color Doppler is a quick and specific way to diagnose ovarian torsion but does not replace the importance of a thorough history and physical exam
- ✓ Definitive treatment for ovarian torsion is surgical detorsion or unilateral salpingo-oophrectomy; the extent of surgery required is directly proportional to the time taken to diagnose the patient!

REFERENCES

1. UpToDate: Ovarian torsion Pathogenesis/Clinical Presentation/Diagnosis/Surgical Evaluation
2. Huang C, Hong MK, Ding DC. A review of ovary torsion. Ci Ji Yi Xue Za Zhi. 2017;29(3):143–147. doi:10.4103/tcmj.tcmj_55_17
3. American College of Obstetricians and Gynecologists: *Evaluation and management of adnexal masses (2018)* Practice Bulletin
4. Adnexal torsion. HIbbard LT. Am J Obstet Gynecol. 1985;152(4):456.