Adnexal Torsion Diagnosis Requires a High Index of Suspicion

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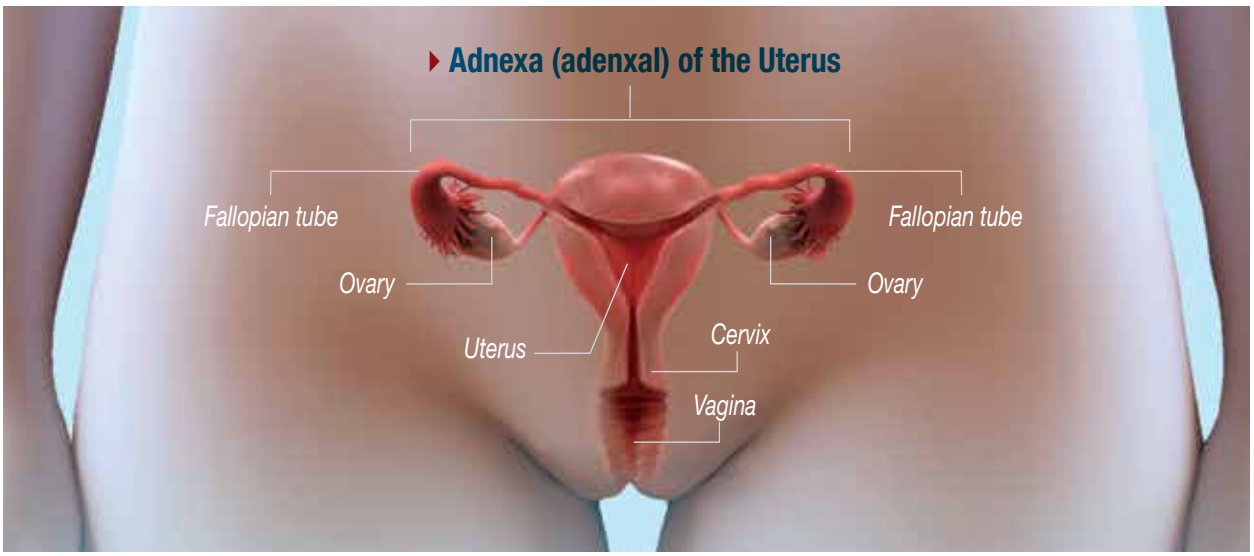
Adnexal torsion, the twisting of the ovary and sometimes the fallopian tube, is an emergency often difficult to recognize and diagnose preoperatively. However, it is relatively easy to correct surgically. Having a high index of suspension is vital in recognizing the condition, leading to earlier surgical intervention and better chances of preserving ovarian and tubal function.

Adnexal torsion is uncommon with an incidence of 4.9/100,000 females less than 20 years of age. Torsion can happen at any age, but it is most commonly seen between the ages of 9 and 14 years. Adnexal torsion first results in obstruction of venous flow, leading to an enlarged, edematous ovary. If the torsion persists, arterial flow as well can be diminished or obstructed leading to ischemia and necrosis.

Diagnosis



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Adnexal torsion occurs when the ovary, tube or both become twisted. Two-thirds of cases involve both tube and ovary, but isolated ovarian and tubal torsion can happen as well.

Completely normal tubes and ovaries can torse, however, risk factors include:

- Younger age
- Previous torsion
- Ovarian cysts or neoplasms
- Paratubal cysts
- Hydrosalpinx

The most common symptom associated with torsion is a sudden onset of lower abdominal pain, usually unilateral and most commonly on the right side. Because of peritoneal irritation, patients will also commonly complain of nausea/vomiting, flank pain and anorexia.

Many girls with right lower quadrant pain, anorexia and nausea/vomiting often are evaluated first for appendicitis. Other diagnoses to consider with this presentation include ruptured hemorrhagic corpus luteal cyst, kidney stone, pelvic inflammatory disease, ectopic pregnancy and gastroenteritis.

On physical examination, patients may have the following:

- Slight temperature elevation and/or tachycardia
- Abdominal tenderness and possibly rebound and/or guarding
- General appearance of being unwell
- Upon pelvic examination (if appropriate), adnexal fullness and tenderness

A pregnancy test and complete blood count (CBC) are helpful in the clinical assessment, but they are not necessarily diagnostic. Most patients with adnexal torsion have a normal WBC.

Trans-abdominal pelvic ultrasound with color Doppler to evaluate blood flow to the ovaries is the standard radiologic test when there is suspicion of adnexal torsion. However, adnexal torsion cannot be confirmed or excluded based on the presence or absence of Doppler flow on ultrasound.

Ultrasound findings that may suggest adnexal torsion include:

- Unilateral adnexal enlargement
- Heterogeneous enlargement of one ovary due to edema
- Simple or complex adnexal mass
- Diminished or absent flow on color Doppler
- Peripherally displaced follicles due to stromal edema from ischemia
- Medialization of the ovary
- Displacement of the uterus from the midline
- Free pelvic fluid
- Whirlpool sign — from twisting of the ovarian vessels within the pedicle

Computed tomography (CT) and magnetic resonance imaging (MRI) are not first line imaging modalities for suspected adnexal torsion.

Adnexal torsion is a *clinical* diagnosis which requires a high index of suspicion, and interpretation of patient symptoms, physical findings, laboratory tests and radiologic imaging. There is no one marker that confirms adnexal torsion. Adnexal torsion requires diagnostic laparoscopy for definitive diagnosis and treatment.

If You Suspect Adnexal Torsion, Refer for Immediate Surgical Evaluation

If patient symptoms, physical findings, and/or radiologic studies suggest torsion, she needs immediate surgical intervention to confirm or eliminate the diagnosis, detorse adnexa, reestablish blood flow and preserve adnexal function.

If there is a suspicion of adnexal torsion, send your patient to be evaluated in the emergency department for access to rapid laboratory assessment, imaging and surgical consultation. Patients who have been symptomatic for longer than 10 hours have an increased chance of experiencing tissue necrosis. Early recognition of the symptoms and signs of adnexal torsion, along with appropriate interpretation of our limited diagnostic tools and prompt intervention is vital to ovarian preservation and young women's reproductive health.

Treatment at Nationwide Children's Hospital

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The ideal treatment of adnexal torsion is conservative surgical intervention to detorse the adnexa and reestablish blood flow, with removal of the cyst if present and feasible. Evidence shows that as early as six weeks after detorsion, adnexal blood flow and follicular activity are both reestablished. Historically, oophorectomy has been performed due to concerns with thromboembolism associated with the detorsed pedicles, infection or bowel obstruction from necrotic tissue, or risk of malignancy, but conservative surgical intervention with preservation of the ovary is the preferred operation. Unfortunately, national data indicate that still just over one half of girls with adnexal torsion continue to undergo oophorectomy.

At Nationwide Children's, ovarian preservation is an important part of the standard of care. Gynecology and Pediatric Surgery have collaborated to develop an Ovarian Preservation Algorithm as part of a quality improvement project, which has been implemented across the institution to ensure high rates of preservation and low rates of oophorectomy for torsion and benign cysts.

Reference:

Childress K, Dietrich J. Pediatric Ovarian Torsion. *Surg Clin N* Amer 2017;97: 209-2221.

Referrals and Consultations

Online: **NationwideChildrens.org\Gynecology**
Phone: **(614) 722-6200** or **(877) 722-6220** | Fax: **(614) 722-4000**
Physician Direct Connect Line for 24-hour urgent physician consultations:
(614) 355-0221 or **(877) 355-0221**.