

Twisted Teeth: Ovarian Torsion Secondary to Mature Teratoma

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CHIEF COMPLAINT:

Abdominal pain

HISTORY OF PRESENT ILLNESS:

8 year old female previously healthy, vaccinated, with no history of abdominal surgery presents with acute onset periumbilical abdominal pain, constant in nature, non radiating, without history of falls or trauma. 1 episode of non bloody vomiting. Denies associated urinary or bowel movement symptoms with no atypical oral intake, travel history, or sick contacts. No historical features concerning for abuse. No menarche.

PHYSICAL EXAM:

Vital Signs: 98.6F, 130/59, HR 85, RR 22, 98% RA

GEN: crying, unable to lie comfortably in gurney

HEENT: unremarkable

CVS/Pulm: RRR no M/R/G, CTA b/l no W/R/R

Abd: soft +bowel sounds, no distension or HSM, L>R LQ TTP w/ voluntary guarding, no rebound

Genital: no external trauma, no vaginal bleeding noted, internal exam deferred

LABS & IMAGING:

CBC/BMP/UA/HCG all unremarkable

ULTRASOUND RLQ: appendix not visualized

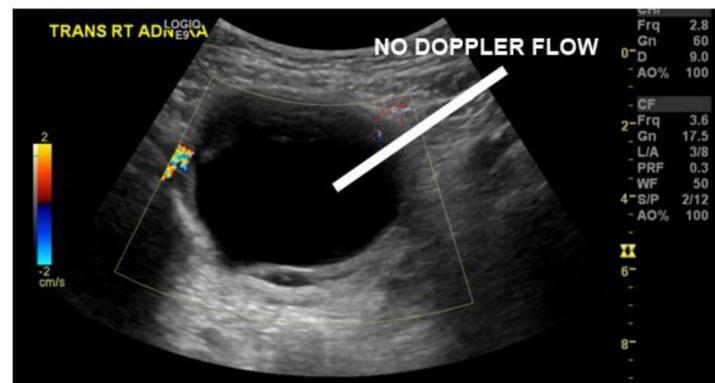
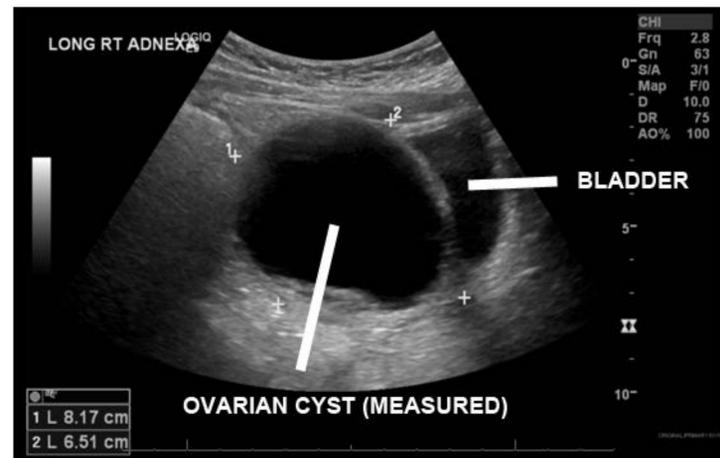
ULTRASOUND PELVIS (TRANSABDOMINAL): L ovary not visualized. R ovary w/ large cyst 8.2 x 6.5 x 6.4 cm w/ mural thickening, no Doppler flow visualized

CASE QUESTIONS:

- What are the “cannot miss” diagnoses for pediatric abdominal pain?
- What are the common and uncommon causes and presentations of ovarian torsion?

ANSWERS:

- 1) Key differential diagnoses for pediatric patients with vague, non-specific abdominal pain include acute appendicitis, gonadal torsion, volvulus, intussusception, retained foreign body, and incarcerated hernia. Reported location of pain and tenderness on examination may be inconsistent and vary with time and repeated evaluation, reminding the physician to maintain a broad differential and re-examining the patient in the ED, even if a clear diagnosis may be more available. In non specific abdominal pain, consideration of child abuse and non-accidental trauma should be included as appropriate.
- 2) An ovarian mass (cyst or neoplasm) is the primary risk factor for torsion, with a prevalence of 86-95% in several case series. While torsion can occur with a mass of any size or type, larger masses (>5 cm) are more likely to torse due to their size and malignancy more likely to be fixed and unable to rotate. Non-malignant ovarian masses include corpus luteum cysts, ectopic pregnancy, TOA, or germ cell tumors.



CLINICAL PEARLS:

- Maintain high suspicion of ovarian torsion in female patients with atypical abdominal pain presentation, particularly if ultrasound imaging is non-diagnostic or provides mixed results when compared to clinical examination.
- Pathologic laterality in both imaging and examination may be inconsistent due to a patient's age and inability to appropriately verbalize in pediatrics, but it may also be due to significant mass effect of pathologic structures altering anatomy that decreases imaging sensitivity.

REFERENCES:

- Geimanaite L, Trainavicius K. Ovarian torsion in children: management and outcomes. J Pediatr Surg. 2013 Sep;48(9):1946-53.
- Oue T, Uehara S, et al. Treatment and ovarian preservation in children with ovarian tumors. J Pediatr Surg. 2015 Dec;50(12):2116-8.
- Westhoff C, Pike M, Vessey M. Benign ovarian teratomas: a population-based case-control study. Br J Cancer. 1988 Jul;58(1):93-8.
- Poonai N, Poonai C, et al. Pediatric ovarian torsion: case series & review of the literature. Can J Surg. 2013 Apr; 56(2): 103-8.
- Tintinalli J. (2016). Emergency Medicine, Eighth Edition. New York, NY: McGraw-Hill Education.

CASE DISCUSSION:

Our patient was initially evaluated for acute appendicitis, but when an abdominal ultrasound was unable to visualize the appendix, a trans-abdominal pelvic ultrasound was ordered to visualize the adnexa. Multiple views were obtained due to patient's larger body habitus and initially reported a large R ovarian cyst (8.2 x 6.5 x 6.4 cm) with mild mural thickening and no Doppler flow, with the L ovary unable to be visualized. Given the patient's colicky and persistently uncomfortable presentation, the clinician's high suspicion and concern for ovarian torsion in this pediatric patient involved both the gynecology and pediatric surgery services, who ultimately took the patient to the OR for exploratory laparoscopy.

Intra-operatively, a large ovarian cyst with multiple tan-brown, irregularly shaped soft tissue masses embedded in the cyst wall was extracted from the L side, with a large amount of congested, coagulated blood evacuated from the adnexa. The adnexa itself was torsed 4 times and unraveled before the cyst was removed. The R ovary was directly visualized and noted to be unremarkable. On pathology several days later, the excised L ovarian cyst was found to be a mature cystic teratoma/dermoid cyst, with the irregular masses consistent with teeth!

The laterality of both the patient's symptoms, the initial ultrasound results, and the ultimate laparoscopic results and pathology are unusual given the initial US report of a large R sided cystic structure but a visualized confirmation of a L sided torsion. Given the patient's obesity-for-age and significant size of cyst, the suspicion is that the initial US views of the cystic mass was actually the L adnexa displacing so much volume that it appeared to be existing on the R side, making the L ovary unable to be visualized.

Teratomas, or mature dermoid cysts, are the most common type of germ cell tumor, with the majority of them being benign in nature (>95%). While most teratomas are asymptomatic, torsion is a common complication, with rupture of contents and subsequent spillage of contents being relatively uncommon. If diagnosed, cystectomy is often suggested to make a definitive diagnosis, prevent potential problems such as torsion, and also preserve ovarian tissue, particularly in patients of child-bearing age. With malignant transformation occurring in 0.2-2% of mature dermoid cysts, complete excision also prevents future complications.^{1,2}

Both dermoid cysts and cases of ovarian torsion are most prevalent in women aged 20-30s, closely related to reproductive hormone peaks and cycles. It is important to note that torsion may occur in females of all ages (even fetuses and neonates), including post-menopausal women, particularly if a mass is present.^{3,4}

Historically, salpingo-oophorectomy was completed to remove soon-to-be necrotic tissue, but a modern surgical approach balances visualization of cystic structures, suspicion of malignancy, and gross appearance with the likelihood of ovarian conservation with detorsion, particularly with young children.^{1,5}