

CASE REPORT

Isolated torsion of the utero-ovarian ligament

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Key Clinical Message

Isolated utero-ovarian torsion poses a challenge to diagnosing adnexal torsion, as it may not present with imaging findings. Clinicians with high suspicion for torsion but lack of evidence on ultrasonography should proceed to diagnostic laparoscopy.

Abstract

Adnexal torsion occurs when the ovary rotates around its supporting ligaments, the infundibulopelvic and utero-ovarian (UO) ligaments, often causing disruption of blood supply. This pathology often presents with acute pelvic pain and is a gynecologic surgical emergency. Diagnosis is typically made with Doppler ultrasound, although dual blood supply to the ovary poses additional diagnostic challenges and sensitivity of this tool is debated. In this case study, we present a case of missed torsion due to isolated compromise of UO ligament.

KEYWORD

adnexal torsion

1 | INTRODUCTION

Torsion of the adnexa occurs when the ovary rotates in the pelvis, causing the supporting ligaments, the infundibulopelvic (IP) and utero-ovarian (UO) ligaments to twist as well.¹ The ipsilateral fallopian tube may also be involved.² This rotation causes edema and compression of blood vessels that course within each ligament.² The ovarian vessels within the IP ligament provide the main source of arterial blood to the ovary, thus torsion of this ligament is what typically leads to ischemia of the ovary and acute pelvic pain.² Patients may also present with nausea, vomiting, and even fever and a surgical abdomen if the ovary is necrotic.¹ The UO ligament contains the UO vessels which are a source of dual blood supply to the ovary.² Torsion of this ligament also contributes to vessel obstruction and the resulting ischemia, venous congestion, and edema.²

Adnexal torsion can occur in patients of all ages but is most frequent in the reproductive years.¹ Known risk factors for adnexal torsion include pregnancy and adnexal masses.² Though this pathology is not frequently life-threatening, it causes severe abdominal and pelvic pain and may require oophorectomy, which can impact fertility in premenopausal women, thus it is considered a surgical emergency.¹

The gold standard for imaging evaluation is trans-abdominal and transvaginal ultrasound with Doppler.³ Ultrasound findings can include ovarian edema or enlargement, free fluid, and absent or decreased blood flow to the ovary.⁴ Adnexal blood flow is assessed with Doppler and should always be compared to the unaffected ovary.⁴ Though the sensitivity of Doppler ultrasound has been reported up to 84%,² this statistic is controversial and lack of ultrasound findings is not sufficient to rule out

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adnexal torsion due to the possibility of transient torsion and many reported cases of torsion that have been missed.^{4,5} CT and MRI may be done to rule out other pathologies but are not typically used for diagnosis of torsion.⁴ The definitive diagnosis of torsion can ultimately only be made by direct visualization of the rotated ovary during surgery, thus diagnostic laparoscopy should be considered if clinical suspicion remains despite lack of imaging findings.²

Diagnosis of adnexal torsion can be challenging due to its frequently vague symptoms that may mimic more common pathologies, such as appendicitis or diverticulitis, and potential lack of imaging findings.³ Some studies have cited that only 23%–66% of torsion cases have a correct diagnosis before surgery.⁶ Another complicating factor is the varying degrees of ligament torsion that can occur.⁴ If blood flow to the ovary is not completely impeded, there may be a lesser degree of difference in Doppler flow.⁴ Similarly, if venous flow is impacted to a greater degree than arterial flow, imaging studies may show little difference in flow.⁴

We present a report of adnexal torsion that was missed by Doppler ultrasound due to preservation of the infundibulopelvic ligament and isolated torsion of the utero-ovarian ligament, a pathology that has not been previously described.

2 | CASE DESCRIPTION

A 64-year-old postmenopausal female presented to the emergency department due to acute onset, severe right lower quadrant pain for 1 week with some radiation of the pain to the right lower back. She reported a few episodes of diarrhea and one episode of dizziness within the first few days of pain onset. She took acetaminophen and ibuprofen with no significant improvement in her pain. She denied nausea, vomiting, fever, or dysuria. Her medical history is significant for hypertension, hypercholesterolemia, and hypothyroidism for which she takes hydrochlorothiazide, atorvastatin, and Synthroid. She has never undergone surgery. She admits to current cigarette use with a 50-pack-year history.

Vital signs revealed systolic hypertension to 148 mmHg. She was afebrile, and her vital signs were otherwise within normal limits. Physical examination was significant only for tenderness to palpation in the right lower quadrant of the abdomen, without rebound or guarding. Cardiopulmonary exams were unremarkable, and there was no costovertebral angle tenderness present. CT of the abdomen and pelvis showed a mass of the right adnexa and diverticulosis with no evidence of nephrolithiasis, diverticulitis, appendicitis, or bowel obstruction. Transvaginal

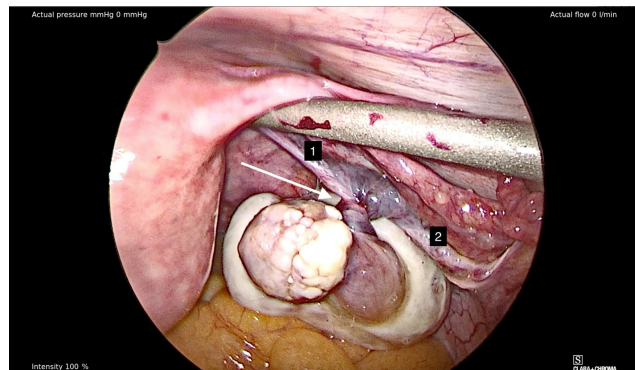


FIGURE 1 Upon laparoscopy, the right ovary was found to be torsed (arrow). Interestingly, the torsion was detected in the UO ligament (1) rather than the IP ligament, which in this case, was intact (2). The torsed ligament appeared to be rotated laterally, parallel to its axis and was visibly engorged.

ultrasound revealed a uniformly hypoechoic, exophytic mass of the right ovary measuring 4.7×3.4×3.4 cm without internal vascularity. The ovary itself measured 2.1×1.8×1.4 cm and had normal arterial flow with a resistive index of 0.38. The left ovary was not visualized. The uterus contained multiple fibroids but was overall normal in echotexture.

Based on these findings, ovarian torsion was ruled out, and the patient's symptoms were thought to be caused by the adnexal mass. Nonurgent referral was made to gynecology–oncology due to increased risk of future ovarian torsion and concern for possible malignancy.

Upon evaluation by gynecology–oncology, the patient's pain had essentially resolved without need for continued use of pain medication. Laboratories revealed no elevations in tumor markers, including CA-125, CA 19-9, CEA, inhibin A, and LDH. The patient was scheduled for laparoscopic bilateral salpingo-oophorectomy with intraoperative frozen pathology.

Upon laparoscopy, the right ovary was found to be torsed. Interestingly, the torsion was detected in the right utero-ovarian ligament rather than the infundibulopelvic ligament, which in this case, was intact. The torsed ligament appeared to be rotated laterally, parallel to its axis and was visibly engorged (Figure 1). The surgeon continued with routine bilateral salpingo-oophorectomy, and intraoperative frozen section was benign. The patient's postoperative course was uncomplicated.

3 | DISCUSSION

Our patient presented with severe right sided abdominal pain and was worked up appropriately with pelvic ultrasound; however, there were no indicators of adnexal torsion on those imaging studies. Other emergent

pathologies were ruled out via CT scan; however, a 4.7 cm right sided adnexal mass was visualized. Rather than continuing to have suspicion for torsion due to presence of the mass, which increases risk of torsion, the ED seemed to rule out the diagnosis based on the lack of ultrasound findings. They prescribed pain medication and discharged the patient with a nonurgent referral to gynecology oncology for further evaluation of the mass.

This patient's torsed ovary was not discovered until her scheduled procedure to remove the ovarian mass, when it was noted that the UO ligament was twisted, edematous, and congested. The IP ligament was surprisingly intact; however, indicating an isolated torsion of the UO ligament. Torsion isolated to the UO ligament has not been described in any preexisting literature. The ovarian mass was present and appeared benign upon visualization, and there was no evidence of necrosis of the ovary. This was likely due to the preserved IP ligament, which allowed blood flow to continue to the ovary.

Isolated UO torsion poses a significant complication to diagnosis of adnexal torsion. If the main blood supply to the ovary, contained within the IP ligament, is not compromised, Doppler ultrasound may not be as sensitive at picking up changes in the blood flow through the UO ligament, as those vessels are often not as prominent as the ovarian vessels. This may be what occurred in the case presented, as there were no signs of adnexal torsion on Doppler ultrasound, despite the UO torsion that was discovered at the time of surgery. This is yet another reason that Doppler ultrasound cannot be used to rule out adnexal torsion, and if clinical suspicion remains, diagnostic laparoscopy is the next step needed to definitively rule it out.

The patients' age may have also been a factor in the missed diagnosis of torsion, as she is postmenopausal. Some may feel less urgency to diagnose and treat adnexal torsion in postmenopausal females because there is no risk to their fertility as there is for premenopausal females. It has been reported that postmenopausal females are less likely to be treated surgically and have a longer time from admission to surgery than premenopausal females.⁷ However, regardless of age or fertility, torsion is an incredibly painful disease and may still carry risks for patients if not treated promptly.

4 | CONCLUSIONS

Adnexal torsion is a gynecologic surgical emergency that can be challenging to diagnose. The ovary's dual blood supply can be a confounding factor to diagnosis, as seen in the case of this patient, whose torsion was isolated to the

UO ligament, meaning blood supply through the IP was preserved. Considering these barriers to diagnosis, clinicians cannot rule out adnexal torsion due to lack of findings on Doppler ultrasound. If alternative diagnoses have been ruled out and clinical suspicion remains, diagnostic laparoscopy is the next best step.

AUTHOR CONTRIBUTIONS

Audrey Hla: Formal analysis; project administration; writing – original draft; writing – review and editing.

Justin Harold: Conceptualization; resources; supervision; writing – review and editing. **Vaagn Andikyan:** Conceptualization; investigation; resources; supervision; writing – review and editing.

CONFLICT OF INTEREST STATEMENT

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DATA AVAILABILITY STATEMENT

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CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

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