

A Case of Torsion in an Otherwise-Normal Ovary in a 22-years old nulliparous women: Utilization of Diagnostic Laparoscopy

SF SHETU^b, K BEGUM^a, RM FAISAL^c

Abstract:

Ovarian torsion can be seen in the otherwise-normal ovary and is a challenging issue in the emergency department. Definitive diagnosis is sometimes difficult to establish because of clinical symptoms similar to other abdominal diseases.

We report a 22-year-old woman, nullipara, with acute lower right abdominal pain for 14 hours before coming to an emergency room. On examination, the abdomen was soft but tender over the right iliac fossa and rebound tenderness were present. Ultrasound radiological examination showed that

the right ovary is grossly enlarged (volume- 98.4cc) with hyperechoic central stoma. On colour, doppler twisted pedicel was noted. Mild collection is also seen in the pouch of Douglas. During laparoscopy, we found a blackish-red cystic mass of about 12 × 11 cm experiencing torsion. Then salpingo-oophorectomy was done. This is an interesting case of torsion in an otherwise-normal ovary with a huge hematosalpinx.

Keywords: Cyst, Ovarian Torsion, Laparoscopy, salpingo-oophorectomy

(*J Bangladesh Coll Phys Surg* 2023; 41: 342-347)

DOI: <https://doi.org/10.3329/jbcps.v41i4.68946>

Introduction:

Ovarian torsion is the fifth most common gynecological emergency, with a reported prevalence of 2.7% in all cases of acute abdominal pain¹. Prompt diagnosis is essential to ovarian salvage, and high clinical suspicion is important. The diagnosis is often confused with more commonly encountered abdominal complaints in the Emergency Department (ED), such as constipation, diarrhea, and urinary tract infections and more common surgical emergencies, such as appendicitis. So, it's a common diagnostic challenge in emergencies. Without an apparent tumor, the ovary can even undergo torsion, known as a torsion in an otherwise normal ovary². It refers to a complete or partial rotation of the adnexal supporting organ, resulting in ischemic changes in the ovary. Torsion more commonly involves both the ovary and fallopian tube². Torsion may occur in cases of any

age, but the presence of an ovarian mass or cyst³ accompanies the majority of cases. However, it has been reported that normal ovaries may twist around on their axis, with an incidence varying from 16% to 49%⁴. The gold standard to confirm and treat ovary torsion is surgery. There are two surgical methods: laparoscopy and laparotomy⁵. To improve diagnosis and shorten time to treatment, laparoscopy is useful for diagnosis of ovarian torsion if indicated by clinical suspicion and supplemental imaging.

Case presentation

A 22-year-old nulliparous woman –admitted to the emergency department of Popular Medical College Hospital with pain. She presented in the middle of her regular 28-day menstrual cycle with a sudden onset of right iliac fossa pain 14 hours before entering the hospital. The pain was described as constant, severe (pain scale 9), sharp, non-radiating and associated with episodes of emesis. She took painkillers at home, but there was no improvement. Similar episodes of pain were experienced in the last 1 year. However, those were shorter in duration, with pain scale 4 occurring only while walking and resolved spontaneously. She was otherwise well and had no associated gastrointestinal or genitourinary symptoms. The patient and her family had no history of previous medical or malignancy history except her elder sister has suffered from primary subfertility for the last 12 years with a history of dysmenorrhea.

1. Dr. Shain Fariya Shetu, Registrar, Department of Obstetrics and Gynaecology, Popular Medical College and Hospital.
2. Prof. Kohinoor Begum, Department of Obstetrics and Gynaecology, Popular Medical College and Hospital.
3. Dr. Mahamud Riyad Foysal, Department of Surgery, Popular Medical College and Hospital.

Address of Correspondence: Dr. Shain Fariya Shetu, Registrar, Department of Obstetrics and Gynaecology, Popular Medical College and Hospital,

Mobile: 01783368986, E-mail: sfariyaa@gmail.com

Received: 23 May, 2023

Accepted: 18 July, 23

On examination, she was afebrile with a pulse rate of 74 beats per minute (bpm) and a blood pressure of 110/70 mmHg. Her abdomen was described as “soft” but tender over the right iliac fossa; rebound tenderness was present, and she displayed voluntary guarding, particularly in the right iliac fossa. There was no renal angle tenderness, and bowel sounds were present.

The laboratory blood test results showed a haemoglobin level of 12.9 g/dL, neutrophilic leukocytosis with a leukocyte count of 11.27 K/iL, and 92% neutrophil. Creatinine and random blood sugar were within normal limits.

Ultrasound radiological examination showed that the right ovary is grossly enlarged (7.16x3.59X7.31 cm, volume- 98.4cc) with a hyperechoic central stoma. Multiple tiny follicles are seen within the stroma. On colour Doppler twisted pedicel was noted. Mild collection is also seen in the pouch of Douglas. Probe tenderness was present. There was no other abnormality detected in the ultrasonography.

At emergency, her pain was unresponsive to inj. Ketorolac and narcotic analgesics, then the patient was admitted, and a decision was made for an emergency laparoscopy.

On laparoscopic surgery, the whole right adnexa was markedly swollen, with a blackish red cystic mass size of about 9x8cm, which was twisted to at least 540 degrees (Figure 2(a). Adnexa was detected, and separate tubular cystic and solid masses were visualized. A fimbria-like structure was observed on the surface of Figure 2(b). This suggests that the tubular cystic mass was right-sided necrosed fallopian tube and the solid mass, an enlarged gangrenous right ovary. There was a haemoperitoneum of 100 mL. Of note was an inflamed appendix but no evidence of adhesions, infection or endometriosis throughout the pelvis. A left salpingo-oophorectomy was performed because of ischemic, irreversible changes in the right ovary and fallopian tube, and simultaneously, an appendectomy was done due to an inflamed appendix. After surgery, her symptoms (abdominal pain and nausea) disappeared quickly. The postoperative period was uneventful, and she was discharged home the following day.

She was well two weeks post-operation, and her port sites had healed as expected.

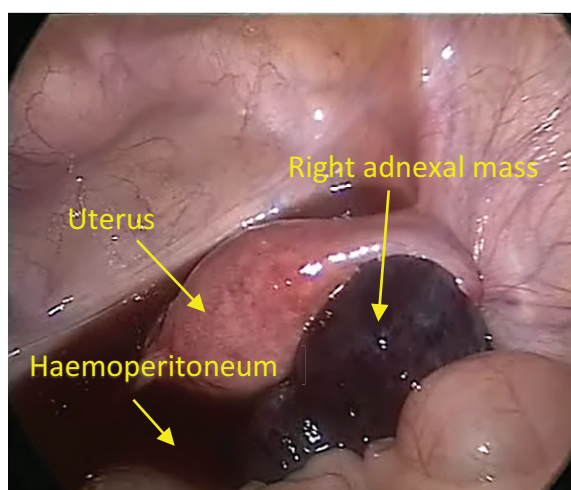


Fig-1: Uterus with right-sided twisted adnexal mass with haemoperitoneum

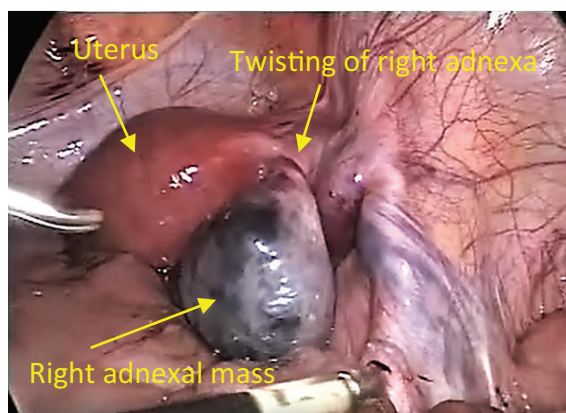


Fig-2: Uterus with right-sided twisted adnexal mass with healthy left ovary

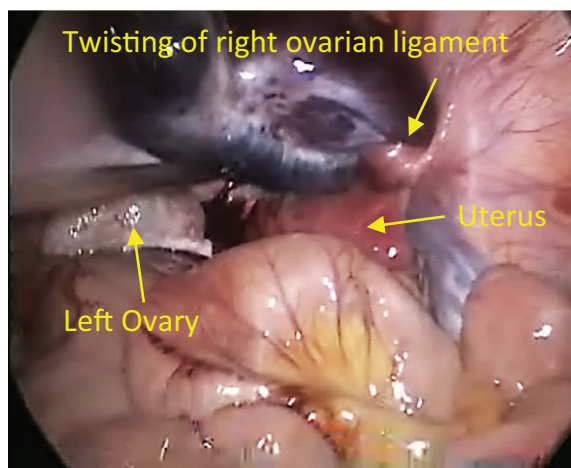


Fig-3: Uterus with right right-sided twisted adnexal mass with left ovary.

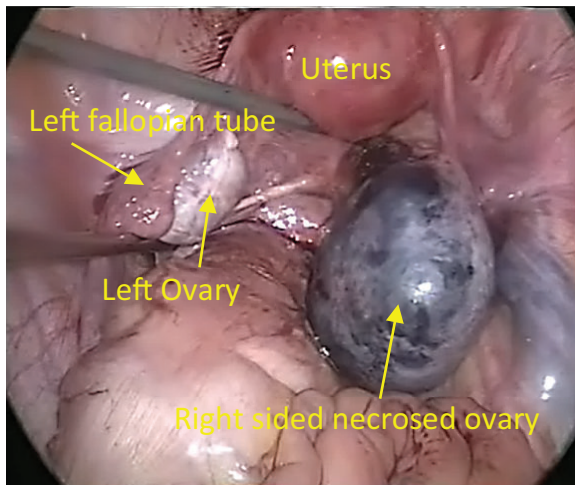


Fig.-4: Uterus with healthy left fallopian tube and left ovary with right-sided an enlarged gangrenous right ovary.

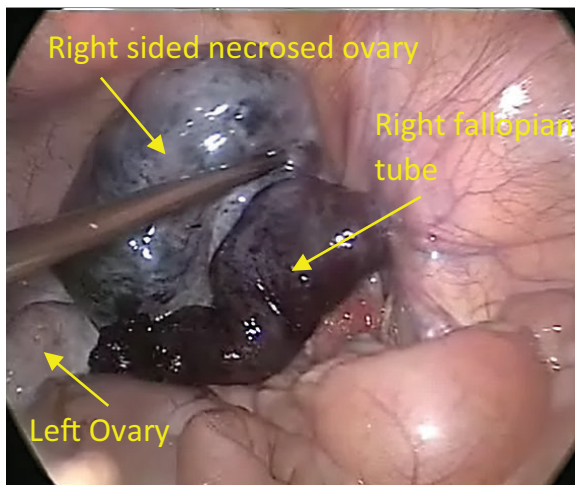


Fig.-5: Suggesting that the tubular cystic mass was right-sided necrosed fallopian tube and the solid mass, an enlarged gangrenous right ovary.

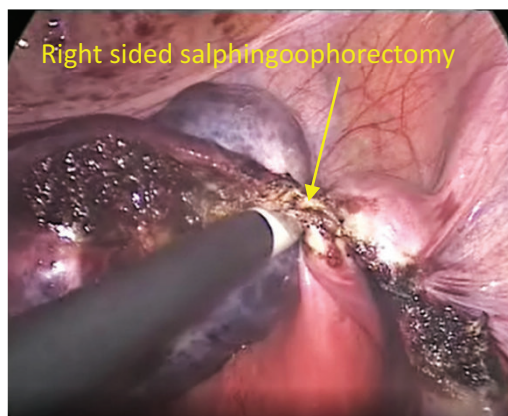


Fig.-6 right sided salpingo-oophorectomy

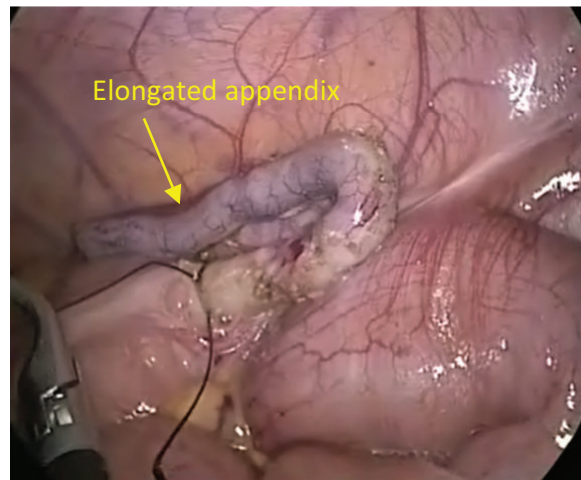


Fig.-7: Elongated appendix

The patient was reminded of her high risk of re-torsion and advised to represent early if there were any further episodes of abdominal pain.

Discussion

We encountered a torsion in an otherwise normal ovary in a nonpregnant woman of reproductive age. Ovarian torsion can occur at any age, with the greatest incidence in women 20-30 years of age⁶. In the pediatric and adolescent age group, the twisting of a normal ovary is more common, and the greater length of the ovarian pedicle⁷ may cause this.

Also, another explanation for torsion of an otherwise normal ovary in the pediatric population is abrupt changes in the intra-abdominal pressure with vomiting, coughing, and sudden acceleration/deceleration movements⁸. Consistent with these data, the procedure of oophoropexy, which shortens the utero-ovarian ligament, reduces ovarian laxity⁹.

About 70% of ovarian torsion occurs on the right side, which is hypothesized to occur due to the longer utero-ovarian ligament on this side. In addition, this is likely due to the proximity of the left ovary to the relatively fixed sigmoid colon compared with the hypermobility of the cecum and ileum on the right¹. This is consistent with this case report in which there was complete 560° torsion on the right side.

Ovulation induction, ovarian hyperstimulation syndrome, history of adnexal torsion, polycystic ovarian syndrome have all been cited as risk factors for adnexal

torsion¹⁰. However, torsion is frequently associated with ovarian pathologies that result in enlarged ovaries. The most frequently encountered pathology is an ovarian dermoid, although other structures include parameso/tubal cysts, follicular cysts, endometriomas and serous/mucinous cystadenoma¹¹. But in our case, both ovaries were of normal size and appearance with no history of previous ovarian cyst or tumor.

Tsafirir et al., who evaluated a 12-year experience with ovarian torsion in children, reported a 60% rate of normal-sized ovaries in adolescent girls with ovarian torsion¹². Similarly, a study on premenarchal girls, including 38 torsion cases, reported 71% normal-sized ovaries¹³. These authors stated that ovarian torsion with normal-appearing ovaries is more characteristic of the younger age group. Fortunately, torsion cases with ovaries, including a mass or cyst, may help to raise suspicion and prompt the diagnosis. However, in cases of torsion with ovaries of normal size and appearance, diagnosis and timely operation are more difficult.

Pansky et al.¹⁴ demonstrated in a retrospective study that women who experienced a first episode of torsion with a morphologically normal-appearing ovary were more likely to experience another episode of torsion (60%) than were those with a pathologic adnexa (8%).

Diagnosing ovarian torsion is challenging as the clinical parameters yield low sensitivity and specificity. Abdominal pain is reported in most patients with ovarian torsion, but the characteristics of this pain are variable. Sudden onset pain occurs in 59-87%, sharp or stabbing in 70%, and pain radiating to the flank, back or groin in 51% of patients^(6,15). Patients with incomplete torsion may present with severe pain separated by asymptomatic periods¹⁶. Nausea and vomiting is common in 59-85% of cases and a low-grade fever in 20%^{6,15}.

She had severe abdominal pain on the day of admission. The pain is due to occlusion of the vascular pedicle, with subsequent hypoxia; generally, the venous and lymphatic systems are affected first because they are lower pressure systems¹⁸. If torsion is prolonged, the adnexa can become necrotic and even infected, at this time, the patient may exhibit signs of peritonitis¹⁸. This constellation of symptoms can be found in several other conditions, including appendicitis, pelvic inflammatory disease, ectopic pregnancy, colitis, necrosis of

leiomyoma, and ruptured ovarian cysts, thus making the diagnosis even more difficult to establish.

The clinical examination findings and diagnostic imaging modalities usually diagnose ovarian torsion, in which ultrasound examination with color Doppler analysis takes great part. Non-specific ultrasound findings include heterogeneous ovarian stroma, a "string of pearls" sign, and free fluid in the cul de sac suggest ovarian torsion^(19,20). However, the use of color Doppler imaging has some controversies as the presence of vascular flow does not rule out torsion²¹. This is because of the dual blood supply from uterine and ovarian arteries. Moreover, torsion symptoms may occur due to venous congestion before arterial supply ceases. Clinically, it is very important to suspect a torsion of the otherwise-normal ovary if we find the enlargement of the ovary, decreased adnexal blood flow, and atypical position of the ovary^(22,23) regardless of other findings. In the presented case, the right ovary demonstrated decreased blood flow with collection in the pouch of Douglas in the USG on the day of admission. However, complete ovarian torsion might have occurred after the last ultrasound was performed.

Other imaging modalities, such as contrast CT and MRI, are rarely useful when the ultrasound findings are inconclusive. Thus, direct visualization by laparoscopy or laparotomy is the gold standard to confirm the diagnosis of ovarian torsion. Laparoscopy is the surgical approach of choice as it has the advantages of a shorter hospital stay and reduced postoperative pain requirements^(24,25). Although laparoscopy is frequently preferred in younger patients, the surgical skill in dealing with these ovarian masses may require a laparotomy.

Traditionally, radical treatment by adnexectomy was the standard approach to ovarian torsion in cases of discoloration/necrosis. This was due to the fear of pulmonary embolism from untwisting a potentially thrombosed ovarian vein. This approach resulted in the loss of the ovary and a potential reduction in fertility. In our patient, we sacrificed the right ovary and fallopian tube as it was necrosed without leaving any viable ovarian tissue. More recently, this approach has been challenged. A more conservative treatment that consists of untwisting the adnexa followed by cystectomy or cyst aspiration has been reported¹. Rody et al.¹¹ suggest conservative management of ovarian torsion regardless

of the macroscopic appearance of the ovary. Their large literature review reported no severe complications, such as embolism or infection, even after the detorsion of “necrotic-looking” ovaries. In support of this, animal studies suggest that reperfusion of ischaemic ovaries, even after 24 hours, with a time-limiting interval of 36 hours, results in ovarian viability as demonstrated histologically²⁶. This ovary-sparing approach after detorsion of ischaemic ovaries is considered safe and effective in both adults and children^(27,28). A cystectomy is usually performed on suspected organic cysts for histological examination. In the case of difficult cystectomy due to ischaemic, oedematous ovary, some authors recommend a reexamination 6-8 weeks following the acute episode and secondary surgery at this later time if necessary^(11,27,28).

Conclusion:

We encountered a case of torsion in an otherwise normal ovary. A marked cystically enlarged fallopian tube made it difficult to understand the actual pathophysiology fully. Because diagnosis of otherwise normal ovary torsion is often difficult, we should not rule out its possibility. If we suspect it for any reason, we should consider treating it without delay to preserve their fertility. Laparoscopic surgery is useful for treatment because the lesion can be observed in detail with a small wound, and treatment can be performed sequentially.

References:

- Huchon C, Fauconnier A. Adnexal torsion: a literature review. *Eur J Obstet Gynecol Reprod Biol.* 2010;150:8-12.
- Z. Tsafirir, J. Hasson, I. Levin, E. Solomon, J. B. Lessing, and F. Azem, “Adnexal torsion: cystectomy and ovarian fixation are equally important in preventing recurrence,” *European Journal of Obstetrics, Gynecology, and Reproductive Biology*, vol. 162, no. 2, pp. 203–205, 2012.
- Rossi BV, Ference EH, Zurakowski et al: The clinical presentation and surgical management of adnexal torsion in the pediatric and adolescent population. *J Pediatr Adolesc Gynecol*, 2012; 25(2): 109–13.
- Kokoska E, Keller M, Weber T: Acute ovarian torsion in children. *Am J Surg*, 2000; 180: 462–65.
- Huang, C., Hong, M. K., & Ding, D. C. (2017). A review of ovary torsion. *Tzu-chi Medical Journal*, 29(3), 143.
- White M, Stella J. Ovarian torsion: 10-year perspective. *Emerg Med Australas.* 2005;17:231-7.
- Yancey LM: Intermittent torsion of a normal ovary in a child associated with use of a trampoline. *J Emerg Med*, 2012; 42: 409–12.
- Mordehai J, Mares AJ, BarkiY et al: Torsion of uterine adnexa in neonates and children: a report of 20 cases. *J Pediatr Surg*, 1991; 26: 1195–99.
- Varras M, Akrivis C, Demou A, Antoniou N: Asynchronous Asynchronous bilateral adnexal torsion in a 13-year-old adolescent: Oexperience of a rare case with review of the literature. *J Adolesc Health*, 2005; 37: 244–47.
- Boswell K, Silverberg KM. Recurrence of ovarian torsion in a multiple pregnancy: conservative management via transabdominal ultrasoundguided ovarian cyst aspiration. *Fertil Steril.* 2010;94:1910.e1–1910.e3.
- Rody A, Jackisch C, Klockenbusch W, Heinig J, Coenen-Worch V, Schneider, HP. The conservative management of adnexal torsion- a case-report and review of the literature. *Eur J Obstet Gynecol Reprod Biol.* 2002;101:83-6.
- Tsafirir Z, Azem F, Hasson J et al: Risk factors, symptoms and treatment of ovarian torsion in children: The twelve-year experience of one center. *J Minim Invasive Gynecol*, 2012; 19: 29–33.
- Ashwal E, Krissi H, Hirsch L et al: Presentation, diagnosis, and treatment of ovarian torsion in premenarchal girls. *J Pediatr Adolesc Gynecol*, 2015; 28(6): 526–29.
- Pansky M, Smorgick N, Herman A, Schneider D, Halperin R. Torsion of normal adnexa in postmenarchal women and risk of recurrence. *Obstet Gynecol.* 2007;109:355–359.
- Shadinger LL, Andreotti RF, Kurian RL. Preoperative sonographic and clinical characteristics as predictors of ovarian torsion. *J Ultrasound Med.* 2008; 27:7-13.
- Albayram F, Hamper UM. Ovarian and adnexal torsion: spectrum of sonographic findings with pathology correlation. *J Ultrasound Med.* 2001;20:1083-9.
- Lentz GM, Lobo RA, Gershenson D, et al. *Comprehensive Gynecology*. 6th ed. Philadelphia, PA: Mosby, Inc. p. 383–432.
- Nichols D, Julian P. Torsion of the adnexa. *Clin Obstet Gynecol.* 1985; 28:375–380.
- Chang HC, Bhatt S, Dogra VS. Pearls and pitfalls in diagnosis of ovarian torsion. *Radiographics.* 2000;28:1355-68.
- Michele B, Giovanni S, Paolo T, Roberta Z, Vincenzo M. Adnexal torsion. *Ultrasound Clin.* 2008;3:109-19.
- Peña JE, Ufberg D, Cooney N, Denis AL: Usefulness of Doppler sonography in the diagnosis of ovarian torsion. *Fertil Steril*, 2000; 73: 1047–50.
- G. Ssi-Yan-Kai, A. L. Rivain, C. Trichot et al., “What every radiologist should know about adnexal torsion,” *Emergency Radiology*, vol. 25, no. 1, pp. 51–59, 2018.
- A. Sintim-Damoa, A. S. Majmudar, H. L. Cohen, and L. S. Parvey, “Pediatric ovarian torsion: spectrum of imaging findings,” *Radiographics*, vol. 37, no. 6, pp. 1892 –1908, 2017.

24. Cohen SB, Wattiez A, Seidman DS, Goldenberg M, Admon D, Mashiach S, Oelsner G. Laparoscopy versus laparotomy for detorsion and sparing of twisted ischemic adnexa. *JSLs*. 2003; 7:295-9.
25. Lo LM, Chang SD, Horng SG, Yang TY, Lee CL, Liang CC. Laparoscopy versus laparotomy for surgical intervention of ovarian torsion. *J Obstet Gynaecol Res*. 2008;34: 1020-5.
26. Taskin O, Birincioglu M, Aydin A, Buhur A, Burak F, Yilmaz I, et al. The effect of twisted ischemic adnexa managed by detorsion on ovarian viability and histology: an ischemiareperfusion rodent model. *Hum Reprod*. 1998;13(10):2823-7.
27. Galinier P, Carfagna L, Delsol M, Ballouhey Q, Lemasson F, Le Mandat A, et al. Ovarian torsion. Management and ovarian prognosis: a report of 45 cases. *Pediatr Surg*. 2009;44:1759-65.
28. Gocmen A, Karaca M, Sari A. Conservative laparoscopic approach to adnexal torsion. *Arch Gynecol Obstet*. 2008;277:535-8.