




Laparoscopic management of adnexal torsion during pregnancy

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ABSTRACT

Acute pelvic pain during pregnancy presents a diagnostic challenge because of its broad differential diagnosis and pregnancy-specific considerations. Adnexal torsion is an uncommon but clinically significant gynecological emergency, and its occurrence during the second trimester is particularly rare. Delayed diagnosis may result in irreversible ischemic damage, loss of ovarian function, and potential adverse maternal-fetal outcomes. We report the clinical course and laparoscopic management of adnexal torsion in an 18-week pregnant patient presenting with acute abdomen. Diagnostic laparoscopy revealed right adnexal torsion with five complete twists around the vascular pedicle. Laparoscopic detorsion was successfully performed, followed by adnexal fixation to the right lateral abdominal wall to reduce the risk of recurrence. Restoration of ovarian perfusion was observed intraoperatively. No maternal or fetal complications occurred during the postoperative follow-up. This case highlights the feasibility and safety of a fertility-preserving laparoscopic approach for adnexal torsion during the second trimester of pregnancy.

Keywords: Adnexal torsion, pregnancy, second trimester, acute pelvic pain, laparoscopy

INTRODUCTION

Adnexal torsion (AT) is a gynecological emergency characterized by partial or complete rotation of the ovary and/or fallopian tube around its vascular pedicle, leading to impaired venous and arterial blood flow.¹ Timely diagnosis and surgical intervention with restoration of the adnexa to their anatomical position are essential to prevent irreversible ischemic injury and loss of ovarian function.²

The majority of AT cases occur in women of reproductive age. Pregnancy is considered a significant risk factor for the development of AT due to hormonal and anatomical changes. It has been reported that 8–28% of torsion cases occur during pregnancy, most commonly in the first trimester; however, AT may be diagnosed at any gestational age.^{3,4} The reported incidence of AT during pregnancy ranges from 3 to 5 cases per 10,000 pregnancies, although this figure varies across populations and study designs.⁵

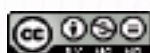
Despite advances in imaging, the diagnosis of AT during pregnancy remains challenging, particularly beyond the first trimester, because physiological and anatomical changes may obscure classical clinical and radiological findings. Furthermore, acute pelvic pain in pregnant patients requires exclusion of obstetric conditions such as miscarriage,

placental abruption, or uterine rupture. This case report addresses the clinical gap related to the diagnosis and laparoscopic management of AT during the second trimester of pregnancy, a relatively rare but high-risk clinical scenario.

CASE

A 30-year-old patient, gravida 2, para 0, living 0, abortus 1 (G2P0L0A1), presented at 18 weeks of gestation according to her last menstrual period with progressively worsening right-sided groin pain that began in the morning hours. The pain was accompanied by nausea and vomiting. The patient had no known history of ovarian cysts, adnexal masses, prior pelvic surgery, or assisted reproductive treatment.

On physical examination, marked abdominal tenderness with guarding and rebound was noted. Obstetric ultrasonography revealed a single, viable fetus in cephalic presentation, with biometric measurements consistent with gestational age. The placenta was located anteriorly, and no evidence of placental abruption or retroplacental hematoma was observed. There was no vaginal bleeding. Transvaginal examination demonstrated cervical motion tenderness and significant pain in the pouch of Douglas.



Abdominal ultrasonography showed an enlarged right ovary with reduced blood flow on Doppler evaluation. Based on the clinical and radiological findings, AT was suspected, and emergency surgical intervention was planned.

Fetal monitoring was conducted preoperatively and postoperatively. Laparoscopy was performed with trocar placement adapted to the enlarged uterus. We started with the insertion of a Veress needle into the peritoneal cavity, after a little incision of the above 2 cm umbilicus. The needle is pushed in until it gives a double click, ensuring that it is in the intraperitoneal space. Once into peritoneal cavity, gas insufflation is provided. Pneumoperitoneum was established using carbon dioxide at an intra-abdominal pressure of 10–12 mmHg. A three-port laparoscopy was performed, with the primary 10-mm port being inserted through the above 2 cm umbilicus for the 10-mm telescope. Two additional 5 mm ports were placed to the left and right of the original trocar at the same level of the abdomen. Laparoscopic exploration revealed that the right adnexa was twisted five complete turns around its vascular pedicle (Figure 1). Laparoscopic detorsion was performed (Figure 2), followed by fixation of the adnexa to the right lateral abdominal wall using absorbable 1.0 sutures to reduce the risk of recurrence and fertility (Figure 3). Restoration of ovarian perfusion was observed shortly after detorsion. Operation duration was 35 minutes. After the operation, we did ultrasound and check the baby's heart rate.

Postoperatively, the patient experienced complete resolution of pain. Preoperative laboratory investigations revealed a



Figure 1. Laparoscopic view demonstrating right adnexal torsion with multiple twists around the vascular pedicle

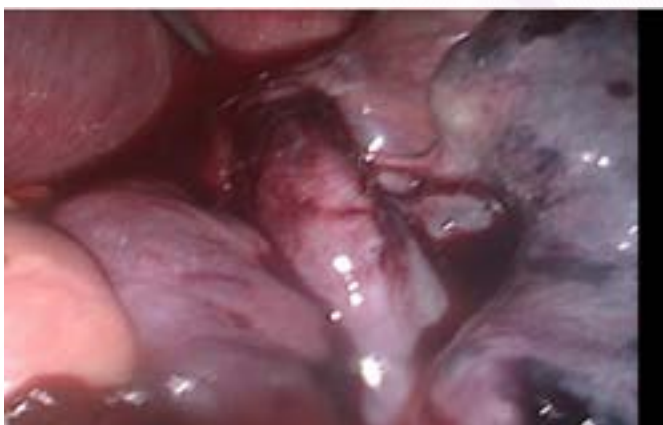


Figure 2. Laparoscopic detorsion of the right adnexa with visible improvement in tissue color

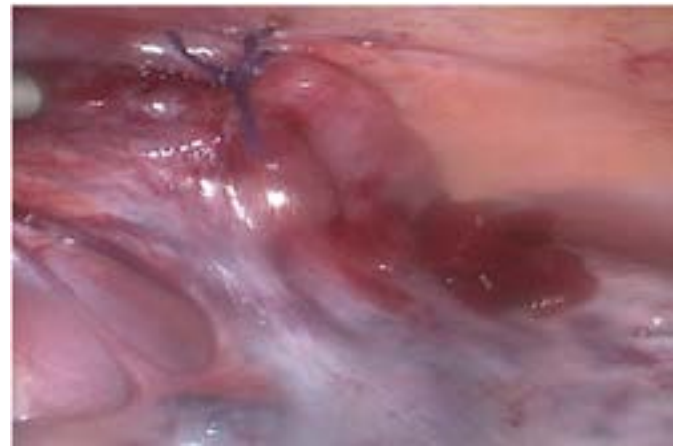


Figure 3. Fixation of the right adnexa to the lateral abdominal wall to reduce the risk of recurrence

white blood cell count of 18,000/mm³ and a C-reactive protein (CRP) level of 28 mg/L,³ which decreased to 9,000/mm³ and 8 mg/L, respectively, on postoperative day one. The patient tolerated oral intake after the passage of flatus and stool and was discharged uneventfully on postoperative day one.

DISCUSSION

AT during pregnancy is an uncommon but potentially serious surgical emergency with implications for both maternal and fetal outcomes. Although most cases are diagnosed during the first trimester, torsion can occur at any gestational age, including the second trimester, as demonstrated in the present case.^{3,4} Its reported incidence ranges from 3 to 5 cases per 10,000 pregnancies.⁵

AT most commonly occurs in the presence of an underlying ovarian pathology. The most frequently reported risk factors include ovarian cysts, prior pelvic surgery, and assisted reproductive technologies. However, as demonstrated in the present case, torsion may also occur in a normal ovary. Diagnosis during pregnancy is particularly challenging due to anatomical changes caused by uterine enlargement and the need to exclude pregnancy-specific differential diagnoses such as miscarriage, retroplacental hematoma, or uterine rupture.

The clinical presentation typically consists of sudden-onset, severe lower abdominal pain, often accompanied by nausea, vomiting, and low-grade fever. Ultrasonography is the first-line imaging modality for suspected AT. Findings such as ovarian enlargement, stromal edema, peripherally displaced follicles, and reduced or absent blood flow may support the diagnosis. Although absent Doppler flow strengthens the suspicion of torsion, normal Doppler findings do not exclude the diagnosis. Magnetic resonance imaging may serve as a useful adjunct when ultrasonography is inconclusive; however, it should not delay surgical intervention.⁶

Surgical management is the standard of care for AT. Current evidence supports the safety of laparoscopy during pregnancy when appropriate precautions are taken, including modified trocar placement and low pneumoperitoneum pressures.^{7,8}

Conservative surgery with detorsion is recommended whenever viable adnexal tissue is present, as ovarian function

can be preserved in up to 90% of cases following detorsion. The choice between conservative and radical surgery depends on the viability of the adnexa following detorsion. In the presence of viable tissue, conservative management with detorsion is recommended to preserve ovarian function. Previous studies have reported recovery of ovarian function in approximately 90% of cases following detorsion. Adnexal fixation should be considered in cases with a high risk of recurrence.⁹

Adnexal fixation after detorsion remains controversial. In the literature, various surgical strategies have been described to prevent recurrence after detorsion. Particularly during pregnancy, several authors have favored tubal shortening over adnexal fixation, based on the assumption that reducing tubal length and mobility may decrease the risk of recurrent torsion. For this reason, tubal shortening has been reported as a preferred approach in many studies.^{10,11} In the present case, adnexal fixation was performed in consideration of the degree of torsion and the potential risk of recurrence during pregnancy, with the aim of preserving fertility and minimizing future complications.^{10,11}

The patient's pregnancy continued without complication following surgery. Although long-term obstetric outcomes were favorable in this case, including continuation of pregnancy, further data are needed to clarify optimal management strategies and long-term maternal and neonatal outcomes in cases of AT during pregnancy.

CONCLUSION

The diagnosis of AT during pregnancy is challenging because of nonspecific clinical and radiological findings, particularly in the second trimester. Prompt surgical intervention and a conservative laparoscopic approach, including detorsion with or without adnexal fixation, are essential to preserve ovarian function and ensure favorable maternal and fetal outcomes.

ETHICAL DECLARATIONS

Informed Consent

For pregnant patient, written informed consent was obtained with a full explanation of maternal and fetal implications. Signed consent forms are on file and available upon request. The inclusion of vulnerable populations in this study adhered to national and international ethical guidelines. Extra care was taken to ensure voluntary participation, understanding, and protection of participant dignity and autonomy.

Cavide Ali

Cavide Ali, MD, is an Obstetrics and Gynecology Specialist who graduated from Gazi University Faculty of Medicine (2017) and completed residency training at Dr. Zekai Tahir Burak Women's Health Education and Research Hospital and Ankara City Hospital (2018–2023). She worked as a specialist at İğdir Dr. Nevruz Erez State Hospital (2023–2024) and VM Medicalpark Gebze (2024–2025), and is currently practicing at Kadıköy Acıbadem Hospital, while also serving as Assistant Editor of the Bulletin of the Pelvic Floor and Cosmetic Gynecology Association. She participated in the ESGE-YEP Exchange Programme in Lisbon (2022) and Liège (2023). Her surgical experience includes advanced laparoscopic procedures and vNOTES surgeries, as well as extensive experience in vaginal prolapse, pelvic floor, urinary incontinence, and cosmetic gynecologic surgeries. She has actively participated in national and international congresses, including multiple ESGE Annual Congresses, and has received professional training and certifications such as GESEA Level 1, KSDF Basic Laparoscopic Course, urinary incontinence and pelvic floor ultrasound training. Dr. Ali has authored peer-reviewed publications on ovarian drilling in PCOS, imaging findings of infected endometriomas, and neonatal outcomes of infants born to mothers with COVID-19. She is a member of ESGE, SERGS, UJOD, PETKOZ, and the European Menopause and Andropause Society, and is fluent in Turkish (native) and English (full professional proficiency).



Peer Review Process

This report underwent external peer review.

Conflict of Interest

The authors declare no conflicts of interest.

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Author Contributions

Concept: C.A.; Design: C.A.; Control: C.A, M.C.S.; Data Collection and/or Processing: C.A, Y.A.K.; Analysis and/or Interpretation: C.A, Y.A.K.; Literature review: C.A, M.C.S.; Article Writing: C.A, M.C.S.; Critical Review: C.A, M.C.S, Y.A.K.

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