

Case Report

Emergency Salpingo-Oophorectomy for Torsion of a Giant Mature Cystic Teratoma During the Second Trimester of Pregnancy: A Case Report

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Abstract

Introduction: Ovarian torsion during pregnancy is a rare but serious condition that requires immediate diagnosis and treatment to prevent maternal and fetal complications. Large benign ovarian tumors, especially mature cystic teratomas, are the most common cause. This case report describes the management of a giant torsed ovarian dermoid cyst found in a pregnant woman during her second trimester.

Case Illustration: A 16-year-old woman, G1P0A0, presented at 17 – 18 weeks of gestation with severe abdominal pain for one day. Physical examination revealed a mobile, cystic adnexal mass. Ultrasonography showed a single live intrauterine fetus consistent with gestational age and a unilocular left adnexal cyst measuring 14.5 × 12.7 × 11.5 cm with a positive whirlpool sign, indicating ovarian torsion. An emergency laparotomy with left salpingo-oophorectomy was performed. Histopathological examination confirmed a mature cystic teratoma with extensive necrosis and hemorrhage consistent with torsion, without evidence of malignancy. Ascitic and cyst fluid cytology showed benign lesions. The pregnancy was preserved, and postoperative fetal condition remained stable. **Conclusion:** This case demonstrates that prompt surgical intervention for ovarian torsion during the second trimester of pregnancy can be safely performed, enabling the preservation of pregnancy and resulting in favorable maternal and fetal outcomes.

Keywords: Dermoid cyst; mature cystic teratoma; ovarian torsion; pregnancy; second trimester

Manajemen Torsio Ovarium Akibat Kista Dermoid Raksasa pada Trimester Kedua Kehamilan: Sebuah Laporan Kasus

Abstrak

Pendahuluan: Torsio ovarium selama kehamilan merupakan kondisi yang jarang, namun berpotensi serius dan memerlukan diagnosis serta penatalaksanaan yang cepat untuk mencegah komplikasi pada ibu dan janin. Tumor ovarium jinak berukuran besar, terutama *mature cystic teratoma*, merupakan penyebab tersering torsio ovarium. Laporan kasus ini menyoroti penatalaksanaan torsio ovarium akibat kista dermoid besar pada trimester kedua kehamilan.

Ilustrasi Kasus: Seorang wanita berusia 16 tahun, G1P0A0, datang pada usia kehamilan 17 – 18 minggu dengan keluhan nyeri perut hebat sejak satu hari. Pemeriksaan fisik menunjukkan massa adneksa kistik yang mobile. Ultrasonografi menunjukkan janin tunggal hidup intrauterin sesuai usia kehamilan dan massa kistik unilokular pada adneksa kiri berukuran 14,5 × 12,7 × 11,5 cm dengan whirlpool sign positif yang mengarah ke torsio ovarium. Pasien menjalani laparotomi dan salpingo-ooforektomi kiri secara emergensi. Pemeriksaan histopatologi menunjukkan mature cystic teratoma dengan nekrosis dan perdarahan luas sesuai dengan torsio, tanpa tanda keganasan. Sitologi cairan asites dan kista menunjukkan lesi jinak. Kehamilan dapat dipertahankan dan kondisi janin pascaoperasi stabil.

Kesimpulan: Kasus ini menunjukkan bahwa intervensi bedah yang cepat pada torsio ovarium trimester kedua dapat dilakukan dengan aman serta memberikan luaran maternal dan janin yang baik.

Kata kunci: Kehamilan; kista dermoid; mature cystic teratoma; torsio ovarium; trimester kedua

Introduction

Adnexal masses are found in about 1–4% of pregnancies due to the increased use of routine obstetric ultrasonography.¹ Most of these masses are functional ovarian cysts, especially corpus luteum cysts, which usually resolve spontaneously during the first trimester. However, some adnexal masses persist beyond 16 weeks of gestation and can cause complications such as torsion, rupture, bleeding, obstruction during labor, and, rarely, malignancy.²

Ovarian torsion refers to the partial or complete rotation of the ovary, often including the fallopian tube, around the vascular pedicle. This rotation causes obstruction of venous and lymphatic outflow, leading to ovarian congestion, edema, and progressive enlargement. If untreated, arterial inflow becomes compromised, ultimately causing ischemia and necrosis.³ Ovarian torsion accounts for roughly 10–20% of gynecologic surgical emergencies during pregnancy and is a time-sensitive condition that requires immediate diagnosis and treatment.⁴

Pregnancy increases the risk of torsion due to both anatomical and hormonal factors. Elevated progesterone levels lead to smooth muscle relaxation and ligamentous laxity, which heightens adnexal mobility. Furthermore, as the uterus enlarges during the late first and early second trimesters, the adnexa are displaced from their usual pelvic position into the abdominal cavity, making them more prone to rotation.⁵ Therefore, the second trimester is considered the peak period for ovarian torsion in pregnancy.

Mature cystic teratoma, also known as dermoid cyst, is the most common benign ovarian tumor in women of reproductive age and accounts for up to 20% of all ovarian neoplasms.⁶ It is also recognized as the most common pathological cause of adnexal torsion in pregnant patients.⁷ The risk of torsion significantly increases when the

tumor diameter exceeds 5–6 cm and becomes even higher in masses larger than 10 cm due to increased weight and mobility.⁸

Delayed diagnosis of ovarian torsion can lead to ovarian loss, peritonitis, thromboembolic events, and adverse pregnancy outcomes such as miscarriage and preterm labor.⁹ Therefore, early diagnosis supported by imaging and immediate surgical intervention are essential to protect maternal health and improve fetal outcomes. This case report details the management of a giant mature cystic teratoma complicated by torsion during the second trimester of pregnancy and discusses the clinical considerations based on current evidence and guidelines.

Early identification of adnexal torsion during pregnancy remains clinically difficult because symptoms are often nonspecific and may resemble common obstetric or gastrointestinal conditions. Delay in diagnosis can lead to ovarian necrosis, increased maternal complications, and potential negative pregnancy outcomes. Therefore, prompt imaging and multidisciplinary teamwork are crucial to improve maternal and fetal outcomes.

Case

A 16-year-old woman, gravida 1, para 0, abortus 0, at 17–18 weeks of gestation, presented to the emergency department with a one-day history of severe, diffuse abdominal pain. The pain was sudden in onset, persistent, and increasingly severe. It was accompanied by nausea but no vomiting. The patient denied vaginal bleeding, amniotic fluid leakage, dysuria, bowel issues, fever, or uterine contractions.

During the physical exam, the patient appeared uncomfortable due to pain. Her blood pressure was 118/82 mmHg, pulse rate 113 beats per minute, respiratory rate 20 breaths per minute, and temperature 36.1°C. Abdominal exam showed a gravid uterus

consistent with gestational age. A palpable, mobile, cystic mass measuring approximately 15 by 12 cm was found in the left lower quadrant.

Abdominal examination further showed localized tenderness in the left lower quadrant with mild guarding. No rebound tenderness was present. The mass was well-defined, mobile, and cystic in consistency. There were no signs of peritoneal irritation. Obstetric examination revealed no uterine contractions, and the cervical os was closed. Fetal heart rate was 140–144 beats per minute.

Laboratory evaluation showed mild leukocytosis, while hemoglobin level, platelet count, and coagulation parameters remained within normal limits. No signs of infection or hemodynamic instability were present.

Transabdominal ultrasonography demonstrated a single live intrauterine fetus consistent with gestational age, an anterior placenta, and adequate amniotic fluid. A large unilocular cystic mass measuring $14.5 \times 12.7 \times 11.5$ cm was identified in the left adnexal region. The cyst showed no septation or papillary projections. Color Doppler examination revealed a twisted vascular pedicle producing a positive whirlpool sign, strongly indicating ovarian torsion. Although minimal peripheral blood flow was observed, the overall findings pointed to significant vascular compromise.

Given the acute presentation and imaging findings consistent with torsion, emergency surgical intervention was necessary. The patient underwent a laparotomy under general anesthesia with proper perioperative monitoring.

Perioperative management included intravenous fluid resuscitation, administration of prophylactic antibiotics (e.g., cefazolin 1 g IV), and adequate analgesia (paracetamol 1 g IV). Maternal hemodynamic status was closely monitored throughout the procedure.

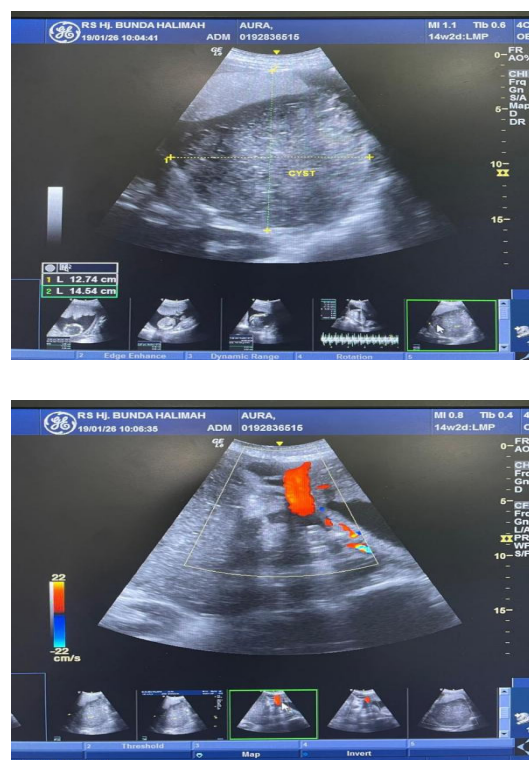


Figure 1 Ultrasound Imaging of the Ovary

Intraoperatively, a significantly enlarged left ovarian cyst with multiple pedicle rotations was identified. The ovary appeared dark bluish and swollen, indicating venous congestion and ischemia. An attempt at detorsion did not restore normal coloration, suggesting irreversible necrosis. Therefore, a left salpingo-oophorectomy was performed. The contralateral ovary and uterus appeared normal. Estimated blood loss was approximately 200 mL. Ascitic fluid and cyst contents were sent for cytological analysis.

Postoperatively, the patient remained hemodynamically stable. Management included intravenous fluid therapy, administration of analgesics (paracetamol 1 g IV), and prophylactic antibiotics. The patient was closely monitored for signs of uterine contractions and fetal well-being. No tocolytic therapy was needed. No uterine contractions were observed. The fetal heart rate ranged between 156–160 beats per minute and remained reassuring.

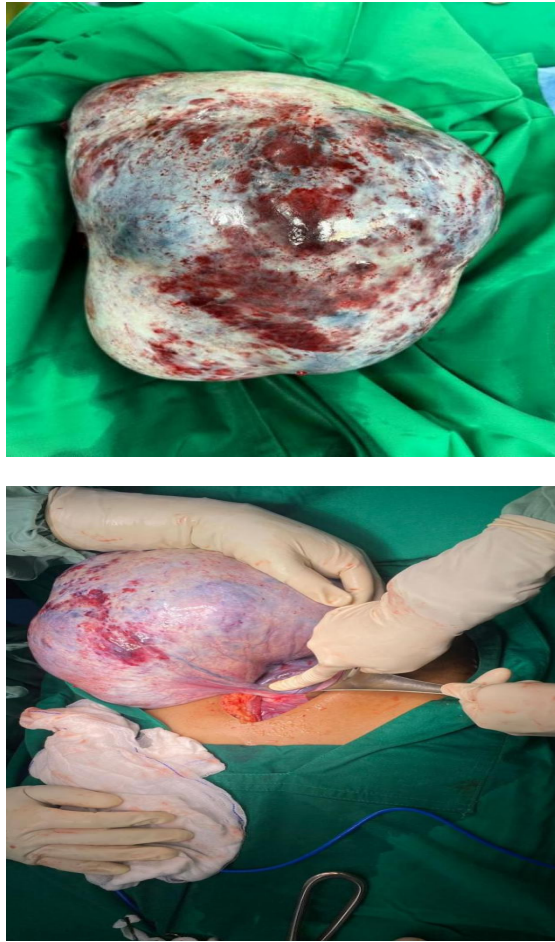


Figure 2 Operative Cystic mass result

Histopathological examination confirmed a mature cystic teratoma composed of ectodermal elements, with extensive hemorrhage and necrosis indicative of ovarian torsion, and no signs of malignancy. Cytology results were benign. The patient was discharged in stable condition on postoperative day 4. Follow-up at two weeks showed normal wound healing, stable maternal status, and normal fetal growth with appropriate gestational development.

Table 1 Timeline of Clinical Course

Time	Clinical Event
Day -1	Onset of severe abdominal pain
Day 0	Admission to hospital

Day 0	Physical examination and ultrasonography performed
Day 0	Diagnosis of suspected ovarian torsion established
Day 0	Emergency laparotomy and left salpingo-oophorectomy performed
Postoperative Day 1	Hemodynamically stable, no uterine contractions, fetal heart rate reassuring
Postoperative Day 4	Patient discharged in stable condition
2-week follow-up	Normal wound healing, stable maternal condition, normal fetal development

Discussion

Ovarian torsion during pregnancy remains a diagnostic challenge because symptoms are often nonspecific and overlap with other causes of acute abdomen. Differential diagnoses include appendicitis, renal colic, degenerating fibroid, placental abruption, and preterm labor.¹⁰ A high index of suspicion is therefore necessary, especially in pregnant patients with known adnexal masses presenting with acute abdominal pain.

The pathophysiology of torsion involves progressive vascular compromise. Initial venous obstruction leads to ovarian edema and enlargement, which worsens twisting and eventually restricts arterial inflow. Prolonged ischemia results in necrosis, as seen in this case.¹¹ The length of torsion greatly affects the chance of salvaging the ovary, with early treatment improving outcomes.

Ultrasonography is the primary imaging modality in pregnancy due to its safety and accessibility. The whirlpool sign, indicating a twisted vascular pedicle, is considered highly specific for ovarian torsion.¹² Although Doppler assessment can show absent or reduced blood flow, normal Doppler results do not rule out torsion because the ovary has

a dual blood supply from both ovarian and uterine arteries.¹³

International guidelines highlight that suspected ovarian torsion requires immediate surgical intervention. Medically necessary surgery during pregnancy should not be postponed, as maternal deterioration poses a greater risk to the fetus than anesthetic exposure.¹⁴ The second trimester is generally considered the safest time for non-obstetric surgery because organogenesis is complete and the risk of spontaneous miscarriage is lower compared to the first trimester.¹⁵

Laparoscopy is becoming more popular because of shorter recovery times and less postoperative pain. However, laparotomy remains suitable in cases with large masses, suspected cancer, or limited visibility.¹⁶ In this patient, the tumor was over 14 cm, making laparotomy the most practical and safe option.

Ovarian preservation is preferred, especially in young patients, and detorsion with cystectomy may be attempted if the ovary appears viable. However, in cases of advanced ischemia with necrosis, salpingo-oophorectomy is necessary to prevent further complications.¹⁷ Unilateral oophorectomy does not significantly impair future fertility as long as the other ovary is healthy.

Maternal and fetal outcomes after second-trimester surgery for adnexal torsion are generally positive. Studies show high rates of pregnancy continuation and a low occurrence of preterm labor when timely intervention is given.¹⁸ Our case supports existing evidence that early diagnosis and proper surgical management can lead to excellent maternal and fetal outcomes.

In pregnant patients, acute abdominal pain has a wide range of possible causes, including appendicitis, kidney stones, degenerating uterine fibroids, placental abruption, and preterm labor. The natural movement of abdominal organs during pregnancy can hide typical clinical signs,

often leading to delays in diagnosis. Therefore, imaging is crucial for telling apart adnexal torsion from other surgical and obstetric emergencies. Early ultrasound assessment greatly improves diagnostic accuracy and helps prevent delayed treatment.

Anesthetic management during pregnancy also requires special consideration. Maintaining adequate maternal oxygenation, avoiding hypotension, and positioning carefully to prevent aortocaval compression are essential to preserve uteroplacental perfusion. Modern anesthetic agents are considered safe when used properly, and current evidence indicates that maternal stabilization remains the key factor for fetal outcome.

Furthermore, this case is especially significant because the patient was an adolescent. Preserving long-term reproductive function is a crucial consideration in this age group. Although unilateral salpingo-oophorectomy was necessary due to ovarian necrosis, the fertility prognosis remains good as long as the contralateral ovary is healthy.

Compared to previously reported cases, this case is notable because of the tumor's large size, exceeding 14 cm, and its occurrence during the second trimester, which is the peak period for ovarian torsion in pregnancy. Previous studies have shown that adnexal masses larger than 10 cm significantly increase the risk of torsion, supporting the findings seen in this patient. A limitation of this report is the lack of long-term follow-up data on pregnancy outcomes and neonatal health. However, short-term maternal and fetal outcomes were positive, suggesting that prompt surgical intervention can lead to good clinical results even in complex cases.

The present case contributes to the growing body of evidence highlighting the importance of rapid assessment and prompt surgical treatment in pregnant patients with suspected ovarian torsion. The positive maternal and fetal outcomes seen in this case

support current guidelines recommending early surgical management when torsion is strongly suspected, even in the second trimester. This report also reinforces that definitive surgical treatment can be safely performed with proper perioperative monitoring.

Conclusion

Ovarian torsion caused by a giant mature cystic teratoma during the second trimester of pregnancy is rare but can be life-threatening. Early diagnosis based on clinical suspicion and ultrasound findings, especially the whirlpool sign, is crucial. Emergency surgery should not be delayed once torsion is suspected. While ovarian preservation is preferred, salpingo-oophorectomy may be needed if the ovary is non-viable. With prompt intervention and proper perioperative care, good maternal and fetal outcomes are possible. Early management is the key to the prognosis of adnexal torsion during pregnancy.

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