

# Torsion of a Large Ovarian Dermoid Cyst in Third Trimester Pregnancy: A Case Report

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## ABSTRACT

Dermoid cysts are the most frequent ovarian tumours among women of reproductive age, constituting a notable 20% of all adult ovarian tumours. They are typically lined by stratified squamous epithelium and contain dermal and epidermal elements. During pregnancy, dermoid cysts are more likely to lead to infection, rupture and torsion. A 23-year-old multigravida (G2P1L1) female at 36 weeks of gestation presented with complaints of left lumbar pain persisting for one day, unrelieved by medication. Ultrasound (USG) revealed a multiloculated septated cystic lesion in the left lumbar region adjacent to the gravid uterus, just anteroinferior to the left kidney. Magnetic Resonance Imaging (MRI) showed a predominantly fat-density multiloculated cystic lesion with twisting of the pedicle. An emergency laparotomy was performed, and the left ovarian cyst was removed, revealing patchy discolored areas of gangrene, and a live healthy foetus was delivered. While torsion of an ovarian cyst is a well-known complication, its presentation during pregnancy is rare. Due to the variable symptoms of ovarian torsion, the clinical presentation can be quite confusing. Therefore, both the obstetrician and radiologist should have a lower threshold for clinical suspicion of torsion in pregnancy, enabling prompt diagnosis and management of such cases to prevent both maternal and foetal mortality.

**Keywords:** Adnexae, Magnetic resonance imaging, Neoplasm, Teratoma, Twisting, Ultrasound

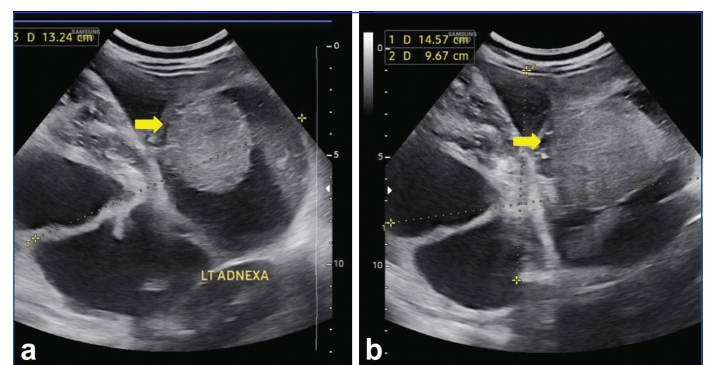
## CASE REPORT

A 23-year-old multigravida (G2P1L1) female at 36 weeks of gestation presented with complaints of left lumbar pain persisting for one day, unrelieved by medication. The pain was intermittent and radiated to the left loin region. There was no history of fever, vaginal discharge, or bleeding. The patient conceived naturally with an interpregnancy interval of six months, without a history of dysuria, diarrhoea, or constipation. She had regular antenatal check-ups and had no relevant past or present medical or surgical history, except for the medical management of small bilateral renal calculi a few years ago. Her first and second trimesters were uneventful.

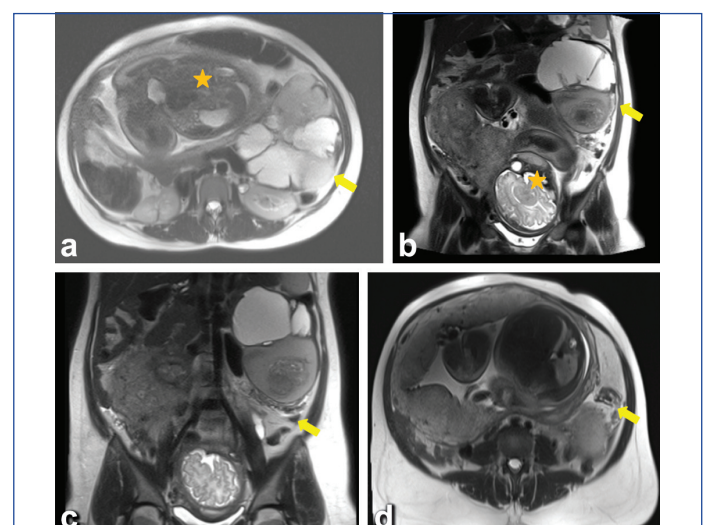
During the general examination, her blood pressure was 100/70 mmHg, her pulse rate was 110 beats/min. Patient was afebrile, and her cardiovascular and respiratory system examinations were normal. The uterine fundus measured about 36 weeks in height with cephalic presentation and a healthy foetal heartbeat. Abdominal examination revealed tenderness in the left lumbar region.

The laboratory parameters of the patient {Complete Blood Count (CBC), Liver Function Test (LFT), Renal Functional Test (RFT), Erythrocyte Sedimentation Rate (ESR) and complete urine examination} were normal. The patient was referred to the Radiology Department for an abdominal scan. Ultrasound revealed a multiloculated cystic lesion with multiple septations in the left lumbar region adjacent to the gravid uterus, measuring 15×10×13 cm, just anteroinferior to the left kidney [Table/Fig-1a,b]. The pedicle of the cyst could not be identified, and the left ovary was not visualised separately.

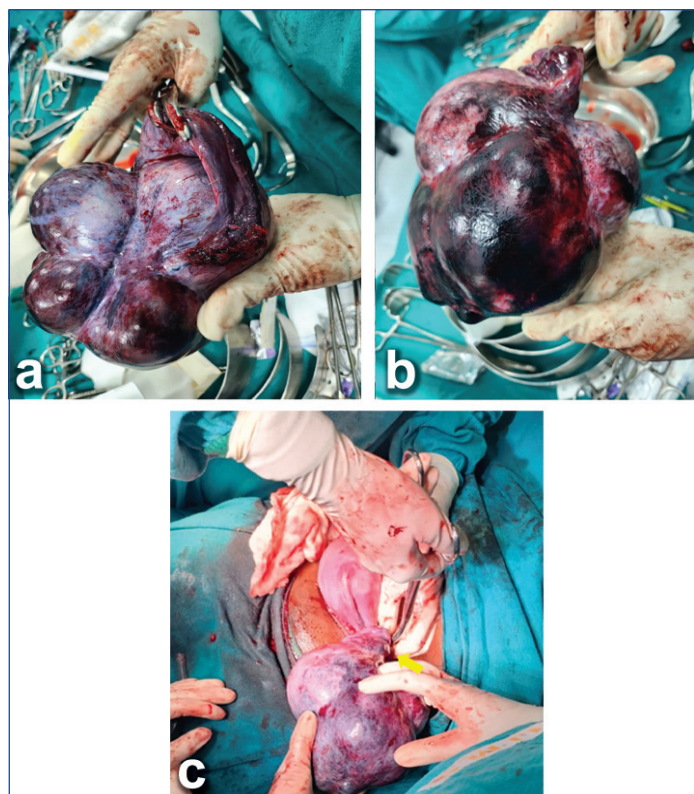
The patient reported severe probe tenderness in the region of the cyst. With a suspicion of ovarian cyst torsion, MRI was recommended. The MRI revealed a predominant fat-density multiloculated cystic lesion with twisting of the pedicle [Table/Fig-2a-d]. Due to a high clinical suspicion of a twisted ovarian dermoid cyst, an emergency laparotomy was performed. The left ovarian cyst was excised, revealing patchy discoloured areas of gangrene. It was twisted around its pedicle by two rotations. A live healthy foetus was delivered [Table/Fig-3a,b,c]. A live healthy foetus was delivered. Histopathological examination confirmed a gangrenous mature cystic



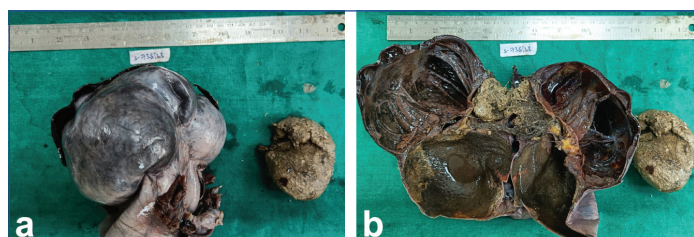
**[Table/Fig-1]:** a,b) USG showed a single intrauterine live foetus of 36 weeks of gestation and a large well-defined multiloculated septated cystic lesion with dense internal echoes measuring 15×10×13 cm, just below the left kidney arising from left adnexa. Fat echogenicity lesions were seen floating in the loculations of the cyst (Yellow arrows).



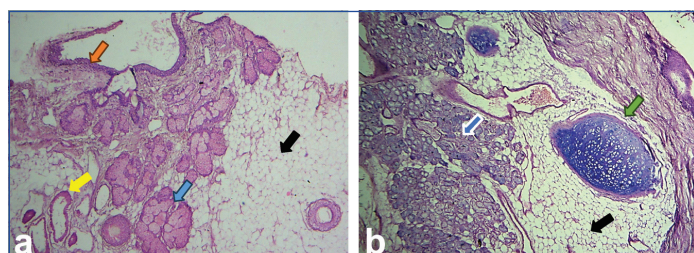
**[Table/Fig-2]:** a,b) Axial and coronal T2W MRI images reveal multiseptated loculated cystic lesion in the left lumbar region related to the kidney posteriorly. There are both hyperintense, as well as, hypointense cyst contents (Yellow arrows). There is gravid uterus in the right side of abdomen (asterisk); c,d) Coronal and axial T2 Weighted (T2W) images demonstrating twisting of the pedicle of the cystic lesion (Yellow arrows).



**[Table/Fig-3]:** a,b) Intraoperative photograph of the ovarian cyst; c) Twisting of the pedicle of the cystic lesion (Yellow arrow).



**[Table/Fig-4]:** a) Gross photograph showing gangrenous ovarian cyst with cyst content; b) Gross photograph of cut opened ovarian cyst with gangrenous changes and cyst contents.



**[Table/Fig-5]:** a) Microphotograph showing stratified squamous epithelial lining (orange arrow) with pilosebaceous unit (yellow arrow), glands (blue arrow) and fat (black arrow) (H&E, 40x); b) Microphotograph showing cartilage (green arrow), fat (black arrow), and glands (blue arrow) (H&E, 40x).

ovarian teratoma [Table/Fig-4a,b,5a,b]. The patient was discharged after five days with a healthy baby. At the one-month follow-up in the Obstetrics and Gynaecology (OBG) Outpatient Department (OPD), the patient was stable without any complaints.

## DISCUSSION

Dermoid cyst is the most common ovarian tumour among women of reproductive age, accounting for a remarkable 20% of all adult ovarian tumours [1]. These structures originate from germ cells and consist of endodermal, ectodermal and mesodermal tissues. The common ovarian lesions during pregnancy include cystic teratoma, paraovarian cyst, serous cystadenoma, corpus luteal cysts and luteomas [2]. Approximately 0.3% of pregnancies involve a dermoid cyst, typically detected in the second trimester. Ovarian cysts are more likely to result in complications during pregnancy, such as

torsion, rupture, infection, malignant transformation, impaction of the cyst in the pelvis leading to urinary retention, obstructed labour, and foetal malpresentation.

Ovarian torsion refers to the total or partial twisting of the ovary around its vascular pedicle. Predisposing factors for torsion include moderate cyst size, free mobility and a long pedicle. Common ovarian lesions prone to torsion are serous cystadenomas and dermoid cysts. Complete torsion can cause venous obstruction, leading to venous congestion, haemorrhage, and necrosis. The cyst becomes tense and may rupture [3]. The risk of ovarian torsion increases fivefold during pregnancy, with an incidence of five cases per 10,000 pregnancies [4].

A comprehensive assessment of the pelvic viscera using all imaging modalities aids in making a prompt diagnosis. Benign ovarian tumours, which present as lead masses, pose the greatest risk for pedicle twists. Before considering a malignant explanation for a complex appearing lead mass, any acute changes in the imaging appearance of a benign mass should be thoroughly investigated [5].

Cysts less than 6 cm in diameter with benign imaging features are typically managed conservatively, as they may undergo spontaneous resolution. Corpus luteal cysts usually regress by 12-16 weeks. Cysts larger than 10 cm are usually surgically resected due to the increased risk of rupture, torsion, or malignant transformation [6]. During pregnancy, there is a significant risk of cancer in adnexal masses [7]. The management of cysts sized between 5-10 cm is debated, but in up to 50% of cases, emergency exploratory laparotomy may be required due to rupture, torsion, or infarction [8]. The clinical presentation of ovarian torsion can vary during pregnancy, especially in the third trimester, which can complicate the picture and lead to misdiagnosis.

In a case report by Dhobale AV et al., USG revealed a large dermoid cyst in a primigravida who presented with acute abdominal features in the second trimester [1]. Due to the acute emergency, laparotomy was performed, and a right ovarian cyst measuring 14×10 cm was found to be triple rotated around its pedicle. Oophorectomy was carried out immediately after untwisting it. In another case report by Nia GK et al., a primigravida presented in the second trimester with severe right lower abdominal pain with USG features of ovarian torsion of a large dermoid cyst [9]. During laparotomy, a large dermoid cyst approximately 10×12 cm in size was carefully removed, and the pregnancy was continued.

In a similar case report published by Evangelia et al., a multigravida presented at 35 weeks of gestation with sudden onset severe and constant right iliac fossa abdominal pain. A pelvic USG scan revealed a right-sided 6×3 cm cystic lesion, consistent with a right ovarian dermoid cyst with torsion of the ovary [10]. Given the clinical presentation of an acute abdomen, a midline laparotomy was performed, revealing the right ovary was twisted twice and appeared as a purple enlarged structure. Cystectomy of the right dermoid and evacuation of blood clots were carried out, and the right tube and ovary were conserved.

In the present case report, the patient experienced intermittent left lumbar pain radiating to the left groin. Additionally, the patient had a previous history of medically managed left renal calculi. Therefore, the presumptive clinical diagnosis was left renal colic. In such cases, a delay in diagnosis and timely intervention can be life-threatening for both the mother and the baby.

Ultrasound with Doppler examination of the ovarian cyst and pedicle has high false-negative rates. MRI is superior in determining the twist of the pedicle, but imaging findings should not override the clinical suspicion of torsion [11].

Most studies recommend the removal of any cystic lesion larger than 6 cm in the second trimester of pregnancy due to the increased risk of complications in the later stages of pregnancy [9,12,13].



The present case is atypical due to its clinical presentation, with lumbar pain radiating to the loin and its intermittent nature, mimicking renal colic. Once the dermoid was diagnosed on USG, the authors promptly transferred the patient to MRI as there was severe probe tenderness and torsion of the dermoid was identified. Timely intervention saved the lives of both the mother and the baby.

## CONCLUSION(S)

Torsion of an ovarian cyst is a well-known complication, but its occurrence during pregnancy is very rare. Due to the variable symptoms of ovarian torsion, the clinical presentation can be quite confusing. Therefore, both the obstetrician and radiologist should have a lower threshold for clinical suspicion of torsion in pregnancy, for prompt diagnosis and management of such cases, preventing both maternal and foetal mortality.

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