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Case Report

Radiology Section

A Rare Case of Ovarian Dysgerminoma with Torsion in Pregnancy

KOMAL RATHOD[1], PRATAP SINGH PARIHAR[2], BHARADWAJ SARASWATHULA[3], SABURI SINGHANIA[4], YOGITA RATHOD[5]

ABSTRACT

Early identification of the clinical and imaging characteristics of ovarian dysgerminoma is crucial for prompt care of this rare malignant germ cell tumour, which primarily affects young women and adolescents. We describe the case of a young woman who experienced sporadic lower stomach discomfort and secondary amenorrhoea for three months. A large, multilobulated, solid-cystic mass originating from the right adnexal region with prominent internal septations and moderate post-contrast enhancement was seen on Contrast-Enhanced Magnetic Resonance Imaging (CE-MRI) of the pelvis following clinical evaluation and initial laboratory investigations. However, there was no evidence of ascites or metastatic spread. With dysgerminoma as the primary differential, these imaging features clearly supported a malignant germ cell tumour. Histopathology verified the diagnosis of ovarian dysgerminoma after the patient had surgical exploration and lump excision. Although ovarian tumours in pregnancy are uncommon, dysgerminoma in pregnancy is extremely rare, emphasising the importance of maintaining a high level of suspicion in reproductive-age women presenting with adnexal masses.

Keywords: Lump, Imaging, Malignant germ cell tumour, Metastasis

CASE REPORT

A 27-year-old married woman (G2P1L1) visited the obstetrics and gynaecology outpatient department, complaining of amenorrhoea for three months and intermittent lower abdomen pain over the past four weeks. The pain was described as dull and unpleasant, centred on the lower abdomen, without radiation, and unconnected to gastrointestinal or urinary symptoms. There was no history of nausea, vomiting, weight loss, or fever.

She had attained menarche at the age of 13 years and had been having regular menstrual cycles (28-30 days) lasting 4-5 days with moderate flow for three months before presentation. There was no history of using contraception and hormones, or having chronic conditions like tuberculosis or thyroid malfunction. There was no significant past or family history.

Her obstetric history revealed she was Gravida 2, Para 1, Living 1. She had delivered a female child three years ago via Full-Term Normal vaginal Delivery (FTND). The child is currently alive and healthy. Her Last Menstrual Period (LMP) was 28th February 2025, corresponding to an Estimated Date of Delivery (EDD) of 5th December 2025. Based on this, her Period of Gestation (POG) at the time of presentation was nine weeks and six days.

The patient was conscious, cooperative, and well-oriented to time, place, and person. At the time of presentation, vital signs were normal, with a blood pressure of 112/70 mmHg, a pulse of 84 bpm, and a stable temperature. There were no signs of pallor, icterus, or lymphadenopathy. The abdomen was soft and non-tender, with no signs of distention or guarding. A vague, hard mass was palpated in the right iliac fossa region, distinct from the uterus. The bulk moved and showed no symptoms of peritoneal discomfort. The uterine enlargement was not noticeable per abdomen, consistent with early gestation. There was no sign of ascites or organomegaly, and bowel sounds were normal.

Routine blood investigations were within normal limits. Haemoglobin was 12.1 g/dL, total leukocyte count 7,700/mm^3, and platelet count 2.43 lac/mm^3. A peripheral smear revealed normocytic red blood cells. Normochromic White Blood Cells (WBCs) were within normal ranges. Platelets: Adequate on smear. No haemoparasites were found. Liver and renal function tests were normal. Urinalysis was unremarkable. Beta-human Chorionic Gonadotropin (β-hCG) levels were consistent with early pregnancy (9-10 weeks of gestation).

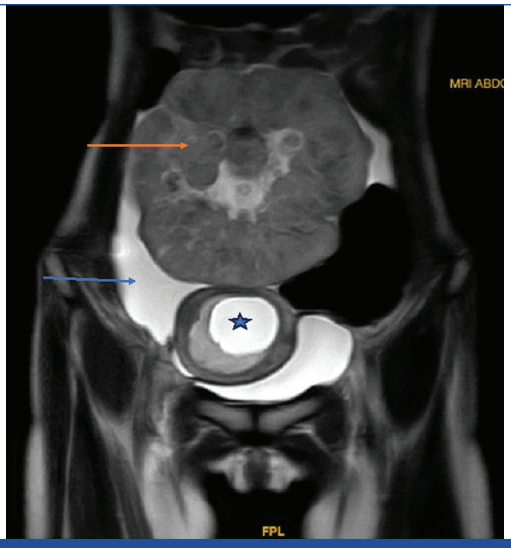
Given the adnexal mass, tumour markers were assessed with the following results:

- Lactate Dehydrogenase (LDH): 2000 U/L (significantly elevated; normal < 250 U/L)
- Alpha-Fetoprotein (AFP): 4.94 ng/mL (within normal range)
- β-hCG: 13,568 mIU/mL (correlating with 9-10 weeks of gestation)
- Cancer Antigen 125 (CA-125): 31.3 U/mL (within normal range)
- Cancer Antigen 19-9 (CA 19-9): 9.7 U/mL (normal)
- Carcinoembryonic Antigen (CEA): 0.42 ng/mL (normal)

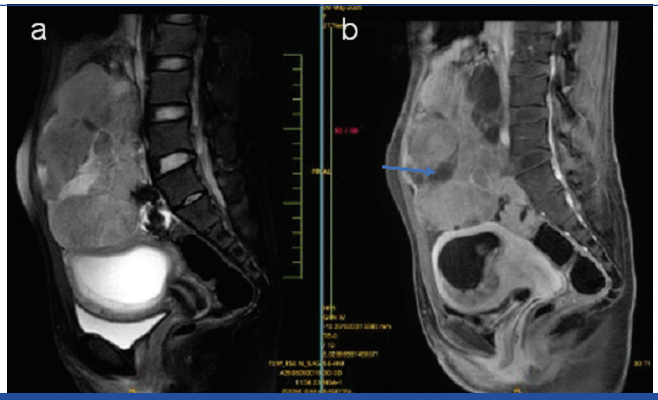
The marked elevation of LDH, with otherwise normal tumour markers, supported the suspicion of a dysgerminoma, which is known to be associated with high LDH levels.

A routine obstetric ultrasound was performed at an outside centre, which revealed a Single Intrauterine Live Fetus (SIULF) corresponding to eight weeks + one day of gestational age, which was appropriate for the dates. In addition, the right adnexal region identified a large, heterogeneous, solid adnexal mass measuring 13 × 10 × 11 cm with an approximate volume of 874 cc. The mass appeared highly vascular on Doppler, and the right ovary could not be visualised separately, suggesting it was involved within the lesion.

Subsequent MRI of the abdomen and pelvis (non-contrast) was performed for further characterisation. It revealed a large, multilobulated, heterogeneously enhancing complex solid mass arising from the right adnexa, as shown in [Table/Fig-1], with non-enhancing necrotic areas within, as depicted in [Table/Fig-2]. The right ovary could not be delineated separately, suggesting the lesion originated from it. The mass exerted a mass effect over adjacent bowel loops and the uterus. Small amounts of free fluid were noted in the abdomen and pelvis, raising concern for malignant ascites as shown in [Table/Fig-1].

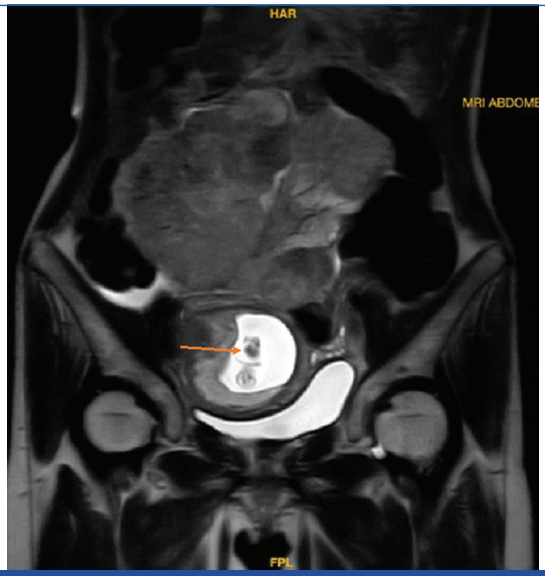


[Table/Fig-1]: T2W image coronal section non-contrast MR abdomen- pelvis showing multilobulated altered signal intensity mass with heterogeneous necrotic areas within (orange arrow). It also shows a g sac within the uterus (blue star) and ascites in the pelvis (blue arrow).



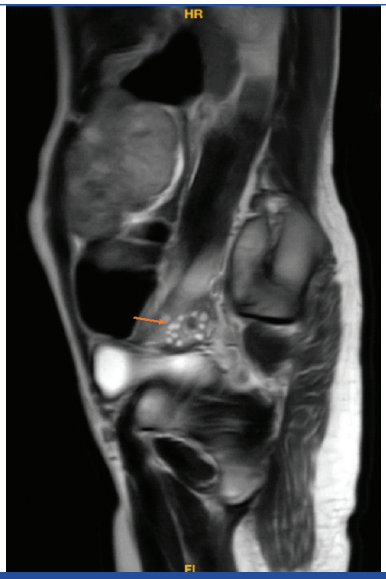
[Table/Fig-2]: T2W sagittal non-contrast and contrast-enhanced images showing heterogeneous post-contrast enhancement of the lesion with non-enhancing necrotic areas within (b image – blue arrow).

The uterus was visualised in the MR scan, and an intrauterine gestational sac was noted with a foetus within, as shown in [Table/Fig-3]. The left ovary was normal, as shown in [Table/Fig-4]. The overall features highly suggest a neoplastic aetiology, with dysgerminoma of the right ovary being the most likely differential.



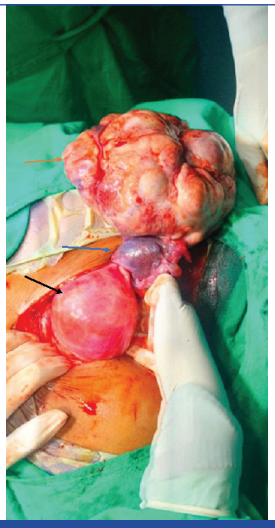
[Table/Fig-3]: T2W image coronal section non-contrast MR abdomen- pelvis showing intrauterine live foetus (orange arrow).

Ascitic fluid cytology was performed to assess for malignant dissemination. Approximately 2 mL of yellow-reddish fluid and a small reddish tissue fragment were received. Smear examination revealed numerous scattered inflammatory cells within a proteinaceous background, predominantly polymorphonuclear leukocytes, lymphocytes, and scattered reactive mesothelial cells.

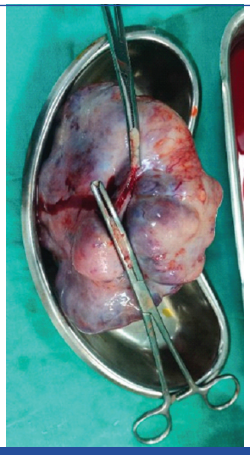


[Table/Fig-4]: T2W sagittal non-contrast MR pelvis image showing normal left ovary (orange arrow).

The patient underwent a mini-laparotomy under combined spinal and epidural anaesthesia. Intraoperatively, a 12 × 10 cm multiloculated right ovarian mass was identified with a 1.5-turn torsion of its pedicle as shown in [Table/Fig-5,6]. The right ovary could not be visualised separately. A right salpingo-oophorectomy was performed, and ascitic fluid and omental biopsy were taken. Haemostasis was secured, and the procedure was completed uneventfully.

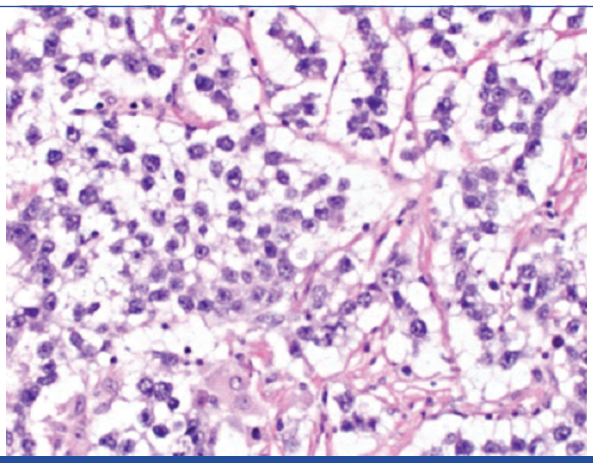


[Table/Fig-5]: Intra-operative image showing the multilobulated tumour (orange arrow), twisted pedicle (blue arrow), and uterus (black arrow).

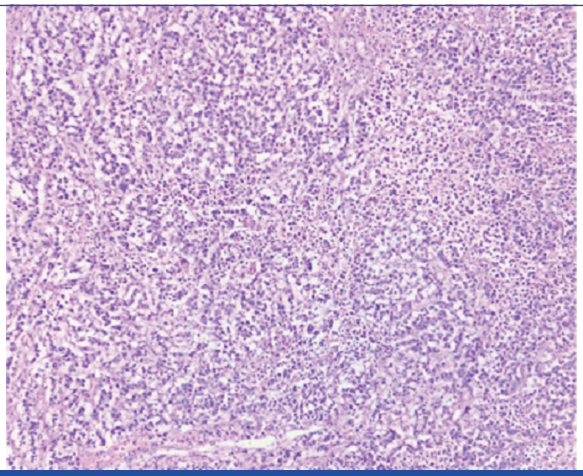


[Table/Fig-6]: Image showing excised tumour.

Histopathological examination of the excised right ovarian mass showed tumour cells having rounded to angulated, square-like nuclear membranes with coarse chromatin and occasionally prominent nucleoli and voluminous clear cytoplasm. Thin and delicate fibrous septae separate aggregates of cells (40x) as shown in [Table/Fig-7]. It also revealed nests of epithelioid tumour cells in a collagenous background (10x), suggestive of dysgerminoma [Table/Fig-8]. The tumour was confined to the ovary without capsular breach or surface involvement. Peritoneal washings and omental biopsy showed no evidence of malignancy. Based on histological features, the tumour was staged as: TNM Stage: pT1a Nx Mx, FIGO Stage: IA, and AJCC Stage: Stage IA.



[Table/Fig-7]: Histological slide image showing tumour cells have rounded to angulated square-like nuclear membranes with coarse chromatin and occasionally prominent nucleoli and voluminous clear cytoplasm. Thin and delicate fibrous septae separate aggregates of cells (40x).



[Table/Fig-8]: Histological slide image showing nests of epithelioid tumour cells in a collagenous background (10x).

A postoperative obstetric ultrasound revealed a single intrauterine live foetus measuring 43 mm in Crown-Rump Length (CRL), indicating a gestational age of 11 weeks + 1 day. Cardiac activity was observed. The placenta was anterior, grade 0, and low-lying, measuring 8.2 mm from the internal organs. After one week, the patient was advised to get a Nuchal Translucency (NT) scan for routine first-trimester screening. There were no abnormalities found in foetal growth or viability. In the prenatal clinic, the patient received routine follow-up care. At the time of paper submission, she was asymptomatic, clinically stable and 20 weeks along in her pregnancy. Foetal growth and viability were shown to be normal by serial obstetric ultrasounds, and there were no surgical or obstetric difficulties. She is still receiving standard prenatal care with a multidisciplinary follow-up scheduled.

DISCUSSION

Ovarian dysgerminoma, the female analogue of testicular seminoma, develops from a primitive germ cell. It is the most prevalent malignant ovarian germ cell tumour, accounting for 32.8-37.5%, followed by immature teratomas, yolk sac tumours, and mixed germ cell tumours [1,2]. Dysgerminoma often develops in the second and third decades of life, but 10% of cases occur in the first decade [3]. Bilateral ovaries are involved in 10-15% of cases [3].

Dysgerminoma during pregnancy is documented seldom in the literature, with incidence rates ranging from 0.2 to 1 per 100,000 pregnancies [4]. Dysgerminoma can be associated with dysgenetic gonads and sexual maldevelopment, including Turner syndrome, testicular feminisation, and triple X syndrome, and it is virtually always accompanied by high serum lactic dehydrogenase, which is generally isoenzymes. Elevated serum β-hCG and AFP levels have also been recorded [3].

If an ovarian tumour exists, the ipsilateral ovarian arteries may enlarge. As a result, the "ovarian vascular pedicle sign" described by Lee JH et al., is also a valuable indication to pinpoint the actual site of origin of the mass, especially in cases of unclear sites due to the mass's great size or when complications such as torsion emerge [5]. The characteristic imaging appearance of ovarian dysgerminoma is a big, well-encapsulated, multilobulated, wholly or mainly solid mass. It has a strong signal on T2 and can be heterogeneous in cases of big masses. Compared to yolk sac tumours, ovarian dysgerminomas frequently display an enhancement lower than myometrium on contrast-enhanced CT and MR images [6,7].

Fibrovascular septa in the tumour are a common imaging characteristic of dysgerminoma, as Tanaka YO et al., documented initially in 1994 [8]. Due to their fibrous nature, traditional fibrovascular septa appear as hypointense lines on T2-weighted images and exhibit augmentation following contrast injection on both CT and MR imaging.

MRI may help to identify dysgerminoma from other Ovarian Malignant Germ Cell Tumours (OMGCTs), solid non-OMGCTs, and epithelial ovarian tumours. Concurrently, MRI is essential in the local and extra-ovarian staging of dysgerminoma, preoperative planning, and identifying recurrences [9].

There have been a few reports of ovarian dysgerminoma during pregnancy in the literature. Awada R et al., (2024) reported a rapidly progressing cancer that necessitated early surgery and careful observation [10], whereas Sas I et al., (2021) discovered a case in early pregnancy that was treated with fertility-sparing surgery [11]. Our patient's presentation and therapy mirror many of these characteristics, including the need for an MRI to identify the lesion and arrange safe surgical care during pregnancy.

In our case, a notable unfavourable intraoperative finding was the discovery of ovarian torsion, which, if not treated promptly, may have resulted in ovarian infarction and a poor pregnancy outcome. Another source of concern was the presence of ascitic fluid, which increased the likelihood of malignant cell spread; nevertheless, cytopathology of the ascitic fluid and an omental biopsy revealed no malignant cells, providing reassurance.

Ovarian dysgerminoma is treated with surgical excision, with young women preferring fertility-sparing treatment. Early-stage illness is frequently treated with a unilateral salpingo-oophorectomy. Adjuvant chemotherapy, usually with a platinum-based regimen, is required in advanced stages or for residual disease. Radiotherapy is rarely utilised due to its gonadotoxic properties. Chemotherapy may be considered during pregnancy; however, intensive multidisciplinary supervision is required for the best maternal and foetal results [12].

Other malignant germ cell tumours, such as yolk sac tumour, immature teratoma, and mixed germ cell tumour, were the main differentials investigated. These were less plausible because the patient's AFP levels were normal, ruling out a yolk sac tumour, and imaging revealed no cystic, fatty, or calcified components, indicating an immature teratoma. A mixed germ cell tumour was less likely if βhCG levels were not above pregnancy-related values. The elevated

LDH and classical imaging findings suggested dysgerminoma, which was confirmed by histological examination.

CONCLUSION(S)

Ovarian dysgerminoma is an uncommon germ cell tumour that is difficult to identify. While histological investigation is the only conclusive method of diagnosis, several radiological characteristics might raise suspicion of its presence. Ovarian dysgerminoma is highly rare during pregnancy, and identifying it presents unique therapeutic hurdles due to overlapping symptoms and imaging constraints. This case demonstrates the need to keep a high index of suspicion for adnexal masses in pregnant women, as well as radiology's critical role in early detection. Early detection allows for immediate management, improves maternal outcomes, and preserves fertility wherever feasible.

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PARTICULARS OF CONTRIBUTORS:

1. Junior Resident, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
2. Professor and Head, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
3. Junior Resident, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
4. Junior Resident, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.
5. Junior Resident, Department of Radiodiagnosis, Datta Meghe Institute of Higher Education and Research, Wardha, Maharashtra, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Komal Rathod,
Department of Radiodiagnosis, Jawaharlal Nehru Medical College,
Wardha-442004, Maharashtra, India.
E-mail: rathodkomal9527@gmail.com

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