

CASE REPORT

A Journey of Hope: A Primigravida with an Ovarian Teratoma.

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Abstract

Ovarian teratomas (OTs) are categorized as either mature or immature. Mature cystic teratomas (MCTs), also known as dermoid cysts, are the most common type of germ cell tumours in the ovaries of women of reproductive age. OTs generally remain asymptomatic until they reach a substantial size. Transvaginal and transabdominal ultrasounds are crucial for evaluating pelvic masses and distinguishing between benign and malignant cases. These imaging methods are commonly used for diagnosis. A histopathology report is essential for confirming an OT diagnosis, and surgical intervention, using various approaches, is the only treatment option. In this case, we reported a primigravida woman at 8 weeks of gestation presented with irregular menses and ultrasound imaging revealed a unilateral dermoid cyst, which was subsequently diagnosed as a mature ovarian teratoma.

Keywords: *Dermoid cyst, mature cystic teratomas(MCTs), ovarian teratomas(OTs).*

Introduction

The occurrence of ovarian tumours during pregnancy is relatively rare, with an incidence between 0.3% and 5.4%. Among these, dermoid cysts and cystadenomas are the most prevalent benign ovarian tumours found [1]. Ovarian teratomas can be classified into several subcategories: mature cystic teratomas, immature teratomas, monodermal (highly specialized) teratomas (such as struma ovarii, carcinoid tumours, neuroectodermal tumours, and sebaceous tumours), and fetiform teratomas [2]. The most common clinical manifestation of patients experiencing MCT is asymptomatic, however, it can sometimes cause major abdominal and pelvic pain [2]. Early detection and detailed ultrasounds are vital in antenatal care within primary care settings, ensuring the health of both the expectant mother and her growing foetus.

Case report

A 23-year-old primigravida at 8 weeks of gestation came for antenatal booking. She did not have a previous medical or surgical history. She sought antenatal care after she missed her period for 8 weeks. She also complained of having irregular menses over the past few months. During her initial presentation, she informed that she had irregular menses but was never investigated before. Her menstrual cycles occurred every 2 to 3 months, lasted for 3 days, and were not accompanied by dysmenorrhea. Otherwise, she had no nausea, vomiting, abdominal pain, abnormal uterine bleeding, or vaginal discharge. There was no excessive hair growth on her face or body. Otherwise, she was well with no gastrointestinal or genitourinary symptoms. She had no prior history of illnesses or allergies and denied using any medications. On physical examination, she was alert, not pale, and her vital signs were within the normal range. An abdominal examination was unremarkable. Her urine pregnancy test was positive. Haemoglobin at booking was 11.9 g/dL. All antenatal infectious screenings were non-reactive.

The ultrasound demonstrated a viable singleton foetus with a crown-rump length of 17.9 mm, indicating an 8-week gestation period [Figure 1]. However, there was an incidental finding of a large right adnexal mass measuring 4.6 cm × 4.1 cm, most likely originating from the right ovary [Figure 2]. The mass was heterogeneous in nature and there was a presence of an echogenic focus with acoustic shadowing within a predominantly cystic structure. This was highly suggestive of an ovarian teratoma. She was then referred to the obstetrics and gynaecology team for confirmation of the findings and further expert management. A diagnosis of a right dermoid cyst was established at 8 weeks of gestation, and she underwent a laparoscopic right cystectomy. Histopathological examination confirmed the cyst as a mature cystic teratoma. The histopathological findings revealed a diverse range of well-differentiated tissues originating from all three germ cell layers, each in its mature form [Figure 3 (a-d)]. Tumour markers, including CA-125 and alpha-fetoprotein, were within normal limits. Postoperatively, her antenatal care resumed as normal.

Discussion

Dermoid cysts, or mature cystic teratomas, are typically found in young women of reproductive age and represent 20%-40% of ovarian masses in pregnant women [1]. Cystic teratoma is the most common ovarian neoplasm, consisting of well-differentiated derivatives of the germ cell layers (ectoderm, mesoderm, and endoderm) that can develop into structures like hair, muscle, teeth, or bone. Teratomas are tumours made up of various parenchymal cell types from more than one germ layer, often including all three. They originate from totipotential cells and are usually located midline or paraxial [3]. The ovary is the most common gonadal site, though they are also found in the testes. Occasionally, cystic teratomas appear in sequestered midline embryonic cell rests, such as the mediastinum (7%), retroperitoneum (4%), cervical region (3%), and

intracranial area (3%) [4]. These cells can differentiate into various tissues found in the body, including hair, teeth, fat, skin, muscle, and endocrine tissue. Most MCTs are unilateral, although they can also be bilateral [5]. In unilateral scenarios, MCT is more common on the right side (72.2%). Menstrual irregularities are also linked with 15% of cases. Although many MCTs are discovered incidentally, about 20% of cases necessitate clinical intervention due to complications. In this patient, the presenting symptom was only irregular menstruation, without abdominal or pelvic pain, however, it is still leading to a diagnosis of mature ovarian teratoma.

Ovarian torsion is rare during pregnancy as the gravid uterus usually limits the space for the cyst to twist on its pedicle [6]. Ovarian torsion resulting from a mature cystic teratoma (MCT) during pregnancy can lead to acute abdominal pain, necessitating emergency surgery to prevent damage to the ovary. Both torsion and rupture of an ovarian teratoma during pregnancy can cause serious complications and negative outcomes.

Ovarian torsion occurs when the suspensory ligament, which connects the ovary and its vascular peduncle to the pelvic wall, twists. This twisting leads to gradual swelling of the ovarian tissue, reduced blood flow (ischemia), and ultimately, haemorrhagic infarction. Additionally, severe tissue damage or death may result in the loss of the affected ovary [6]. Besides that, rupturing an ovarian teratoma can cause severe abdominal pain, internal bleeding, and peritonitis, all of which require immediate medical attention. In pregnant women, this can lead to severe pain, bleeding, and shock [7]. Detecting free fluid in the abdomen via ultrasound can indicate a rupture. Such ruptures during pregnancy can significantly affect outcomes, potentially causing shock or haemorrhage and necessitating emergency surgery. Although the overall prognosis is generally good, complications can still arise for both mother and baby. Research has shown that mature cystic teratomas (MCTs) are associated with adverse pregnancy outcomes like

intrauterine growth restriction (IUGR), preterm deliveries, and complicated labour [7]. Specifically, MCTs larger than 5 cm increase the risk of premature rupture of membranes (PROM). The increased use of ultrasonography (USG) in recent years has led to the diagnosis of asymptomatic multiple ovarian masses in pregnant women [6]. Ultrasound is critical in identifying ovarian masses and differentiating between benign and malignant tumours. About this case, a bedside ultrasound at a primary care setting revealed a unilateral ovarian cystic mass which was later confirmed as ovarian teratoma. Diagnosing ovarian tumours is challenging because of their diverse internal structures and appearances on ultrasound. Echogenic, fluid-filled masses can look like solid lesions, making it hard to identify mature cystic teratomas (MCTs). Ovarian cystic teratomas can display a wide range of echo patterns [8]. In this case, the mass appeared mixed, with an echogenic area and shadowing inside a mostly cystic structure, which supports the diagnosis of an ovarian teratoma.

While MRI provides detailed tissue plane definitions and relationships with other organs when ultrasound results are inconclusive [9], it was unnecessary here as ultrasound findings alone identified the dermoid cyst, later confirmed as a mature ovarian teratoma. Laparoscopy is the preferred treatment approach, with cystectomy being ideal to preserve ovarian parenchyma. This patient underwent a laparoscopic right cystectomy to remove the unilateral dermoid cyst. Research has shown that laparoscopic removal of ovarian dermoid cysts is safe [10], and it is considered safer than laparotomy during the late first or second trimester, despite the risk of cyst rupture [11]. The same approach was used in this case.

Conclusion

Mature teratoma is a benign tumour with a good prognosis. Diagnosis is presumed by radiological examinations and confirmed by pathology. However early diagnosis is crucial with a good

skill in antenatal scan in primary care so that it will not be missed and can be managed successfully and in a timely manner.

Recognizing both uncommon presentations and typical signs, alongside a fundamental understanding of their pathological counterparts, enables more accurate diagnosis and appropriate treatment decisions. Ultimately, the patient's clinical symptoms should guide the choice of the most suitable management approach.

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Conflict of interest The authors declare that they have no conflict of interest.

Patient's consent for the use of images and consent for publications

The patient provided consent to use images and content for publications.

Authors' Contribution

- Dr. Norasikin: Contributed to the conception of the study and drafting of the case report.
- Dr. Fatin 'Amira : Analyzed and assisted in histopathological interpretation.
- Dr. Mohd Daud : Provided insights into the discussion and reviewed the literature on ovarian teratoma effects during pregnancy.
- Dr. Suhaiza : Reviewed the manuscript and provided critical revisions.
- All authors : Read and approved the final manuscript.



Figure 1. Ultrasound picture at 8 weeks of gestation showed a singleton viable

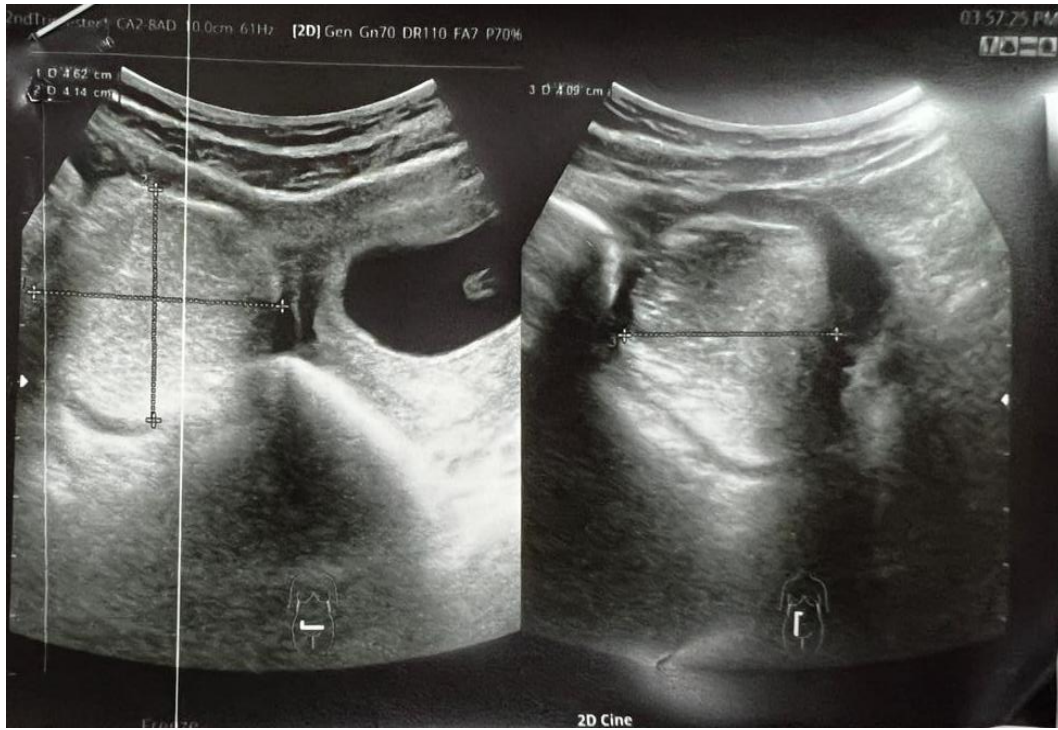


Figure 2. Ultrasound picture at 8 weeks gestation showed one large heterogenous echogenicity cystic mass size of 4.6 cm x 4.1 cm

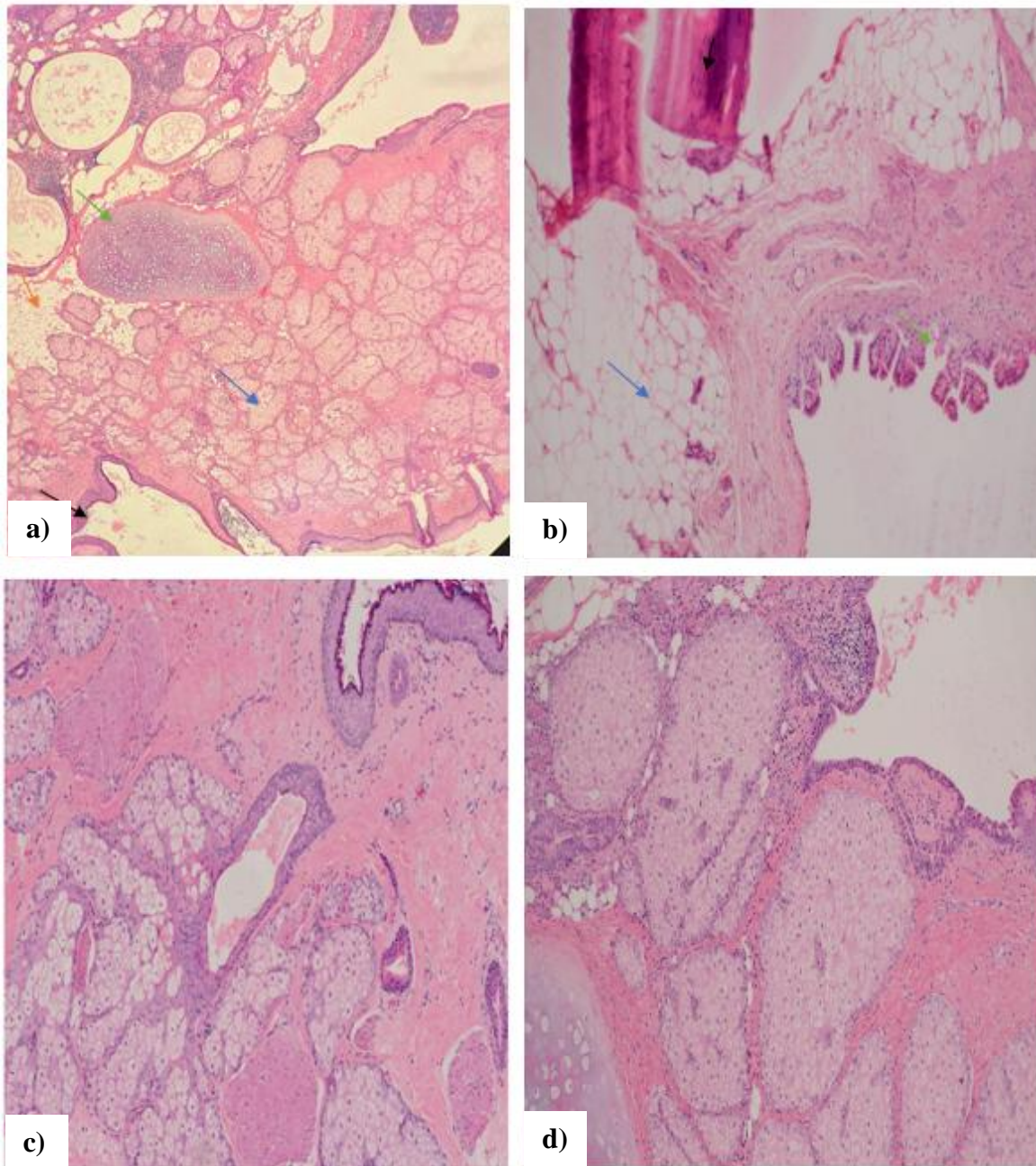


Figure 3. (a) Hematoxylin and Eosin staining at 40X show view of mature cystic teratoma, composed of stratified squamous epithelium (black arrow), sebaceous glands (blue arrow), mature cartilage (green arrow) and mature adipose tissue (red arrow). (b) Hematoxylin and Eosin staining at 100X show mature bone (black arrow), mature adipose tissue (blue arrow) and choroid plexus (green arrow). (c) Hematoxylin and Eosin staining at 100X show stratified squamous epithelium, skin adnexae and smooth muscle bundles. (d) Hematoxylin and Eosin staining at 100X show pseudostratified columnar epithelium with goblet cells, sebaceous glands and mature cartilage.

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