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Giant Ovarian Serous Cystadenoma in the Second Trimester of Pregnancy: Successful Conservative Surgical Management by Debulking and Marsupialization with Term Delivery – A Case Report

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Abstract: Adnexal masses complicate 0.05%–2.4% of pregnancies, with the majority being benign and many resolving spontaneously. Symptomatic large cysts, however, may require intervention. Here, we report a case of a 29-year-old primigravida at 26 weeks + 3 days' gestation who presented with progressive abdominal distension, dyspnea on exertion, orthopnea, early satiety, and difficulty ambulating. Imaging revealed a large multilocular cystic mass (25 × 19.1 × 16.2 cm) arising from the pelvis. Exploratory laparotomy with controlled drainage, tumor debulking, and marsupialization were performed. Histology confirmed serous cystadenoma. Postoperative management included magnesium sulfate for fetal neuroprotection, antenatal corticosteroids for lung maturity, and nifedipine tocolysis. The pregnancy continued uneventfully, culminating in cesarean delivery at 38 weeks of a healthy male infant (3.24 kg). This case highlights the feasibility of conservative surgical management of giant benign ovarian cysts in the second trimester when laparoscopy is unavailable, with good maternal and fetal outcomes.

Keywords: *Ovarian Serous Cystadenoma; Pregnancy; Second Trimester; Laparotomy; Marsupialization; Tocolysis; Magnesium Sulfate; Antenatal Corticosteroids.*

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I. INTRODUCTION

Adnexal masses are identified in 2–20 per 1,000 pregnancies, approximately 2–20 times more frequently than in age-matched non-pregnant women, largely due to the widespread use of routine antenatal ultrasonography [1,2]. The reported prevalence of ovarian cysts during pregnancy ranges from 1% to 5.3% in some studies [3]. Most are benign functional cysts; approximately three-quarters of incidentally identified adnexal masses are simple cysts smaller than 5 cm, and 68–72% of masses ≥2.5–5.0 cm or with complex features spontaneously resolve by 6 weeks after delivery [1].

Among those requiring surgical management or removal at cesarean delivery, the most common histological subtypes are mature cystic teratomas (dermoids, 32%), endometriomas (15%), functional cysts (12%), serous cystadenomas (11%), and mucinous cystadenomas (8%) [1,4–6]. Approximately 2% of adnexal masses during pregnancy are malignant [1]. Ovarian malignancy complicating pregnancy is rare, with an estimated incidence of 1 in 15,000 to 1 in 32,000 pregnancies [7].

Management decisions must balance the risks of torsion, rupture, hemorrhage, obstruction of labor, or malignancy against the maternal and fetal risks of surgery (miscarriage, preterm birth, and low birth weight) [1,3]. Conservative management with ultrasound surveillance is preferred for asymptomatic, simple, and low-risk lesions. Surgical intervention is indicated for symptomatic masses, those with suspicious imaging features, or a high risk of acute complications [2,8]. Laparoscopy is generally preferred over laparotomy when feasible because of shorter hospital stays, less postoperative pain, and some evidence of lower risks of fetal loss, preterm birth, and low birth weight [1,9]. However, laparotomy remains necessary for exceptionally large masses, suspected malignancy, or when laparoscopic expertise and equipment are unavailable, particularly in the late second or third trimesters [3,10].

The optimal timing for elective surgery is the second trimester (approximately 14–20 weeks), when the risk of first-trimester miscarriage is lower and the risk of preterm labor associated with third-trimester surgery is reduced [8,11]. We present a case of a giant symptomatic ovarian serous cystadenoma managed by exploratory laparotomy with controlled decompression, debulking, and marsupialization in a resource-limited setting, resulting in continuation of pregnancy to term and a favorable perinatal outcome.

II. CASE PRESENTATION

A 29-year-old primigravida at 26 weeks + 3 days' gestation by the last normal menstrual period (confirmed by first-trimester ultrasound) presented to the gynecology outpatient department with a 12-day history of progressive abdominal distension, dyspnea on exertion, orthopnea, early satiety, and difficulty ambulating. The patient had no prior medical or surgical history. Antenatal care was provided at a rural facility without an obstetric ultrasound after booking.

The vital signs were stable: blood pressure, 120/75 mmHg; pulse rate, 75 bpm; SpO2, 96% on room air; and respiratory rate, 20 breaths/min. The abdomen was grossly distended, with a fundal height of 26 cm. It was tense, with a soft, vague mass palpable in the right lumbar region extending from the pelvis to the right hypochondrium. The fetal heart rate was normal, and there were no uterine contractions.

Abdominal ultrasound demonstrated a single live intrauterine fetus at 25 weeks + 3 days, estimated fetal weight 600 g, and amniotic fluid index 13 cm. A large anechoic multilocular cystic mass measuring 25 × 19.1 × 16.2 cm arose from the pelvis and extended to the epigastrium, with thin septations and no solid components or papillary projections. Magnetic resonance imaging (MRI) was not available at the facility.

Because of progressive compressive symptoms, exploratory laparotomy was planned after counseling regarding the risks of miscarriage, preterm labor, and other surgical complications. Laparoscopic services were not available. Under general anesthesia, explorative laparotomy was performed, and a controlled small opening was made in the cyst wall, and fluid was drained to decompress the mass, reduce pressure on the gravid uterus, and facilitate access while minimizing uterine manipulation. The tumor was then debulked, and the cyst edges were marsupialized. Hemostasis was secured. Histopathology confirmed benign serous cystadenoma.

- *Postoperative Management:*

In view of the gestational age (26 weeks) and the risk of preterm delivery following non-obstetric abdominal surgery, the patient received comprehensive fetal protective therapy and tocolysis as follows: Magnesium sulfate ($MgSO_4$), a loading dose of 4 g intravenous (IV) over 20–30 minutes was administered, followed by a maintenance infusion of 1 g/hour for up to 24 hours, and antenatal corticosteroids for fetal lung maturity: dexamethasone 6 mg intramuscular (IM) was administered twice daily (BID) for 2 days (total of 4 doses). Tocolysis and bed rest: Nifedipine 10 mg orally (PO) was administered 6 hourly for 3 days as a tocolytic agent to suppress uterine activity and reduce the risk of preterm labor triggered by surgical manipulation of the uterus and peritoneal irritation. Bed rest was advised during this period.

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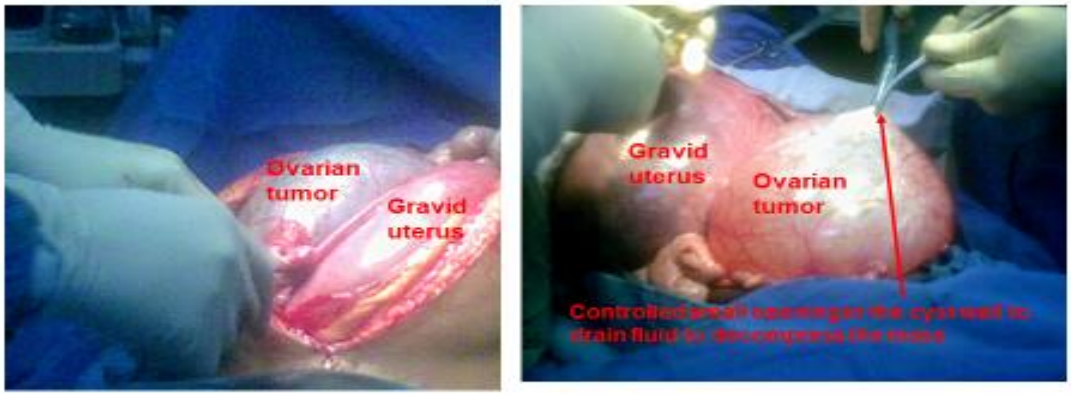

Figure 1.A Giant right ovarian tumor and a gravid uterus

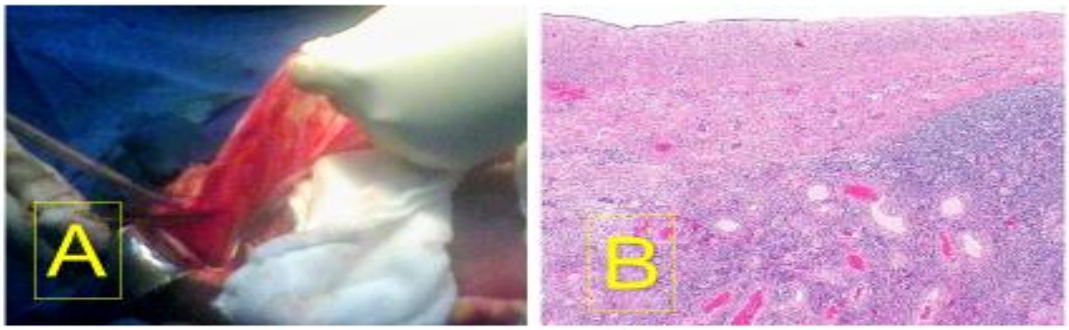

Figure 2. A -The tumor was then debulked and the cyst edges marsupialized & B- microscopic view (micrograph) of a benign ovarian serous cystadenoma shows a single, orderly layer of tall, ciliated columnar or cuboidal cells lining a cyst

The patient was hospitalized for 10 days after surgery. She remained stable, with no signs of preterm labor, infection, or other complications. She was discharged on postoperative day 10 (after completion of observation) and continued outpatient follow-up at the gynecology outpatient department. Pregnancy progressed without further complications. At 38 weeks, cesarean section was performed for obstetric indications, delivering a male infant weighing 3.24 kg with good Apgar scores. Maternal postoperative recovery was uneventful.

III. DISCUSSION

Giant ovarian cysts (>20 cm) during pregnancy are uncommon and can cause significant maternal discomfort through diaphragmatic elevation, reduced venous return, and gastrointestinal compression, as observed in this patient. Serous cystadenomas account for approximately 11% of surgically managed adnexal masses during pregnancy and are typically benign [1]. Large multilocular cystic lesions with thin septations and absence of solid components or papillary projections on ultrasound are generally consistent with benign cystadenomas [2,8].

Ultrasound is the first-line imaging modality for the evaluation of adnexal masses in pregnancy because of its safety, availability, and diagnostic accuracy [1,7]. Features favoring benignity include thin septations, lack of solid components or papillary projections, and absence of significant vascularity. Magnetic resonance imaging can provide additional tissue characterization when available and is considered safe in pregnancy; however, it is not essential for decision-making in clearly symptomatic, sonographically benign-appearing lesions [3].

Surgical intervention is recommended for larger, symptomatic cysts or those with features suspicious for malignancy [3,8]. In the present case, progressive respiratory

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compromise and difficulty ambulating necessitated surgery at 26 weeks. Controlled intraoperative drainage, followed by debulking and marsupialization, allowed safe reduction of the mass effect while minimizing traction on the gravid uterus and preserving ovarian tissue where feasible. Similar conservative approaches—including cystectomy after controlled decompression—have been successfully reported for large mucinous and serous cystadenomas in pregnancy, with continuation of pregnancy to term [12–15]. When laparoscopy is unavailable or the mass is exceptionally large, laparotomy remains an acceptable and effective approach [10].

Elective surgery during pregnancy is associated with lower rates of miscarriage and preterm birth than emergency procedures [16]. Population-based data indicate that non-obstetric abdominal surgery carries an absolute risk of pregnancy loss of approximately 8.2% (versus a background risk of 6.1%) and preterm birth of approximately 8.3% (versus a background risk of 4.3%), with the highest risk in the first week after surgery [16].

IV. POSTOPERATIVE FETAL PROTECTION AND TOCOLYSIS

Given the gestational age of 26 weeks and the known increase in preterm birth risk after non-obstetric abdominal surgery, a multimodal approach was used: magnesium sulfate for neuroprotection, antenatal corticosteroids for lung maturity, nifedipine for tocolysis, together with bed rest and close inpatient observation.

Magnesium sulfate is recommended for fetal neuroprotection when preterm birth is imminent or threatened before 32 weeks of gestation. Standard regimens include a 4 g IV loading dose over 20–30 minutes, followed by 1 g/hour maintenance infusion (typically for up to 24 hours). This reduces the risk of cerebral palsy in surviving preterm infants [18,19].

Antenatal corticosteroids (dexamethasone 6 mg IM every 12 hours for four doses, or equivalent betamethasone regimen) are indicated when preterm delivery is anticipated within 7 days between 24 and 34 weeks of gestation. Corticosteroids accelerate fetal lung maturation and improve neonatal outcomes [20].

Nifedipine, a calcium-channel blocker, is an effective first-line tocolytic agent. It delays delivery for at least 48 h (and often longer) with a better maternal side effect profile than betamimetics [17,18]. In this case, nifedipine 10 mg PO hourly for 3 days, combined with bed rest, was used to suppress potential uterine activity after surgical manipulation. The patient was observed in the hospital for 10 days, confirming clinical stability before discharge.

This combined strategy is consistent with the current recommendations for optimizing fetal outcomes when surgery is required in the late second trimester. The pregnancy continued uneventfully until 38 weeks, supporting the effectiveness of these measures in this setting.

V. CONCLUSION

Giant symptomatic ovarian serous cystadenomas can be safely managed in the second trimester using laparotomy with controlled decompression, debulking, and marsupialization when laparoscopy is unavailable. Multidisciplinary counseling, meticulous surgical techniques to minimize uterine irritation, and comprehensive postoperative care, including magnesium sulfate for neuroprotection, antenatal corticosteroids for lung maturity, nifedipine tocolysis, and inpatient observation, contribute to favorable maternal and perinatal outcomes. Early ultrasound evaluation of persistent or symptomatic adnexal masses is essential for timely intervention.

DECLARATIONS

- *Ethics Approval and Consent to Participate*

In this case report, written informed consent was obtained from the patient. A copy of the consent form is available on record. Approval for publication was obtained from the relevant authorities.

- *Consent for Publication:*

Written informed consent (in Swahili) was obtained from the patient for publication of this case report and the accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

- *Competing Interests:*

The authors declare no competing interests.

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- *Authors' Contributions:*

GSM, NEK, and TAM performed the operation and patient follow-up. GSM and BKM reviewed the literature and wrote the manuscript. GSM and JJK critically revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

- *Abbreviations*

MD-Medical Doctor, MMED-Masters of Medicine.

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