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Ovarian Sparing Surgery for Torsion of a Giant Mucinous Cystadenoma with Coexisting Dermoid Cysts in Early Pregnancy: A Case Report

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ABSTRACT

Background: Adnexal torsion is a time-sensitive gynecological emergency that may complicate pregnancy. Ovarian masses increase the risk of torsion, while operative management in early pregnancy requires balancing maternal safety, pregnancy preservation, and future ovarian function.

We present a 19-year-old primigravida at approximately 7 weeks and 3 days of gestation who was referred to Georgetown Public Hospital Corporation in February 2026 for further management of suspected right ovarian torsion. Operative exploration demonstrated a markedly enlarged right ovary torsed twice around its pedicle, with a large cystic lesion measuring approximately 20 × 12 cm and two dermoid-appearing cysts measuring approximately 3 × 4 cm and 4 × 5 cm. Approximately 3 L of clear fluid were drained from the large cyst. Detorsion, cystectomy and ovarian reconstruction with purse-string sutures were performed, preserving the ovary. Dermoid contents included hair and tooth-like material. Histopathological examination demonstrated a cystic cavity lined by mature squamous epithelium with sebaceous glands, with a component lined by mucinous epithelium. The final diagnosis was mature cystic teratoma with mucinous cystadenoma of the right ovary. Postoperative recovery was associated with appropriate pain and no reported surgical complications. The patient received appropriate routine antenatal care, with a final clinic visit at 37 weeks and 2 days. Gestational diabetes mellitus required metformin and subsequent induction of labour. Concerns regarding cephalopelvic disproportion led to emergency lower-segment caesarean section, with delivery of a neonate weighing 3,610 g.

Conclusion: This case demonstrates successful ovarian conservation following torsion associated with a large complex right ovarian mass in early pregnancy. Histopathology confirmed mature cystic teratoma with mucinous cystadenoma. Prompt detorsion, cystectomy and ovarian reconstruction preserved ovarian tissue and were followed by continuation of pregnancy to delivery.

Keywords: ovarian torsion; pregnancy; mature cystic teratoma; dermoid cyst; mucinous cystadenoma; ovarian cystectomy; ovarian preservation

INTRODUCTION

Adnexal torsion is rotation of the ovary, often with the fallopian tube, around its vascular pedicle, producing venous and lymphatic obstruction and, with persistent torsion, compromise of arterial perfusion. Pregnancy is a recognized setting for torsion, particularly when an ovarian mass is present. A systematic review of 662 reported cases of adnexal torsion in pregnancy found that 54.6% occurred during the first trimester; sudden-onset pain was the most frequent presenting symptom, and detorsion with cystectomy was among the commonly reported surgical approaches [1]. Current reviews emphasize prompt diagnosis and preservation of ovarian tissue whenever feasible [5,6].

Mature cystic teratomas (dermoid cysts) are common benign ovarian neoplasms and may predispose to torsion. Management during pregnancy is individualized according to symptoms, cyst morphology and size, gestational age, and concern for complications [7,8]. We report a primigravida who developed right ovarian torsion in early pregnancy in association with a giant ovarian cyst and two coexisting dermoid cysts, with histopathology demonstrating mature cystic teratoma with mucinous cystadenoma, managed by detorsion, cystectomy, and ovarian reconstruction with preservation of the adnexa.

Case Presentation

Presentation and initial assessment

A 19-year-old primigravida was referred from a regional hospital to the Accident and Emergency Department of Georgetown Public Hospital Corporation on 26 February 2026 for further management of suspected right ovarian torsion. She was approximately 7 weeks and 3 days pregnant by her last menstrual period, with a confirmed intrauterine pregnancy. At triage, she was ambulant and haemodynamically stable, with pulse 81 beats/min, blood pressure 107/63 mmHg, respiratory rate 21 breaths/min, temperature 36.6 °C, oxygen saturation 100% on room air, and Glasgow Coma Scale score 15/15. She presented with acute-onset generalized abdominal pain. Given the severity of her symptoms and the presence of a large right adnexal mass, ovarian torsion was suspected. No chronic medical condition was documented at that presentation. Following informed consent for surgery, she underwent exploratory laparotomy. Operative exploration demonstrated a markedly enlarged right ovary containing a cyst measuring approximately 20 × 12 cm together with two dermoid-appearing cysts measuring approximately 3 × 4 cm and 4 × 5 cm. The right ovary was torsed twice around its pedicle. The adnexa were detorsed. Approximately 3 L of clear fluid was drained in a controlled fashion from the large cyst, after which the cyst wall was excised. The two dermoid cysts were also enucleated; their contents included hair and tooth-like material. The dermoid cyst walls were removed. The remaining right ovarian tissue was preserved and reconstructed with purse-string sutures. Haemostasis was confirmed. The contralateral ovary and both fallopian tubes were macroscopically normal. No oophorectomy or salpingectomy was required.

Histopathological findings

Histopathological examination of the excised right ovarian cyst demonstrated a cystic cavity lined by mature squamous epithelium with sebaceous glands, while part of the cyst cavity was lined by mucinous epithelium. Gross examination described several dark-brown, smooth, rubbery fragments from the previously drained cyst, ranging from 22.0 × 10.0 × 4.0 cm to 5.3 × 1.5 × 0.5 cm, with a wall thickness of approximately 0.2 cm. A separate dermoid-appearing piece measured 3.5 × 2.4 × 1.7 cm and contained yellow, butter-like material with attached hair follicles. The final histopathological diagnosis was mature cystic teratoma with mucinous cystadenoma of the right ovary. These findings confirmed the dermoid component observed intraoperatively and

established the epithelial nature of the large cystic component.

Pregnancy follow-up

Postoperatively, the patient experienced pain appropriate to the procedure, with no surgical complications reported. Following surgery, the patient attended routine postoperative clinic visits and continued appropriate routine antenatal follow-up. At her antenatal review on 16 September 2026, she was documented as a 20-year-old G1P0 at 36 weeks and 2 days of gestation with fetal movements present. Her antenatal care included 12 documented visits. Blood group was A positive; hepatitis B, sickle-cell screening and VCT/VDRL screening were negative. Haemoglobin was 10.8 g/dL. An ultrasound dated 9 September 2026 showed a single live intrauterine pregnancy, cephalic presentation, posterior/fundal grade 2 placenta, no detected fetal anomaly, estimated fetal weight 2,863 g, ultrasound-estimated gestational age of 36 weeks and 2 days, amniotic fluid index 12.36 cm, and normal reported Doppler indices (RI 0.60, PI 0.89).

At her 36-week antenatal review, she was clinically stable, with a temperature of 36.5 °C, pulse of 91 beats/min, respiratory rate of 20 breaths/min, blood pressure of 120/80 mmHg, and oxygen saturation of 98%. Fundal height was 37 cm, and the fetus was in a cephalic presentation with a left occipito-anterior (LOA) position and a heart rate of 151 beats/min. The pregnancy was complicated by gestational diabetes mellitus requiring pharmacological treatment (GDMA2). Multiple elevated fasting and postprandial home glucose readings prompted initiation of oral metformin 500 mg, with a planned regimen of three times daily and dietetic follow-up. Her final antenatal clinic visit was at 37 weeks and 2 days, when she was advised to return for induction of labour and 37 weeks 6 days. She subsequently underwent induction of labour for gestational diabetes mellitus at 38 weeks. Concerns regarding cephalopelvic disproportion necessitated an emergency lower-segment caesarean section, resulting in delivery of a neonate weighing 3,610 g.

DISCUSSION

This case is notable for the coexistence of three right ovarian cystic lesions—a giant cyst and two dermoid cysts—in a primigravida presenting with torsion during early pregnancy. The approximately 20 × 12 cm cyst produced marked adnexal enlargement, while the dermoid components provided an additional structural risk factor for torsion. The ovary had rotated twice on its pedicle, yet ovarian preservation remained technically feasible.

Pregnancy-associated adnexal torsion occurs most often in early gestation. In the 2023 systematic review by Didar and colleagues, more than half of reported torsions occurred in the first trimester, and adnexal enlargement was the most prevalent ultrasound finding [1]. Doppler findings cannot independently exclude torsion; diagnosis remains clinical and ultimately surgical [6,8]. In a 2025 cohort of women operated on for suspected torsion, surgically confirmed torsion was more frequent among pregnant than nonpregnant patients, underscoring the need for timely assessment when suspicion is high [9].

The central management principle in a young patient is preservation of ovarian tissue whenever feasible. ACOG guidance on adnexal torsion in adolescents recommends detorsion and preservation of adnexal structures regardless of gross ovarian appearance, with oophorectomy reserved for situations in which it is unavoidable [2]. This ovarian-preserving principle is relevant to the management of a 19-year-old primigravida. In this case, detorsion was followed by cystectomy and ovarian reconstruction rather than adnexectomy. A retrospective cohort of 155 pregnant patients treated for adnexal torsion found no significant difference in the measured obstetric outcomes between laparoscopic and open surgery, although operative recovery measures favored laparoscopy; the operative

route should still be selected for the clinical circumstances and available expertise [10].

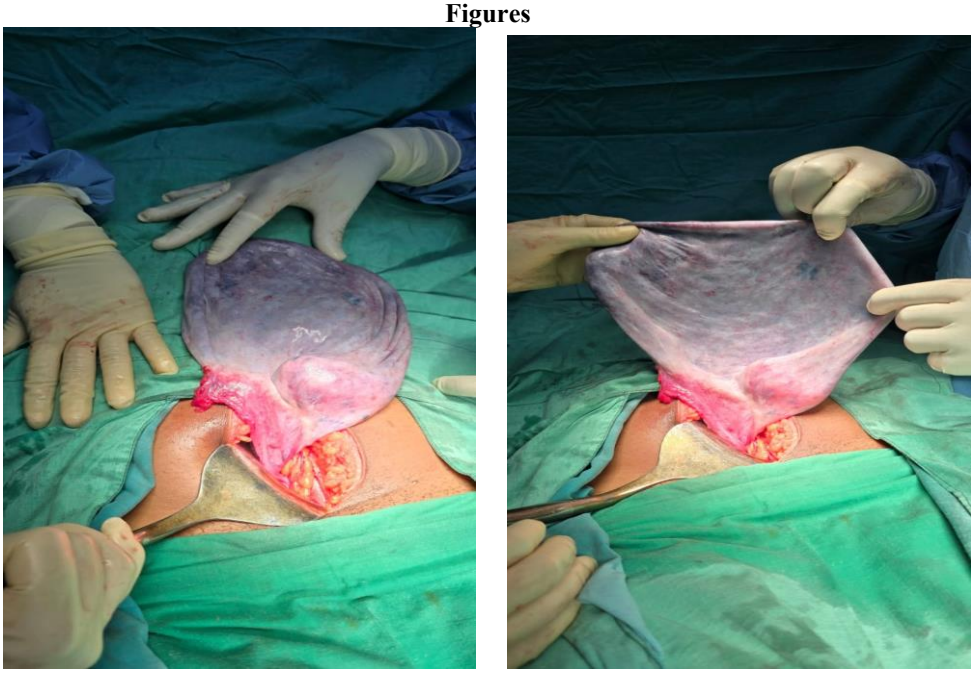
The presence of dermoid cysts adds a management challenge. Pregnancy literature supports individualized management of dermoid cysts and shows that ovarian-sparing cystectomy can be compatible with favorable pregnancy outcomes when surgery is clinically indicated [3,12]. Reports of bilateral dermoid torsion in the first trimester and cystectomy for torsion later in pregnancy illustrate the range of presentations and surgical approaches [12,13,14]. The present case differs in the unusually large volume of clear cyst fluid drained and the simultaneous presence of two dermoid cysts within the affected ovary. The histologic combination of mature cystic teratoma and mucinous cystadenoma has also been reported [11].

The patient received appropriate routine antenatal care following first-trimester ovarian surgery and attended her final antenatal clinic visit at 37 weeks and 2 days. Gestational diabetes mellitus developed later in pregnancy and required metformin. She subsequently underwent induction of labour for gestational diabetes, followed by emergency lower-segment caesarean section because of concerns regarding cephalopelvic disproportion, delivering a neonate weighing 3,610 g. This documents continuation of the pregnancy to delivery after ovarian-sparing surgery.

CONCLUSION

Ovarian torsion in pregnancy requires timely recognition and operative management. In this patient, detorsion, cystectomy of a 20 × 12 cm cyst and two coexisting dermoid cysts, and ovarian reconstruction preserved the right ovary. There were no reported surgical complications, and the pregnancy continued to delivery. This case illustrates the feasibility of ovarian-sparing surgery for a markedly enlarged ovary with multiple cystic lesions in early pregnancy. Preservation of ovarian tissue was achieved.

Figures



Figures 1 & 2: Intraoperative appearance of the residual right ovarian cyst wall after controlled drainage of approximately 3 L of clear cystic fluid.



Figure 3. Decompressed cyst demonstrating the inner cyst wall during ovarian-sparing cystectomy.



Figure 4. Dermoid cyst contents removed at cystectomy, demonstrating abundant hair and tooth-like material characteristic of a mature cystic teratoma macroscopically.



Figure 5. Preserved ovarian tissue following cyst excision and reconstruction during conservative surgery.

Institutional Permission

Permission was granted by Georgetown Public Hospital Corporation Research Committee.

Declaration by Authors

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