

## Neonatal Management of a Large, Prenatally Diagnosed Ovarian Cyst with Subsequent Laparoscopic Oophorectomy: A Case Report

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### Abstract

**Introduction:** Fetal ovarian cysts are the most common prenatally diagnosed abdominal masses in female neonates. While many regress spontaneously, large cysts carry a significant risk of complications, including torsion.

**Case Presentation:** We report the case of a female neonate with a large (6 x 7 cm) multiloculated abdominal cyst, first detected at 37 weeks' gestation. Postnatal ultrasound and MRI confirmed a likely ovarian origin. Serial monitoring showed no regression and a slight increase in size (6.5 cm max diameter), with imaging features suggestive of a hemorrhagic "chocolate" cyst. Due to the persistent size and elevated torsion risk, she underwent an elective laparoscopic right oophorectomy at 10 weeks of age. Intraoperative findings confirmed a large, non-viable, hemorrhagic cyst adhered to the anterior abdominal wall, consistent with prior torsion. The procedure was uncomplicated, and the patient was discharged on postoperative day one.

**Conclusion:** This case highlights the standard diagnostic pathway for large fetal ovarian cysts, underscores the importance of serial postnatal imaging, and demonstrates that laparoscopic intervention is a safe and effective management strategy for large, complex, or non-regressing cysts to prevent complications and preserve future fertility where possible.

**Keywords:** Fetal Ovarian Cyst; Neonatal Surgery; Laparoscopic Oophorectomy; Prenatal Diagnosis; Chocolate Cyst; Case Report

### Introduction

Fetal ovarian cysts are a common anomaly, detected in approximately 1 in 2,500 pregnancies. They arise from fetal gonadotropin stimulation and are often benign and self-resolving. However, cysts larger than 4 - 5 cm are associated with a higher risk of complications such as torsion, hemorrhage, or rupture, which can lead to loss of ovarian tissue. The optimal management strategy-conservative observation versus prophylactic surgery-remains a nuanced clinical decision based on cyst characteristics, evolution, and symptomatology. We present a case of a large, prenatally diagnosed ovarian cyst managed with laparoscopic oophorectomy, detailing the diagnostic journey, surgical decision-making, and outcome [1-4].

### Case Presentation

#### Prenatal and perinatal history

The patient, a female infant, was born at 38 weeks' gestation via elective lower-segment caesarean section (LSCS) to a 28-year-old primigravida. The mother had a significant obstetric history of a prior termination of pregnancy for fetal spina bifida and was on high-

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dose (5 mg) preconceptual folic acid. A large fetal abdominal mass was first identified on a routine third-trimester ultrasound at 37 weeks, measuring 6 x 7 cm, located below the stomach and anterior to the left kidney. It was not visualized at the 20-week anomaly scan. Subsequent fetal MRI described a simple cystic mass, most consistent with an ovarian cyst, with no solid components or signs of fetal anemia. The baby was born in good condition, with Apgar scores not detailed but requiring no resuscitation.

### Postnatal diagnostic workup

The infant was referred to the pediatric surgery service. An initial postnatal pelvic ultrasound on 28 January 2025 (at 5 days of age) confirmed a 64 x 60 x 59 mm multiloculated adnexal cyst, initially thought to be left-sided, with no internal vascularity. Tumor markers (HCG and AFP) were normal.

A follow-up ultrasound on 3 March 2025 was pivotal. It showed the cyst (now identified as right-sided) had increased slightly to a maximum diameter of 6.5 cm (volume 94 ml). It was described as a multi-loculated, thin-walled, fluid-filled cyst with “a little internal vascularity” on super-resolution imaging. The right ovary was not seen separate from the cyst. The radiological appearance was suspicious for a hemorrhagic “chocolate” cyst, indicative of a prior torsion event with infarction.

### Surgical intervention and findings

Given the cyst’s large size, lack of regression, and ongoing risk of (further) torsion, surgical intervention was offered and accepted. The patient underwent an elective laparoscopic right oophorectomy on 1 April 2025 at 10 weeks of age.

**Operative findings:** Laparoscopy revealed a large, non-viable right ovarian cyst adhered to the anterior abdominal wall, with the omentum wrapped around it. The cyst contents were old blood (“chocolate cyst”). The left fallopian tube was noted to be elongated and thinned, but the left ovary and uterus were normal. There was no active torsion at the time of surgery. The cyst was separated from adhesions, aspirated, and the entire ovary (with the cyst) was exteriorized through a widened umbilical port site and removed.

**Procedure:** The surgery was completed laparoscopically (5mm infraumbilical, right upper quadrant, and left lower quadrant ports) without conversion to open. Blood loss was minimal, and there were no intraoperative complications.

### Postoperative course

The patient recovered well. She was discharged home on 2 April 2025 (postoperative day one). Discharge instructions included routine wound care, a low threshold for seeking medical attention for abdominal pain (given her single remaining ovary), and a scheduled follow-up in 3 months to review histology.

### Discussion

This case illustrates several key points in the management of large fetal/neonatal ovarian cysts:

1. **Diagnostic evolution:** The shift in suspected laterality (from left on early postnatal scan to right on subsequent imaging) highlights the challenge of precise anatomical localization in neonates and the value of serial assessment. The MRI and ultrasound features were crucial in characterizing the cyst as simple/complex and suggesting hemorrhagic content.
2. **Timing and indication for surgery:** The decision to operate was based on established risk factors: cyst size (> 5 cm), complex/multiloculated appearance, lack of regression on serial scans, and sonographic features (internal vascularity) suggestive of a prior ischemic event. Prophylactic surgery in such cases aims to prevent acute torsion, which constitutes a surgical emergency and often results in complete ovarian loss.

3. **Surgical approach and fertility preservation:** Laparoscopic surgery is the gold standard, offering magnified visualization, reduced postoperative pain, and faster recovery. The primary goal is cystectomy with ovarian preservation. However, in this case, the intraoperative finding of a completely necrotic, adhered “chocolate cyst” confirmed that the ovary had already been destroyed by a prior torsion, making oophorectomy the only viable option. The preservation of a normal contralateral ovary is reassuring for long-term fertility potential.
4. **Pathophysiology:** The finding of a “chocolate cyst” (endometrioma-like appearance from old blood) in a neonate is a rare but documented sequela of in-utero or perinatal ovarian torsion, where the cyst undergoes hemorrhage and infarction.

## Conclusion

Large fetal ovarian cysts require a structured, multidisciplinary approach involving prenatal diagnosis, detailed postnatal imaging, and serial monitoring. Surgical intervention is warranted for large, complex, or non-regressing cysts to mitigate the high risk of torsion. Laparoscopic oophorectomy, when necessary due to non-viable ovarian tissue, is a safe and effective procedure with excellent postoperative outcomes. This case reinforces the importance of vigilant follow-up and timely surgical decision-making to optimize care for neonates with this condition.

## Patient Perspective

The infant’s parents were engaged throughout the process. They understood the rationale for surveillance and, subsequently, for surgery to address the persistent risk associated with the cyst. They were counseled extensively about the findings, the procedure, and the implications of having a single ovary.

## Consent for Publication

Written informed consent was obtained from the patient’s guardian for publication of this case report and accompanying images.

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