

Case Study

Prenatal Diagnosis and Perinatal Management of Gastroschisis: A Case Report

Rina Gustuti¹, Farah Mutiara², Yusrawati³

¹Division of Fetomaternal Medicine, Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Andalas, Andalas University Hospital

²Obstetrics and Gynecology Residency Program, Faculty of Medicine, Universitas Andalas, Dr. M. Djamil General Hospital, Padang

³Division of Fetomaternal Medicine, Department of Obstetrics and Gynecology, Faculty of Medicine, Universitas Andalas, Dr. M. Djamil General Hospital, Padang

SUBMISSION TRACK

Received: December 02, 2025

Final Revision: December 17, 2025

Available Online: December 25, 2025

KEYWORDS

gastroschisis, congenital abdominal wall defect, prenatal diagnosis

CORRESPONDENCE

Phone: +6282169880323

E-mail: yusrawati65@med.unand.ac.id

A B S T R A C T

Background: Gastroschisis is a congenital abdominal wall defect characterized by herniation of abdominal organs through a paraumbilical defect without a protective membrane. Prenatal detection plays a crucial role in planning delivery and optimizing neonatal management. **Case Presentation:** We report a case of a 39-year-old pregnant woman, G4P2A1L2, who presented at 36–37 weeks of gestation with latent phase of labor and a history of two previous cesarean sections. Antenatal ultrasonography revealed a singleton live intrauterine fetus with suspected gastroschisis, demonstrated by herniation of fetal bowel outside the abdominal cavity without a covering membrane. Fetal well-being assessment using cardiotocography showed a category I tracing. Delivery was performed by cesarean section due to maternal obstetric indications. A male neonate was delivered with a birth weight of 2415 grams, and postnatal Ballard scoring indicated a gestational age of approximately 36 weeks. The neonate was planned for further management according to clinical condition. **Conclusion:** Prenatal diagnosis of gastroschisis allows for appropriate delivery planning and early neonatal management. A multidisciplinary approach involving obstetricians, neonatologists, and pediatric surgeons is essential to improve outcomes in neonates with congenital abdominal wall defects.

I. INTRODUCTION

Congenital abdominal wall defects are structural anomalies resulting from disturbances in the embryologic development of the anterior abdominal wall. Among these conditions, gastroschisis and omphalocele are the most frequently encountered entities, each with distinct embryologic mechanisms, clinical characteristics, and prognostic implications. Gastroschisis is defined by herniation of abdominal organs through a paraumbilical defect, most commonly to the right of the umbilicus, without a protective membranous covering, leading to direct exposure of the bowel to amniotic fluid. In contrast, omphalocele is covered by a membranous sac and is frequently associated with chromosomal abnormalities and additional structural anomalies, highlighting important differences in pathogenesis and clinical outcomes.¹⁻³

The incidence of gastroschisis has increased worldwide over the past several decades, making it a growing concern in contemporary obstetric practice. Current epidemiological data estimate a prevalence of approximately 3–5 per 10,000 live births, with notable geographic and demographic variation. Although gastroschisis is more commonly associated with younger maternal age, it can occur across all maternal age groups. Unlike omphalocele, gastroschisis is typically an isolated defect; however, prolonged exposure of the bowel to amniotic fluid may result in inflammation, bowel wall thickening, and impaired intestinal motility, contributing to significant neonatal morbidity.⁴⁻⁶

Advances in prenatal ultrasonography have substantially improved the antenatal detection of gastroschisis, often allowing diagnosis during the second trimester. Characteristic sonographic findings include free-floating bowel loops outside the fetal abdominal cavity without a covering membrane and difficulty in accurate assessment of fetal abdominal circumference. Prenatal diagnosis facilitates close fetal surveillance, parental counseling, and planned delivery at tertiary centers equipped with neonatal intensive care units and pediatric surgical services. Serial ultrasound examinations and fetal monitoring are essential to assess fetal growth, bowel condition, and overall fetal well-being.⁷⁻⁹

Optimal management of gastroschisis requires a multidisciplinary approach, integrating obstetric, neonatal, and pediatric surgical care. The timing and mode of delivery remain areas of clinical debate; however, current evidence suggests that cesarean delivery should be reserved for standard obstetric indications rather than gastroschisis alone. Early neonatal stabilization, protection of exposed bowel, and timely surgical intervention are key determinants of outcome. Despite advances in perinatal care, gastroschisis continues to pose significant management challenges, underscoring the value of detailed case reports to inform clinical practice and optimize outcomes.¹⁰⁻¹²

II. METHODS

This study is a case report describing the antenatal diagnosis and perinatal management of a pregnancy complicated by suspected gastroschisis. The case was managed at a tertiary referral hospital with facilities for comprehensive obstetric, neonatal, and pediatric surgical care. Data were collected retrospectively from the patient's medical records after completion of clinical management.

Maternal data included age, obstetric history, antenatal care records, gestational age at presentation, and indication for hospital admission. Obstetric evaluation was performed according to standard clinical protocols, including physical examination, fetal assessment, and routine

antenatal investigations. Gestational age was determined based on obstetric history and fetal biometric measurements obtained from ultrasonography.

Antenatal ultrasonography was performed to evaluate fetal anatomy, growth, placental location, and amniotic fluid volume. The diagnosis of suspected gastroschisis was established based on sonographic findings demonstrating herniation of fetal bowel outside the abdominal cavity without a covering membrane. Fetal biometric parameters were assessed to estimate gestational age and fetal growth, although abdominal circumference measurement was limited due to the abdominal wall defect. Fetal well-being was evaluated using cardiotocography prior to delivery, and the tracing was interpreted according to standard classification criteria.

The timing and mode of delivery were determined based on maternal and fetal conditions, following established obstetric indications. In this case, delivery was performed by cesarean section due to maternal obstetric factors. Intraoperative findings and immediate neonatal outcomes were documented.

Neonatal data collected included sex, birth weight, body length, Apgar scores, and postnatal assessment of gestational age using the Ballard scoring system. Initial neonatal condition and plans for further management were recorded in collaboration with the neonatology team.

This case report aims to describe the clinical presentation, antenatal diagnosis, and perinatal management of gastroschisis, with emphasis on the role of prenatal detection and multidisciplinary coordination. Patient confidentiality was strictly maintained, and no identifiable personal information is disclosed in this report.

III. RESULT

A 39-year-old pregnant woman, gravida 4 para 2 abortus 1 living 2, was admitted at 36–37 weeks of gestation with signs of labor in the latent phase. The patient had a history of two previous cesarean sections. Antenatal care had been performed regularly, and obstetric ultrasonography revealed a singleton live intrauterine fetus with longitudinal lie and cephalic presentation. The placenta was located at the fundus with grade II maturity, and the amniotic fluid index was within normal limits.



Figure 1. Ultrasonography examination

Obstetric examination revealed a singleton live intrauterine fetus with longitudinal lie and cephalic presentation. Uterine contractions were present but irregular. Fetal heart rate auscultation was regular. Obstetric ultrasonography demonstrated a live fetus with biometric parameters consistent with gestational age. Biparietal diameter, head circumference, and femur length corresponded to 36–37 weeks of gestation. Abdominal circumference measurement was difficult to assess due to the presence of an abdominal wall defect. The placenta was located at the fundus with grade II maturity, and the amniotic fluid index was within normal limits.

Ultrasonographic evaluation revealed herniation of fetal bowel loops outside the abdominal cavity without a covering membrane, raising suspicion of gastroschisis. No additional structural anomalies were identified on antenatal imaging. Fetal well-being assessment using cardiotocography showed a baseline fetal heart rate of approximately 140 beats per minute, normal variability, positive accelerations, and no decelerations. The cardiotocography tracing was classified as category I.



Figure 2. Neonate with Gastroschisis Showing Extruded Abdominal Contents

Based on maternal obstetric history and current clinical findings, delivery was planned and performed by cesarean section. Intraoperatively, the uterus appeared consistent with gestational age, and no intraoperative complications were noted. A male neonate was delivered with a birth weight of 2415 grams and body length of 40 cm. The initial Apgar score was 1 at the first minute and 1 at the fifth minute.

Postnatal assessment of gestational age using the Ballard scoring system yielded a score corresponding to approximately 36 weeks of gestation, consistent with antenatal estimations. The neonate was noted to have abdominal contents protruding outside the abdominal cavity without a covering membrane, consistent with the antenatal suspicion of gastroschisis. Immediate neonatal evaluation and stabilization were performed, and the neonate was planned for further management according to clinical condition in collaboration with the neonatology team.

IV. DISCUSSION

In the present case, gastroschisis was suspected antenatally based on ultrasonographic findings showing free-floating bowel loops outside the fetal abdominal cavity without a covering membrane. Prenatal ultrasonography remains the primary diagnostic tool for gastroschisis and allows early identification, often during the second trimester. Early diagnosis enables close fetal surveillance, appropriate referral to tertiary centers, and preparation for neonatal surgical management. Antenatal detection has been shown to improve perinatal planning and neonatal outcomes.^{2,4,5}

Epidemiologically, the incidence of gastroschisis has increased worldwide over recent decades. Although younger maternal age has been consistently reported as a significant risk factor,

gastroschisis can occur across all maternal age groups, as illustrated in this case involving a 39-year-old pregnant woman. This highlights the importance of routine antenatal ultrasound screening regardless of maternal age. Unlike omphalocele, gastroschisis is rarely associated with chromosomal abnormalities, and invasive genetic testing is not routinely indicated unless additional anomalies are identified.⁶⁻⁸

Fetal surveillance is a key component of antenatal management in gastroschisis. Serial ultrasound examinations are recommended to monitor fetal growth, bowel condition, and amniotic fluid volume. In this case, fetal biometric measurements were consistent with gestational age, although abdominal circumference was difficult to assess due to the abdominal wall defect, a limitation commonly encountered in gastroschisis. Cardiotocography was used to assess fetal well-being and demonstrated a category I tracing, indicating reassuring fetal status prior to delivery. Such findings support expectant management until obstetric indications for delivery arise.^{5,9}

The timing and mode of delivery in pregnancies complicated by gastroschisis remain controversial. Several studies have shown that routine elective preterm delivery does not significantly improve neonatal outcomes and may increase prematurity-related morbidity. Current evidence supports delivery at late preterm or early term gestation when fetal condition is stable. Importantly, cesarean section is not routinely recommended for gastroschisis alone and should be reserved for standard obstetric indications. In this case, cesarean delivery was performed due to a history of two previous cesarean sections, which is consistent with current obstetric guidelines.^{1,10-12}

Neonates with gastroschisis are at risk of significant early postnatal complications, including respiratory distress, hypothermia, fluid and electrolyte imbalance, and gastrointestinal dysfunction. The low initial Apgar score observed in this case may be related to late preterm birth and the physiological stress associated with gastroschisis. Immediate neonatal stabilization, including protection of the exposed bowel and careful thermoregulation, is essential to reduce morbidity and mortality.^{3,11}

From a pathophysiological standpoint, prolonged intrauterine exposure of the bowel to amniotic fluid results in serositis, bowel wall thickening, and impaired motility. These changes contribute to postoperative ileus, feeding intolerance, prolonged dependence on parenteral nutrition, and extended hospital stays. Although gastroschisis is often an isolated defect, associated intestinal complications such as atresia, volvulus, or necrosis can occur and significantly affect prognosis.^{4,7,13}

A multidisciplinary approach is fundamental to the successful management of gastroschisis. Coordination between obstetricians, fetomaternal medicine specialists, neonatologists, and pediatric surgeons ensures continuity of care from the antenatal period through delivery and postnatal management. Prenatal counseling of parents is also essential to provide realistic expectations regarding neonatal outcomes, potential complications, and the need for prolonged hospitalization or surgical intervention. Studies have demonstrated that management in specialized centers with multidisciplinary teams is associated with improved survival and outcomes.^{2,10,14}

Despite advances in prenatal diagnosis and neonatal care, gastroschisis remains a challenging condition due to its associated morbidity and long-term gastrointestinal complications. Although survival rates have improved significantly, long-term follow-up is often required to address nutritional issues and growth concerns. Detailed case reports such as this one contribute to the existing literature by highlighting real-world clinical management and reinforcing the importance of early diagnosis and coordinated care.^{5,12,15}

V. CONCLUSION

Gastroschisis is a congenital abdominal wall defect that can be reliably detected during the antenatal period through routine ultrasonography. Prenatal diagnosis plays a crucial role in facilitating appropriate fetal surveillance, parental counseling, and delivery planning in a tertiary care setting. In this case, antenatal suspicion of gastroschisis allowed for coordinated perinatal management and preparedness for neonatal care immediately after birth.

The mode and timing of delivery should be determined based on obstetric indications rather than the presence of gastroschisis alone. A multidisciplinary approach involving obstetricians, fetomaternal medicine specialists, neonatologists, and pediatric surgeons is essential to optimize neonatal outcomes. Early diagnosis, careful perinatal planning, and integrated postnatal management remain key factors in improving survival and reducing morbidity in neonates with gastroschisis.

REFERENCES

- Cunningham FG, Leveno KJ, Dashe JS, Hoffman BL, Spong CY, Casey BM. Williams Obstetrics. 26th ed. McGraw-Hill; 2022.
- Lockwood CJ, Saade GR, Copel JA, et al. Creasy and Resnik's Maternal–Fetal Medicine: Principles and Practice. 9th ed. Elsevier; 2022.
- Landon MB, Galan HL, Jauniaux ERM, et al. Gabbe's Obstetrics: Normal and Problem Pregnancies. 9th ed. Elsevier; 2024.
- Jones AM, et al. Increasing prevalence of gastroschisis—14 states, 1995–2012. *MMWR*. 2016.
- Feldkamp ML, et al. Gastroschisis prevalence and epidemiologic characteristics. *Birth Defects Res*. 2024.
- Bhat V, et al. Gastroschisis: A state-of-the-art review. *Children (Basel)*. 2020;7(12):302.
- Mann S, et al. Prenatal and postnatal management of abdominal wall defects. *Prenat Diagn*. 2008.
- Nitzsche K, et al. Prenatal prediction of outcome in fetal gastroschisis. *Diagnostics (Basel)*. 2020.
- Lap C, et al. Ultrasound markers predicting complex gastroschisis. *Ultrasound Obstet Gynecol*. 2020.
- Shamshirsaz AA, et al. Early delivery in fetal gastroschisis: A randomized controlled trial. *Am J Obstet Gynecol*. 2018.
- Slidell MB, et al. Management of gastroschisis: A systematic review. *J Pediatr Surg*. 2024.
- Räsänen L, et al. Outcome and management of neonates with gastroschisis. *Eur J Pediatr*. 2022.
- Ferreira RG, et al. Gastroschisis: diagnosis and prognosis. *Prenat Diagn*. 2022.
- Wagner JP, et al. Contemporary management of abdominal wall defects. *Semin Pediatr Surg*. 2019;28:150–155.
- Bilal R, et al. Gastroschisis: diagnosis, prognosis and treatment options. *Front Pediatr*. 2025.