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Case Report

Complex gastroschisis with severe neonatal compromise in a preterm infant: a case report

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ABSTRACT

Gastroschisis is a congenital full-thickness abdominal wall defect characterized by herniation of abdominal viscera most commonly the small intestine-through a paraumbilical defect without a protective sac. The defect typically occurs to the right of the umbilical cord insertion, resulting in direct intrauterine exposure of the bowel to amniotic fluid, which can cause inflammation, thickening, compromised motility, and significant neonatal morbidity. In contrast to omphalocele, gastroschisis is usually isolated and un-associated with chromosomal abnormalities; however, outcomes worsen in the presence of prematurity, complex bowel pathology, or additional structural anomalies. We report a case of a 36-year-old multiparous woman at 34-35 weeks of gestation presenting with uterine contractions and vaginal bleeding. Prenatal ultrasonography demonstrated an anterior abdominal wall defect with eviscerated bowel loops floating freely within the amniotic cavity, consistent with gastroschisis, along with fetal hydrothorax suggesting severe intrauterine compromise. A premature neonate was delivered via cesarean section with a birth weight of 1670 g and severely depressed Apgar scores, requiring immediate resuscitation. Postnatal findings confirmed extensive bowel exteriorization, marked physiological instability, and multiple associated congenital anomalies. This case illustrates a severe, complex presentation of gastroschisis in a preterm infant with profound neonatal compromise. Early prenatal diagnosis and coordinated perinatal management remain essential to improving outcomes in high-risk cases.

Keywords: Gastroschisis, Congenital abdominal wall defect, Prematurity, Neonatal outcome, Prenatal diagnosis

INTRODUCTION

Gastroschisis is a congenital defect of the anterior abdominal wall defined by evisceration of bowel through a small paraumbilical defect lacking a covering membrane. Typically positioned to the right of the umbilical cord insertion, the defect results from abnormal embryologic development during early gestation. In contrast to omphalocele, gastroschisis is seldom associated with chromosomal or syndromic abnormalities and is usually considered an isolated anomaly.[1]

The precise pathogenesis of gastroschisis remains incompletely understood; however, vascular the etiology of gastroschisis remains incompletely understood, though leading hypotheses include vascular disruption of the right omphalomesenteric artery or right umbilical vein, resulting in localized abdominal wall ischemia. Epidemiologic data consistently identify young maternal age, cigarette smoking, low socioeconomic status, and environmental toxin exposure as significant risk factors. Global incidence has increased over the past two decades, with reported rates of 2-5 per 10,000 live births and disproportionately higher rates among mothers <20 years old.[1,2]

Prognosis in gastroschisis varies widely and depends on gestational age, bowel condition, and the presence of

complications such as intestinal atresia, necrosis, volvulus, or perforation. Prolonged exposure of the bowel to amniotic fluid may induce serositis, thickening, dysmotility, and nutrient malabsorption, each contributing to adverse neonatal outcomes. Prenatal ultrasonography plays an essential role in early detection, monitoring of bowel status, and planning delivery and surgical management.[3]

CASE REPORT

A 36-year-old multiparous woman (G3P2A0) presented at 34-35 weeks of gestation to Arifin Achmad General Hospital with uterine contractions and vaginal bleeding. The pregnancy was complicated by premature uterine contractions and premature rupture of membranes for 12 hours. No maternal comorbidities or family history of congenital anomalies were reported.

Ultrasonography revealed a single live fetus with a heart rate of 172 beats per minute. A midline anterior abdominal wall defect with a 3.3×4.1-cm mass containing herniated viscera was visualized. Free-floating bowel loops without a covering membrane suggested gastroschisis, although an initial impression of omphalocele was considered. Significant fetal hydrothorax was also noted, indicating severe intrauterine stress.

After counseling, the patient underwent cesarean delivery. A premature neonate weighing 1670 g was born with Apgar scores of 1 at one minute and 0 at five minutes. The infant exhibited apnea, cyanosis, and profound hypotonia and was immediately intubated. Postnatal examination confirmed a large abdominal wall defect with eviscerated intestines and liver. Additional congenital anomalies included ambiguous genitalia and absence of anal and urethral openings. Severe respiratory compromise developed rapidly.

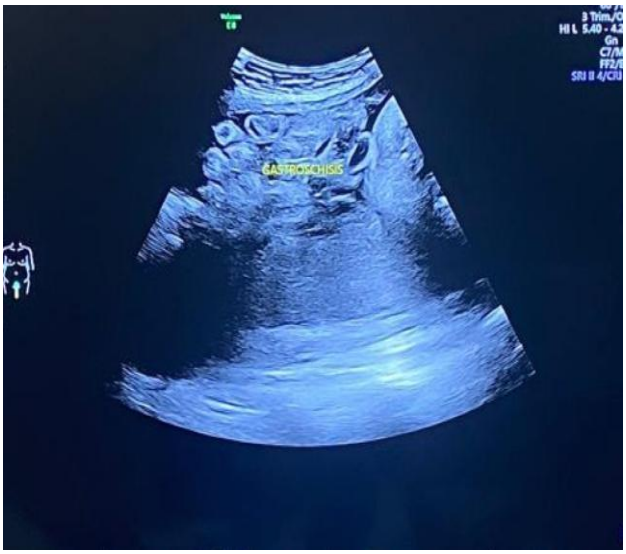

Figure 1: Prenatal ultrasound showing gastroschisis with herniated abdominal organs.

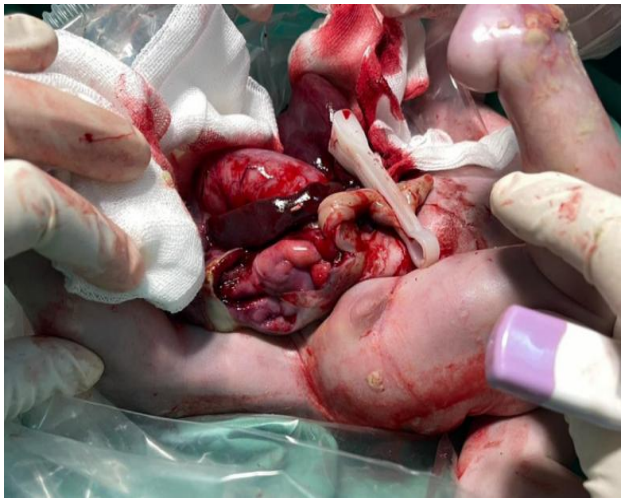

Figure 2: Neonate with large gastroschisis containing intestines and liver.

Figure 3: Anterior view of extensive abdominal organ hernia.

DISCUSSION

Gastroschisis is an abdominal wall defect associated with high perinatal morbidity, particularly when accompanied by prematurity, bowel damage, or additional congenital anomalies. The severity of the condition is determined largely by the quality of the exposed bowel, the degree of inflammation resulting from prolonged contact with amniotic fluid, and the presence of complications such as atresia, perforation, or necrosis. In the present case, the extensive evisceration of the bowel and the neonate's profoundly compromised condition at birth indicate a complex and severe form of gastroschisis.[4,5] In the present case, extensive exteriorization of the bowel with severe clinical compromise represents a severe form of the disease.

Prenatal ultrasonography plays a critical role in the early diagnosis and prognostic evaluation of gastroschisis. The hallmark sonographic findings include free-floating bowel loops without a protective membrane, typically located to

the right of the umbilical cord insertion. Assessment of bowel thickness, dilatation, and the condition of other fetal organs further aids in predicting postnatal outcomes. In this case, the presence of fetal hydrothorax served as an indicator of significant intrauterine compromise a rare but highly concerning finding associated with increased perinatal mortality.[5]

Following delivery, neonates with gastroschisis commonly face clinical challenges such as respiratory distress, fluid and electrolyte imbalance, hypothermia, and an elevated risk of sepsis. Prematurity exacerbates these complications due to organ immaturity and limited physiological reserve. The extremely low Apgar scores and immediate need for resuscitation in this case reflect severe instability uncommon in isolated gastroschisis. Additionally, the presence of other congenital anomalies, including ambiguous genitalia and absent anal and urethral openings, suggests a broader developmental disturbance, which is atypical in isolated gastroschisis and may indicate a more complex malformation spectrum.[5,6]

The management of gastroschisis requires a multidisciplinary approach involving obstetricians, neonatologists, pediatric surgeons, and intensive care specialists. Key priorities include postnatal stabilization, protection of the exposed abdominal organs, and planning for primary or staged abdominal wall closure using a silo. Although advancements in neonatal intensive care and surgical techniques have improved survival rates, the prognosis remains poor in cases with extensive bowel injury, extreme prematurity, or associated congenital anomalies as demonstrated in the present report.

CONCLUSION

This case demonstrates a severe, atypical presentation of gastroschisis complicated by prematurity, extensive bowel involvement, and multiple congenital anomalies, culminating in profound neonatal compromise. Prenatal ultrasonography remains central to early detection and risk stratification. Outcomes depend heavily on coordinated multidisciplinary management, although prognosis remains poor in complex cases. Early counseling and delivery planning are essential to optimizing neonatal survival and long-term outcomes.

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