CASE REPORT

Multiple Gastric Perforation in Preterm and Extremely Low Birth Weight Infant: A Case Report

Khanza Adzkia Vujira[1], Henggar Allest Pratama[1], Wegrimel Ariegara[1], Kukuh Rizwido Prasetyo[1], Elysa Nur Safrida[2], Gunadi[1]

[1] Pediatric Surgery Division, Department of Surgery, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/ Dr. Sardjito Hospital, Yogyakarta, 55281, Indonesia
[2] Neonatology Division, Department of Child Health, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/ Dr. Sardjito Hospital, Yogyakarta 55281, Indonesia

ABSTRACT

Neonatal gastric perforation (NGP) is a rare but life-threatening condition, most commonly affecting preterm and very low birth weight infants, and remains associated with high mortality despite advances in neonatal care. We report a male extremely preterm twin born at 25 weeks and 2 days of gestation with a birth weight of 685 g who developed progressive abdominal distension on day 6 of life. Radiologic evaluation revealed pneumoperitoneum. Emergency exploratory laparotomy identified multiple perforations involving both the anterior and posterior walls of the stomach. Primary repair was performed with creation of a feeding jejunostomy. Despite intensive postoperative support, the neonate developed sepsis, disseminated intravascular coagulation, and acute kidney injury, and died on postoperative day 8. This case highlights the severe and rapidly progressive nature of NGP in extremely preterm infants. Early recognition, prompt imaging, and timely surgical intervention are critical, although prognosis remains poor due to physiological immaturity and high risk of multi-organ failure.
Malaysian Journal of Medicine and Health Sciences (2026) 22(SUPP6): 93-95. doi:10.47836/mjmhs.22.s6.19

Keywords: Neonatal gastric perforation, extreme prematurity, very low birth weight, pneumoperitoneum, neonatal surgery

Corresponding Author:
Gunadi, PhD
Email: drgunadi@ugm.ac.id
Tel: +62817885744234

INTRODUCTION

Neonatal gastric perforation (NGP) is a rare condition, accounting for 7-12% of all gastrointestinal perforations in the neonatal period, and carries a high mortality rate despite advances in neonatal intensive care (1,2). The condition primarily affects preterm and very low birth weight (VLBW) infants (3). Proposed etiologies include gastric ischemia, barotrauma from mechanical ventilation, and iatrogenic injury from nasogastric tubes (4). Early recognition and timely surgical repair remain critical for survival (5). This report aims to describe a rare case of multiple neonatal gastric perforations in an extremely preterm, very low birth weight infant, and to discuss the possible etiologies, management challenges, and outcomes.

CASE REPORT

A male preterm twin was delivered at 25 weeks and 2 days of gestational age via vaginal delivery to an 18-year-old primigravida mother. Both neonates required resuscitation at birth and were placed on positive pressure ventilation followed by continuous positive airway pressure (CPAP). One twin died on day 4 of life due to neonatal asphyxia.

The surviving twin, weighing 685 g, developed progressive abdominal distension on day 6 of life. The infant was kept nil per os, and an orogastric tube (OGT) was placed, initially draining clear fluid. During day 7 of life, the clinical condition deteriorated, with worsening abdominal distension and dark brown OGT residues. A supine babygram demonstrated extraluminal radiolucency in the supradiaphragmatic region, consistent with free intraperitoneal air (pneumoperitoneum). Associated findings included dilatation of portions of the intestinal system (Figure 1).

A percutaneous needle decompression was performed to reduce intra-abdominal pressure, followed by emergency exploratory laparotomy. Intraoperatively, multiple perforations were identified involving the anterior and posterior walls of the stomach. Primary repair of each perforation was performed using 5-0 PDS sutures, and a feeding jejunostomy was created to facilitate enteral nutrition and gastric decompression

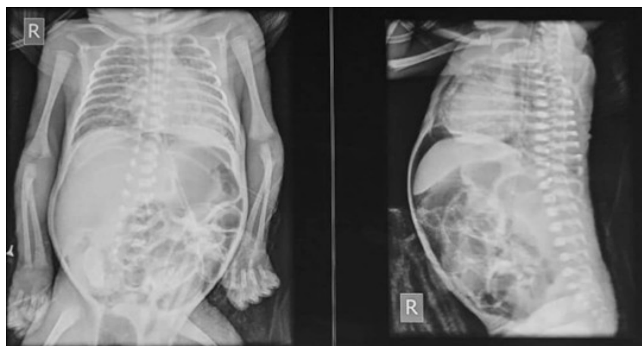

Figure 1: A Babygram revealed gastric dilatation and pneumoperitoneum

(Figure 2). Enteral feeding via the jejunostomy was initiated at 1 mL every 2 hours. Despite aggressive postoperative support in the neonatal intensive care unit, the neonate developed disseminated intravascular coagulation (DIC), sepsis, and acute kidney injury and passed away on postoperative day 8.

DISCUSSION

Neonatal gastric perforation (NGP) is a rare but catastrophic event, particularly in preterm and very low birth weight (VLBW) infants. Pathogenesis is multifactorial, involving both intrinsic and extrinsic mechanisms. Proposed theories include gastric wall ischemia due to immaturity of the vascular supply, overdistension and barotrauma from mechanical ventilation or positive pressure resuscitation, and direct iatrogenic trauma from orogastric tube insertion (1,2). In addition, congenital deficiencies in gastric muscularis

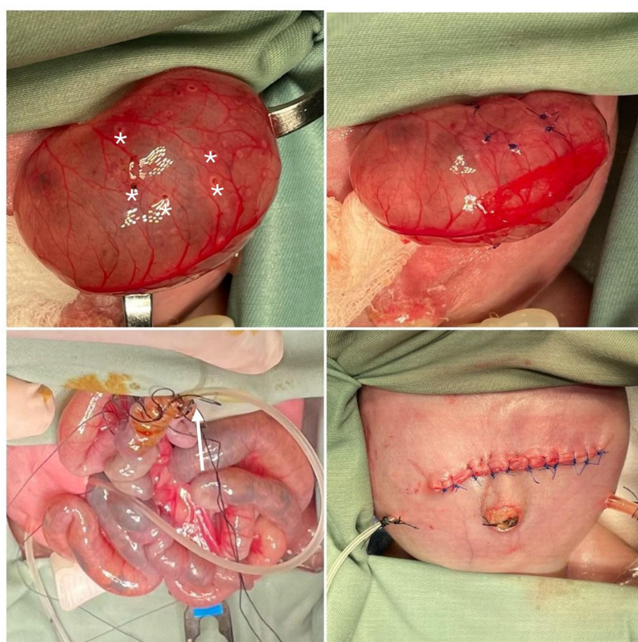

Figure 2: Intraoperative findings showing gastric perforation sites marked with asterisks and the feeding jejunostomy tube indicated by an arrow.

(Figure 2). Enteral feeding via the jejunostomy was initiated at 1 mL every 2 hours. Despite aggressive postoperative support in the neonatal intensive care unit, the neonate developed disseminated intravascular coagulation (DIC), sepsis, and acute kidney injury and passed away on postoperative day 8.

DISCUSSION

Neonatal gastric perforation (NGP) is a rare but catastrophic event, particularly in preterm and very low birth weight (VLBW) infants. Pathogenesis is multifactorial, involving both intrinsic and extrinsic mechanisms. Proposed theories include gastric wall ischemia due to immaturity of the vascular supply, overdistension and barotrauma from mechanical ventilation or positive pressure resuscitation, and direct iatrogenic trauma from orogastric tube insertion (1,2). In addition, congenital deficiencies in gastric muscularis
development have been suggested, leading to focal weakness and predisposition to spontaneous rupture (3). These mechanisms may coexist, explaining why multiple perforations, as seen in our patient, can occur. Several patient-specific factors in this case are recognized as contributors to poor outcomes. Extreme prematurity at 25 weeks of gestation and extremely low birth weight are consistently identified as the strongest predictors of mortality in NGP, reflecting limited physiological reserve, immaturity of the gastric wall, and increased vulnerability to infection and coagulopathy (1,3). Twin gestation complicated by perinatal compromise and early exposure to positive pressure ventilation may further increase the risk of gastric overdistension and ischemic injury (2). Importantly, the subsequent development of systemic complications, including sepsis, disseminated intravascular coagulation, and acute kidney injury, represents a common terminal pathway in non-surviving infants, even when surgical intervention is performed in a timely manner (1,3).

Mal J Med Health Sci 22(SUPP6): 93-95, April 2026

Clinically, NGP typically presents within the first week of life with sudden or progressive abdominal distension, often accompanied by changes in gastric residues (1,2). Radiographically, pneumoperitoneum is the most frequent and critical diagnostic finding. In the appropriate clinical context, the presence of free intraperitoneal air with associated bowel dilatation strongly suggests gastrointestinal perforation (1,2). Differentiating NGP from neonatal spontaneous pneumoperitoneum (NSP) without visceral perforation remains essential, as management strategies differ significantly (4). While NSP is a non-surgical condition in newborns that results in a benign buildup of gas in the peritoneal cavity, usually caused by a pulmonary air leak, such as from continuous positive airway pressure, and is typically managed conservatively, NGP is a surgical emergency marked by sudden, severe abdominal swelling, rapid clinical deterioration, and sepsis (4).

Needle decompression was performed in this case as an emergency temporizing measure to rapidly reduce intra-abdominal pressure caused by pneumoperitoneum. In extremely preterm neonates, this intervention may improve respiratory mechanics, venous return, and hemodynamic stability, and is commonly used as a bridge to definitive surgical exploration in unstable patients (4). Definitive management requires surgical repair. Primary closure remains the standard approach and is associated with improved outcomes when diagnosis and intervention occur early (2,3).

The decision to insert a jejunostomy feeding tube was based on multiple gastric perforations and the fragile condition of the gastric wall. Jejunostomy allows effective gastric decompression, reduces tension on the repair site, and facilitates early enteral nutrition while bypassing the stomach. This approach has been described as a useful adjunct in cases of multiple or extensive gastric perforations, particularly in extremely low birth weight infants (5).

Despite advances in neonatal intensive care, mortality remains high, ranging from 30–60%, particularly in extremely preterm infants with systemic complications such as sepsis, disseminated intravascular coagulation, and multi-organ failure (1,3). Early recognition of risk factors, rapid diagnosis, and timely surgical intervention remain essential for improving survival in neonates with gastric perforation. Ongoing multicenter research and systematic reviews continue to refine prognostic indicators, which may help stratify management and optimize care in high-risk infants (1,5).

This case report provides a detailed clinical, radiological, and surgical correlation of a rare presentation of multiple neonatal gastric perforations in an extremely preterm infant, contributing to the limited literature on this condition (5). However, several limitations should be acknowledged. As a single-case report, the findings cannot establish causality or be generalized to all neonates with gastric perforation. Histopathological evaluation of the gastric wall was not available, limiting further insight into underlying structural abnormalities. Larger multicenter studies are needed to better define prognostic factors and optimize management strategies for this high-risk population (1,5).

CONCLUSION

This case highlights the catastrophic nature of NGP in extremely low birth weight infants. Clinicians should maintain high vigilance for signs of gastrointestinal compromise in preterm neonates. Prompt radiologic assessment and early surgical repair are crucial for survival; however, despite optimal management, outcomes may remain poor due to severe systemic complications.

ACKNOWLEDGEMENT

The authors would like to thank the entire team for their dedication care.

REFERENCES

1. Lin YJ, Chou YH, Chen CJ, et al. Risk factors for mortality in neonatal gastric perforation. Front Pediatr. 2021;9:652139. doi:10.3389/fped.2021.652139.
2. Houben CH, Chan KW, Mou JWC, et al. Neonatal gastric perforation: 14-year experience from a tertiary NICU. Am J Perinatol. 2021;38(12):1302-10. doi:10.1055/s-0040-1718948.
3. Wu S, Feng J, Xu X, et al. Clinical characteristics and outcomes of neonatal gastric perforation: a multicenter study. BMC Pediatr. 2022;22:312. doi:10.1186/s12887-022-03305-5.
4. Sharma P, Gupta N, Agrawal A, et al. Neonatal spontaneous pneumoperitoneum: differentiation from gastric perforation. J Pediatr Surg Case Rep. 2021;66:101779. doi:10.1016/j.epsc.2021.101779.
5. Li W, Fang J, Zhao J, et al. Outcomes of multiple gastric perforations in neonates: a systematic review. Pediatr Surg Int. 2024;40(3):405-12. doi:10.1007/s00383-023-05574-4.