

# Gastric Perforation: A Rare Cause of Neonatal Peritonitis: A Curious Case at Yaoundé Central Hospital (HCY)

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## Abstract

Neonatal gastric perforation (NGP) is a serious surgical emergency, causing pneumoperitoneum and peritonitis, most often occurring during the first week of life. It accounts for a rare proportion of neonatal digestive perforations, but remains associated with high mortality, particularly in resource-limited countries. We report the case of a 6-day-old newborn admitted for abdominal distension and respiratory distress, in whom surgical exploration revealed a large gastric perforation. Medical and surgical management resulted in a favourable outcome. Through this case, we discuss the diagnostic, therapeutic and prognostic aspects in the light of recent international and African literature.

## Keywords

Neonatal Gastric Perforation, Pneumoperitoneum, Neonatal Peritonitis, Africa, Neonatal Surgery

## 1. Introduction

Neonatal gastric perforation (NGP) is a rare but potentially fatal condition, accounting for approximately 7 to 12% of digestive perforations in newborns [1] [2]. It most often occurs between the 2nd and 7th day of life, with a male predomi-

nance reported in several series [2] [3]. Despite advances in neonatal intensive care, mortality remains high, ranging from 20 to 60%, particularly in premature and low birth weight newborns [4].

The pathophysiology of NGP remains poorly understood. Several mechanisms have been proposed, including congenital weakness of the gastric wall, parietal ischaemia secondary to perinatal hypoxia, intragastric hyperpressure, and iatrogenic causes such as mask ventilation or trauma related to the gastric tube [1] [3] [5].

In Africa, neonatal gastric perforation is rarely reported, probably due to underdiagnosis, limited access to imaging and specialised surgical care, and underreporting of cases [6] [7]. The few African cases that have been published often describe an unfavourable outcome linked to delayed diagnosis and constraints within healthcare systems [6]-[8]. We report here a case of NGP in a full-term newborn, which was successfully treated, in order to contribute to the African documentation of this rare condition.

## 2. Presentation of the Case

### Clinical History

The patient was a male newborn aged 6 days, born at 38 weeks + 2 days of gestation from a well-monitored pregnancy. The birth weight was 4900 g. The Apgar score was not documented; however, there was an absence of an immediate cry at birth, followed by the return of crying after stimulation, suggesting initial neonatal adaptation difficulty. The neonatal context was marked by amniotic fluid aspiration at birth, complicated by respiratory distress requiring oxygen therapy.

On the second day of life, progressive abdominal distension appeared, initially associated with the absence of meconium passage, suggesting neonatal intestinal obstruction. However, perineal examination revealed a normally patent anus, excluding anorectal malformation. Due to worsening abdominal distension and respiratory distress, an abdominal X-ray without preparation (ASP) in the referring center revealed massive pneumoperitoneum, prompting referral to the Yaoundé Central Hospital for specialized management.

On admission, the newborn presented an altered general condition with respiratory distress. Vital parameters were as follows: heart rate 163 beats/min, respiratory rate 60 cycles/min, temperature 37.8°C, and oxygen saturation 78% - 79% on room air. The abdomen was markedly distended, hypermeteoric and tympanic, with an abdominal circumference of 69 cm, associated with collateral venous circulation (**Figure 1**). A disappearance of prehepatic dullness was noted, suggesting perforation of a hollow organ.

A repeat abdominal X-ray without preparation confirmed the presence of massive pneumoperitoneum (**Figure 2**), indicating digestive perforation.

The surgical indication was therefore established. Preoperative management consisted of strict digestive rest with placement of a nasogastric tube for free drainage, urinary catheterization, broad-spectrum probabilistic antibiotic therapy



**Figure 1.** Abdominal distension in newborns (photo library YCH).

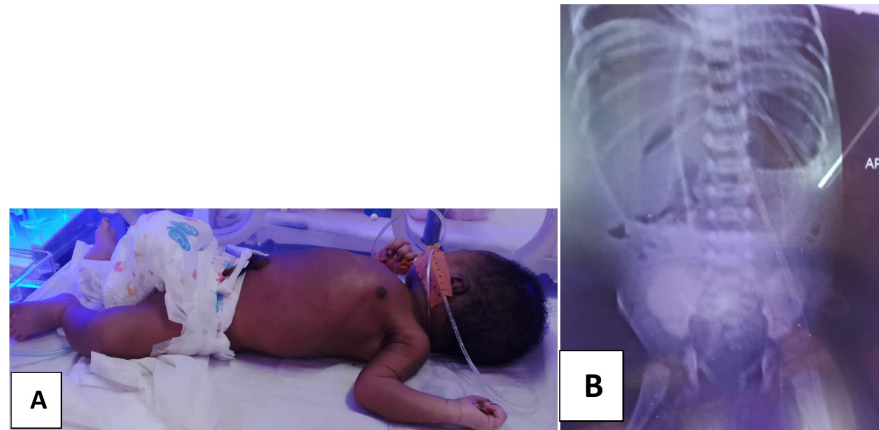


**Figure 2.** ASP showing massive pneumoperitoneum (photo library YCH).

(ceftazidime, amikacin and metronidazole), oxygen therapy, hydro-electrolytic correction, and monitoring of vital signs. Due to the compressive pneumoperitoneum responsible for respiratory distress, emergency abdominal decompression was performed before surgery in order to stabilize the newborn prior to laparotomy (**Figure 3**). Because of the urgent context, only routine preoperative tests were carried out.

Under general anesthesia with orotracheal intubation, the newborn was warmed using soft bands and hot water bottles. A right supra-umbilical transverse incision was performed. Exploration revealed purulent peritoneal fluid with numerous false membranes (**Figure 4**), indicating a long-standing peritonitis. A large gastric perforation located on the superior surface of the stomach near the cardia, measuring approximately 3 - 4 cm in diameter, was identified (**Figure 5**). The nasogastric tube was seen communicating directly with the peritoneal cavity through the perforation.

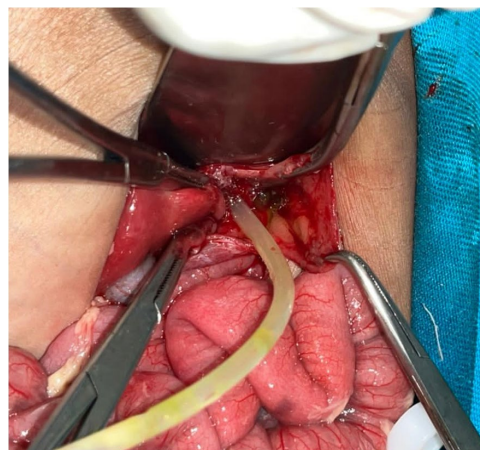
The surgical procedure consisted of excision of the perforation edges followed by a two-layer gastric suture reinforced with an omental patch, associated with abundant peritoneal lavage and placement of abdominal drainage (**Figure 6**). Peritoneal samples were sent for bacteriological and histopathological analysis.



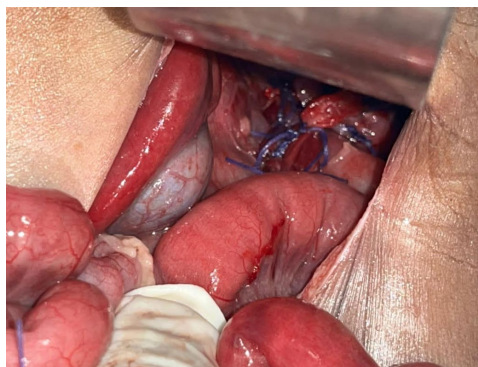
**Figure 3.** Appearance after exsufflation; (A) newborn; (B) ASP (photo library YCH).



**Figure 4.** False membranes (photo library YCH).



**Figure 5.** Gastric perforation (photo library YCH).



**Figure 6.** Gastric suture with omental patch (photo library YCH).

Postoperative management included continuation of antibiotic therapy, analgesia, hydro-electrolytic rehydration, and strict fasting with nasogastric aspiration. In the absence of parenteral nutrition, amino acid supplementation (Astymin®) was administered.

The postoperative course was marked by transient respiratory distress and inflammatory syndrome, which were controlled after adjustment of antibiotic therapy. Feeding was progressively resumed on postoperative day 6. The bacteriological and histopathological results were not available at the time of manuscript preparation. The newborn was discharged on the tenth day of hospitalization with a favorable outcome.

### 3. Discussion

Neonatal gastric perforation is a rare but severe condition typically presenting with acute abdominal distension associated with massive pneumoperitoneum [1] [2]. In our observation, the age of onset during the first week of life is consistent with previous reports [3] [5].

Several risk factors have been described, including prematurity, perinatal asphyxia, hypoxia, mechanical ventilation, and iatrogenic trauma [1] [4]. In our patient, the absence of prematurity and direct iatrogenic injury makes traumatic causes less likely. However, the history of amniotic fluid aspiration associated with respiratory distress may have contributed to gastric wall ischemia secondary to hypoxia, a mechanism previously reported in the literature [3] [5].

Meconium peritonitis represents an important differential diagnosis in neonatal pneumoperitoneum. However, the absence of intestinal perforation, intraperitoneal meconium, and peritoneal calcifications helps rule out this condition [9].

Preoperative abdominal decompression is considered a life-saving procedure in cases of massive pneumoperitoneum causing respiratory distress or hemodynamic instability. It reduces intra-abdominal pressure and improves ventilation before definitive surgical management [2] [4]. This approach is recommended in settings with limited resources, as reported in several African series, where it helps to reduce preoperative mortality linked to delayed access to the operating theatre

[6] [8].

Available African data remain limited to a few isolated reports and small case series from Burkina Faso, the Democratic Republic of Congo, and Uganda [6]-[8] [10]. Mortality in these settings remains high due to delayed diagnosis and limited technical resources. Our observation is notable for its favourable outcome, highlighting the importance of early diagnosis and rapid surgical intervention, even in a context of limited resources.

The prognosis mainly depends on the speed of diagnosis and surgical intervention, as well as the general condition of the newborn [4] [7]. Recent series show an improvement in survival thanks to advances in neonatal resuscitation, although mortality remains higher in low-income countries [4] [7].

#### 4. Conclusion

Neonatal gastric perforation is a rare surgical emergency, still rarely reported in Africa. It should be considered in any case of acute abdominal distension associated with pneumoperitoneum in newborns. Preoperative abdominal decompression, when indicated, is a key step in stabilising newborns with compressive pneumoperitoneum. Early multidisciplinary management significantly improves the prognosis. This case contributes to the African literature and highlights the need for better recognition of the condition through early diagnosis.

#### Ethical Considerations

Written informed consent was obtained from the parents for publication of this case and the associated images.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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