

Spontaneous Perforation of Stomach in a Neonate

Sethi H¹, Simalti A², Chauhan SS³, Chandra M⁴

Abstract

Spontaneous gastric perforation is not a very common entity. If not suspected and managed in time, this is uniformly fatal. Although documented as early as in 1825 exact pathology remains unclear even to date. A case of spontaneous rupture in a term neonate is being presented as a case report.

Key words: Gastric perforation

Introduction

Spontaneous gastric perforation of the newborn is an uncommon entity¹. Although the condition entails a very high mortality, its pathogenesis is still not universally agreed upon². Many factors have been postulated to explain the aetiopathogenesis of this disease, and all of these occur in individual cases. We report a case of spontaneous gastric perforation seen by us in a three-day-old neonate.

The Case

A three day old female baby was brought with history of blood stained stool. Baby was born at term with no significant antenatal history. Baby was found to be lethargic on examination. Systemic examination revealed abdominal distention and absent bowel sounds. Abdominal X-ray showed free intraperitoneal air (Fig 1). The provisional diagnosis was perforative peritonitis. On exploration, after opening the lesser sac there was a 2 cm x 1.5 cm perforation seen on the posterior wall along the greater curvature, with inflammatory exudates all over the abdominal cavity. Primary repair was done in two layers and abdomen was closed. A drain was left in place. Postoperative period was uneventful and baby was discharged on 15th postoperative day. Histopathology of the margin of perforation area revealed nonspecific inflammation which did not lead to any specific aetiology of perforation in our case.

Discussion

First reported case of spontaneous rupture of the stomach in the newborn was in 1825 by Siebold³ and first reported survival of an infant was reported in 1950⁴. Spontaneous gastric perforation is more

¹Dr Harish Sethi, MBBS, MD, Military Hospital Amritsar, India. ²Dr. Ashish Simalti, MBBS, MD, FNB, Base Hospital, Delhi Cantt, India. ³Dr SS Chauhan, MBBS, MS, DNB, MNAMS, FICS(Gastro) Base hospital Delhi Cantt India. ⁴Dr Mukesh Chandra, MBBS, MD, Base Hospital, Delhi Cantt, India.

Address for correspondence:

Dr. Ashish Simalti
E-mail; ashishsimalti@rediffmail.com

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common in preterm babies². Perforations most commonly occur between the 2nd and 7th days of age, most commonly on the 3rd day of life⁵. Our baby was a full term baby and the perforation had occurred on third day of life.

The incidence of prenatal and perinatal risk factors is reportedly high. Besides prematurity other reported risk factors include birth asphyxia requiring resuscitation, premature rupture of membranes, breech, Cesarean or twin delivery, in decreasing order of frequency². Necrotizing enterocolitis, and postnatal steroid usage have also been reported as risk factors^{6,7}. However spontaneous gastric perforation has also been reported in term infants without apparent risk factors as was the case with this baby⁸.



Fig 1: X-Ray; kiddygram showing free gas under the right hemidiaphragm delineating the right margin of the liver on the anteroposterior view. The gas is seen subjacent to the anterior abdominal wall on the lateral view. Findings are suggestive of pneumoperitoneum secondary to perforation of a hollow intra-abdominal viscus.

The pathogenesis of spontaneous gastric perforation is much debated. Anatomical defects of the gastric muscular wall have been suggested to potentiate perforation of the stomach among neonates, especially in prematurity⁷. The circular muscle layer of the newborn stomach normally contains several gaps, most prominently in the fundus, near the greater curvature. These gaps are more common in premature infants. Gastric tissue ischemia secondary to hypoxia is another plausible explanation². During severe hypoxic stress there is diving reflex causing selective shunting of blood away from the splanchnic vascular bed. Traumatic neonatal gastric perforation is usually iatrogenic caused by interventions such as gastric tube insertion or attempted intubation.

Sudden abdominal distension and respiratory distress have been the reported predominant symptoms besides various combination of, feeding intolerance, respiratory distress, or poor activity⁹. The most common radiographic finding in gastric perforation is pneumoperitoneum, which in this case is obvious, and significant enough to cause elevation of the diaphragms and subsequent compression of the lungs. Subtle radiographic findings of pneumoperitoneum include the "football sign," when the falciform ligament is seen as a dense, vertical, near-central strip surrounded by gas, the "saddle bag" sign, where the liver and spleen are displaced downwards and towards midline, and the "arcade" sign, where air is seen between bowel loops, forming extraluminal triangular shaped areas of gas¹⁰.

Surgical repair of most perforation consists of debridement and two layer closure of stomach. Significant gastric resection should be avoided but cases have been reported where significant part of stomach was removed¹¹. Post operative intensive care is crucial for survival and includes empiric broad spectrum antibiotic cover. In very sick infants, short-term external peritoneal drainage may be required, followed by formal surgical repair of the perforation once the infant's condition is stabilized. Due to the associated problems of sepsis and respiratory failure often found in premature infants, mortality rates of gastric perforation are high, ranging from 45% to 58%¹⁰. For better outcome, interval between the onset of symptoms and start of definitive therapy should be minimized.

Conclusion

Regardless of cause, a timely diagnosis of gastric perforation must be made and surgical correction is performed expeditiously to prevent significant morbidity. Aim of presenting this case report was to generate awareness about this potentially catastrophic event which can happen even in a neonate without any apparent risk factors.

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