

Intestinal malrotation and gastric duplication with ectopic mucosa in a neonate: A rare case

Md. Samiul Hasan¹, Refoyez Mahmud²

Abstract

Gastric duplication and intestinal malrotation are rare associations, with only a few cases reported to date. We present a neonate who came to us with bilious vomiting and epigastric fullness. A contrast X-ray revealed intestinal malrotation and a radiolucent area below the stomach. An ultrasound scan showed a cystic structure attached to the stomach. During laparotomy, we found the cyst attached to the greater curvature of the stomach. The cyst was excised, and the malrotation was corrected. The histopathology confirmed a duplication cyst that contained colonic tissue. The post-operative period was uneventful. The coexistence of these anomalies should be considered when evaluating infants with intestinal obstruction.

Keyword: Gastric duplication; Intestinal malrotation; ectopic mucosa; Bilious vomiting; Neonatal intestinal obstruction.

Introduction

Malrotation of the intestine occurs due to abnormal rotation and fixation of the intestine during its re-entry into the abdominal cavity in intrauterine life.¹ Duplication cysts consist of intestinal muscles and serosa lined by intestinal mucosa, which are directly attached to the normal intestinal tract.² The connection between intestinal malrotation and gastric duplication is rare. The clinical presentations of these two conditions can mimic each other, potentially leading to diagnostic challenges and delays in management.^{3,4} Ectopic mucosa in enteric duplication cysts is likewise uncommon. Most reported cases identified gastric and pancreatic tissue, although this does not change the management approach.^{4,6} We present a case of intestinal malrotation and gastric duplication cyst with colonic tissue.

Case presentation

A 15-day-old girl presented with multiple episodes of bilious vomiting. Her prenatal history was uneventful, and her bowel and bladder habits were regular. Upon examination, the girl had stable vital signs and weighed 2.8 kg. A nasogastric aspirate revealed bilious content. The abdomen was not distended, soft, but a small palpable lump was felt in the epigastric region. We kept the baby NPO (nothing by mouth) and initiated fluid replacement therapy.

An abdominal ultrasound showed an elongated cystic mass measuring 5.7 x 2.5 cm in the upper abdomen (Figure 1).



Figure 1: Ultrasound scan revealed a cystic structure attached to the stomach

A plain abdominal X-ray demonstrated a cystic area below the stomach without evidence of intestinal obstruction. A contrast meal follow-through revealed a distorted stomach and duodenum, with no connection to the cystic area (Figure 2).

¹Associate Professor
Department of Paediatric
Surgery
Bangladesh Shishu Hospital &
Institute, Dhaka

²Registrar
Department of Paediatric
Surgery
Bangladesh Shishu Hospital &
Institute, Dhaka

Correspondence

Dr. Md. Samiul Hasan
Associate Professor
Department of Paediatric
Surgery, Bangladesh Shishu
Hospital and Institute Dhaka,
Bangladesh
e-mail: samiulo45@gmail.com

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Figure 2: Contrast meal follow-through showing distorted stomach and duodenum anatomy with radiolucent area below the stomach

Based on these findings, a diagnosis of intestinal malrotation with a duplication cyst was made.

During the laparotomy, we discovered intestinal malrotation and performed the Ladd procedure. A cyst was found attached to the greater curvature of the stomach, sharing a common wall (Figure 3).



Figure 3: Per-operative picture showing an elongated cyst attached to the greater curvature of the stomach

We carefully separated the cyst from the pancreas and spleen. Additionally, we detached the stomach attachment along with its seromuscular layer. The exposed area of the stomach mucosa was repaired using interrupted seromuscular sutures. The cyst was sent for histopathological analysis. The postoperative period was uneventful, and

the histopathology report revealed that the cystic wall was composed of colonic muscle and mucosa (Figure 4).

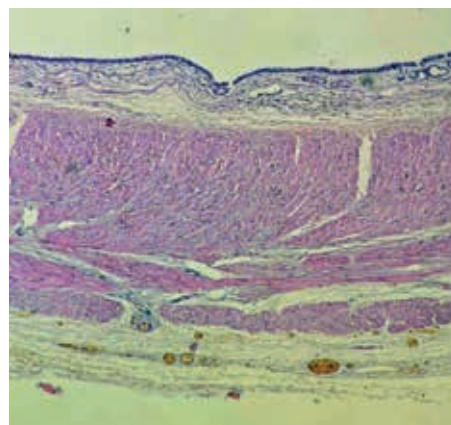


Figure 4: High-power image (H&E stain) showing colonic lining epithelium, thin submucosa, and colonic smooth muscle fibers

Discussion

Intestinal malrotation is a common cause of bilious vomiting in newborns, and it requires urgent evaluation and treatment to prevent complications.³⁻⁵ Gastric duplication cysts make up less than 10% of cases of gastrointestinal duplications.⁷ However, the occurrence of both intestinal malrotation and gastric duplication cysts together is rare. The exact reason for this association has not been established, but some researchers have suggested that gastric cysts may interfere with normal intestinal rotation.⁶

The clinical presentation of duplication cysts can vary depending on their location, size, and type. Gastric duplication cysts may remain asymptomatic or can lead to intestinal obstruction due to external pressure.⁷⁻⁹ In adults, these cysts may present as an abdominal lump accompanied by pain and infection.¹⁰ This can make diagnosing a gastric duplication cyst in a neonate with suspected malrotation quite challenging.

In our patient, a palpable epigastric lump and an area of radiolucency beneath the stomach raised suspicion for a cystic mass, prompting us to perform sonography. Some reports suggest that an abdominal CT scan, in addition to sonography, may be used to confirm the diagnosis. For instance, Ballweg et al. documented a case where a duplication cyst mimicked intestinal malrotation on radiological examination, with the diagnosis confirmed during surgery.³

The only treatment option for the cyst is excision. In our patient, an emergency laparotomy was performed not only to excise the cyst but also to correct intestinal malrotation. Cystic duplications in other parts of the intestine typically lie along the mesenteric border and share a common blood supply; therefore, they require en-bloc resection followed by end-to-end anastomosis. In contrast, gastric duplication

cysts are usually located along the greater curvature of the stomach.²⁻⁶ In this particular case, the cyst shared a common wall with the stomach. After excising the cyst, the exposed stomach mucosa was repaired using interrupted seromuscular sutures.

Enteric duplication cysts are generally expected to have a histological appearance similar to their site of origin. However, cases of ectopic mucosa, particularly gastric and pancreatic mucosa, have been reported in these cysts. This ectopic tissue can lead to symptoms such as ulceration and recurrent pancreatitis.³⁻⁶ In the case of our patient, histopathological examination revealed the presence of colonic wall tissue. To our knowledge, ectopic colonic tissue has not been previously documented in gastric duplication cysts. Nevertheless, this finding does not alter the management approach for these patients.

Gastric duplication cysts are a rare cause of intestinal obstruction in neonates and can mimic other conditions. The presence of this anomaly should be considered when evaluating infants with suspected malrotation.

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