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Gastric Duplication Cyst in a Young Patient: A Case Report from a Tertiary Surgical Center in Western Afghanistan

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ABSTRACT

Gastric duplication cysts are rare congenital malformations of the gastrointestinal tract, accounting for less than 5% of all alimentary tract duplications. Their nonspecific clinical presentation and variable anatomical location often delay diagnosis, particularly in low-resource settings. We present the case of a 3-year-old girl from western Afghanistan who exhibited chronic abdominal pain, poor appetite, and nausea. Ultrasonography revealed a cystic lesion adjacent to the stomach, and exploratory laparotomy confirmed a duplication cyst arising from the greater curvature, without communication with the gastric lumen. The cyst was excised completely with preservation of the stomach. Histopathological examination confirmed the diagnosis. The postoperative course was uneventful, and the patient demonstrated complete clinical recovery. This report highlights the critical role of clinical judgment, basic imaging, and timely surgical intervention in managing complex congenital gastrointestinal anomalies where advanced diagnostics are unavailable.

Keywords: Alimentary tract duplication, Congenital gastrointestinal anomaly, Gastric duplication cyst, Low resource settings, Pediatric abdominal mass, Surgical excision

Introduction

Gastrointestinal duplication cysts are rare congenital malformations characterized by the presence of a well-formed, hollow, epithelium-lined structure that shares a muscular wall with the native gastrointestinal tract. These cysts can occur anywhere along the alimentary canal, but approximately 4%–9% are located in the stomach, making gastric duplication cysts an uncommon clinical entity (1). First described by W.E. Ladd in 1937, gastric duplication cysts are mostly identified in children under the age of 12, with nearly 70% diagnosed before the age of two (2). The pathogenesis remains under debate; proposed mechanisms include errors during embryonic development such as

aberrant recanalization, incomplete twinning, and intrauterine vascular accidents (3).

Gastric duplication cysts often present with vague and nonspecific symptoms such as abdominal pain, vomiting, distension, or poor feeding, depending on their size and location (4). In some cases, particularly when the cysts are small, they may remain undetected until complications like bleeding, infection, or obstruction arise. Rarely, malignant transformation has been documented in long-standing, untreated cases, especially in adults.

Ultrasound is commonly the first-line imaging modality, often revealing a cystic structure with a characteristic double-wall or "gut signature" appearance. However, CT and MRI are more definitive for anatomical localization and preoperative planning. Despite their utility, such advanced imaging techniques are frequently unavailable in under-resourced healthcare settings (5). Surgical resection remains the treatment of choice. Complete excision of the cyst, preferably with preservation of gastric integrity, typically results in excellent long-term outcomes (6). Minimally invasive laparoscopic approaches are gaining popularity, but they require specialized equipment and expertise that may not be accessible in many low- and middle-income countries.

We describe here the clinical course, diagnostic process, surgical management, and favorable outcome of a 3-year-old girl from rural Afghanistan diagnosed with a gastric duplication cyst. While such cases have been documented in developed settings, reports from low-resource environments remain scarce. The current case adds to the limited literature by demonstrating that, despite constraints in imaging and infrastructure, timely diagnosis and surgery can achieve excellent outcomes. It also emphasizes the importance of recognizing such congenital anomalies in countries like Afghanistan, where access to advanced diagnostics is often limited.

Case Presentation

A 3-year-old female from the Shindand district of Herat Province, Afghanistan, was referred to the Department of Pediatric Surgery at Afghan Arya Complex Hospital, Herat, with a three-month history of intermittent abdominal pain, reduced appetite, nausea, and occasional episodes of vomiting. There was no reported history of fever, constipation, diarrhea, or weight loss. On physical examination, a soft, non-tender, palpable mass was detected in the epigastric region. Abdominal ultrasonography (Figure 1) revealed a cystic lesion located in the upper abdomen, suggestive of a gastric origin.

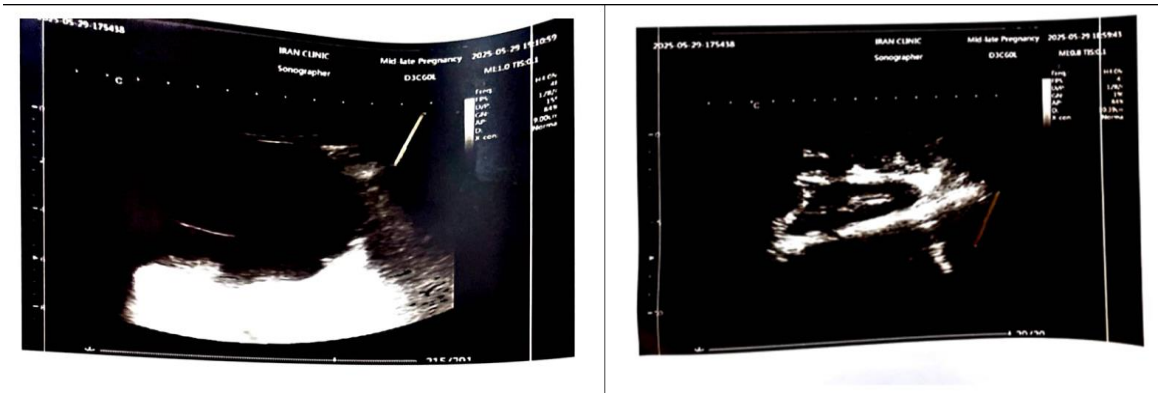

Figure 1: Abdominal sonography showing cystic lesion located in upper abdomen.

Due to financial limitations, computed tomography (CT) imaging could not be performed.

Based on the clinical evaluation and sonographic findings, a provisional diagnosis of a gastric duplication cyst was made, and the patient was scheduled for exploratory laparotomy. Intraoperatively, a midline laparotomy incision was performed, revealing a cystic mass originating from the greater curvature of the stomach. The lesion was adherent to the gastric serosa but showed no communication with the gastric lumen. The cyst was meticulously dissected, completely mobilized, and excised with preservation of the gastric wall. The anatomical location of the cyst is illustrated (Figure 2). It shows the intraoperative view of the cyst's anatomical location. Figure 3 displays the gross appearance of the excised mass.

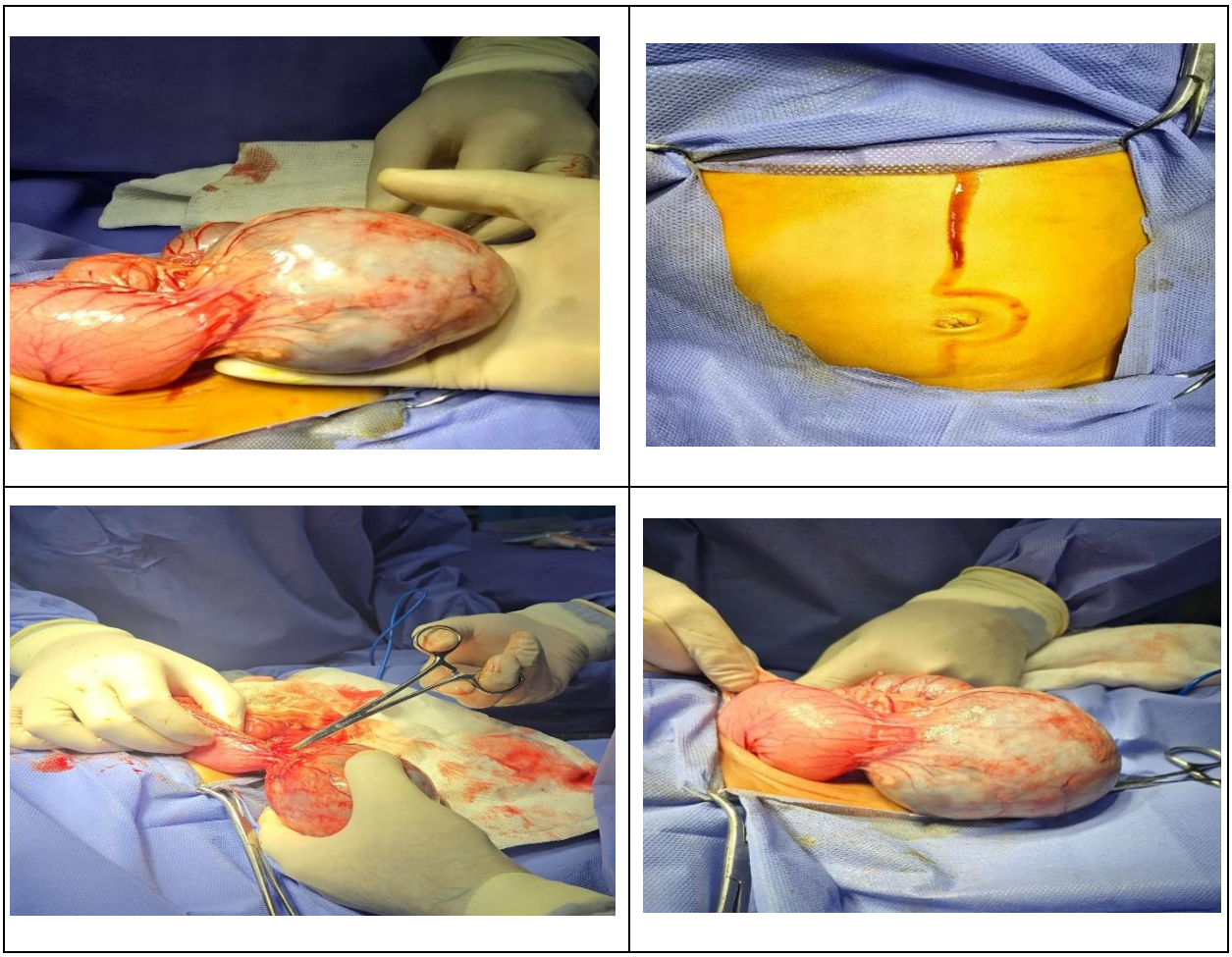

Figure 2: Anatomical location of the cyst and surgical operations

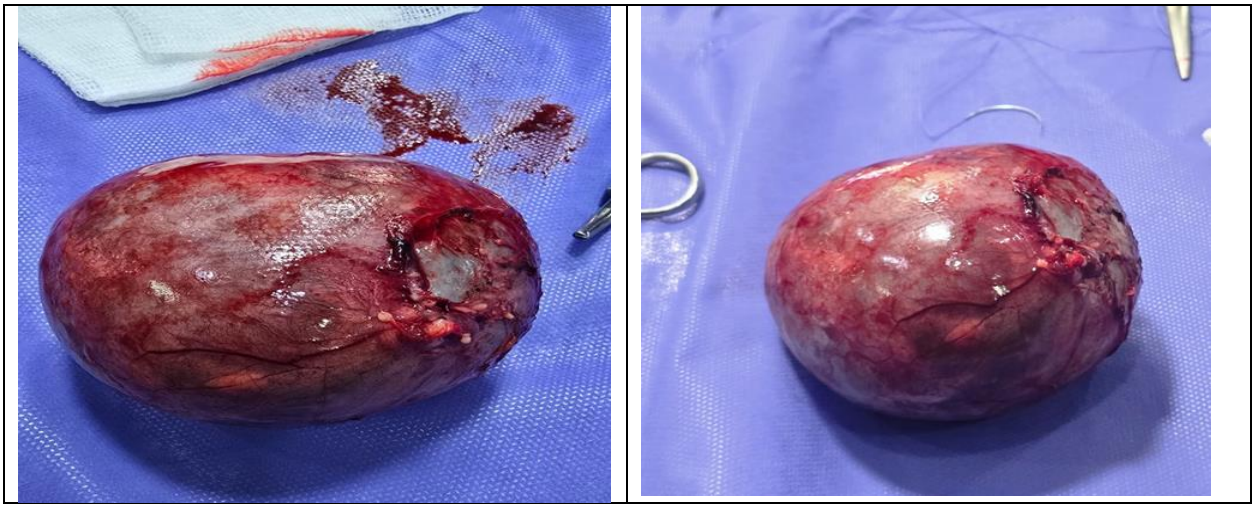

Figure 3: Gross morphology of mass operated

Postoperative Course and Follow-Up

The postoperative course was uneventful. Oral feeding was initiated on the third postoperative day and was well tolerated. The patient was discharged on the fifth postoperative day in stable condition and good general health. Histopathological analysis of the excised specimen confirmed the diagnosis of a gastric duplication cyst. Microscopic examination revealed a cystic structure lined by gastric-type mucosa and surrounded by a well-organized muscular wall, with no evidence of dysplasia or malignancy. At the one-month follow-up, the patient remained asymptomatic, with no clinical signs suggesting of recurrence. Although follow-up imaging was not performed due to financial limitations, the child demonstrated continued clinical improvement, including normalization of appetite, appropriate weight gain, and absence of gastrointestinal symptoms. These findings collectively indicate a sustained and stable postoperative recovery.

Discussion

Gastric duplication cysts are rare congenital anomalies that comprise a small percentage of gastrointestinal tract duplications. They are most often diagnosed in early childhood and frequently mimic other abdominal masses such as pancreatic pseudocysts, mesenteric cysts, or gastrointestinal stromal tumors, making preoperative differential diagnosis challenging (7). Ultrasonography and cross-sectional imaging, particularly CT and MRI, are valuable for diagnosis and surgical planning. However, in low-resource environments such as rural Afghanistan, these technologies may not be readily available. In such contexts, clinical acumen and intraoperative findings remain critical to reaching a definitive diagnosis and guiding management (8,9).

In our case, careful surgical exploration confirmed the presence of a gastric duplication cyst arising from the greater curvature, with no communication to the gastric lumen. Complete surgical excision is the gold standard of treatment and is associated with excellent prognosis when resection is achieved without perforation or contamination. Histopathological confirmation is essential not only for diagnosis but also to rule out malignant transformation, reported in rare long-standing adult cases (10).

The primary limitation in our case was the absence of advanced imaging preoperatively

and postoperative imaging during follow-up, due to socioeconomic constraints. However, the patient's full clinical recovery, weight gain, and resolution of symptoms strongly support treatment success. This case reinforces that effective surgical care and good outcomes are possible even in resource-limited settings, when timely intervention and appropriate clinical judgment are applied (11).

Conclusion

This case highlights the successful diagnosis and management of a gastric duplication cyst in a young child in a resource-limited setting. It emphasizes the importance of early clinical suspicion, the utility of basic imaging, and timely surgical intervention in ensuring favorable outcomes for rare congenital anomalies. Despite the absence of advanced diagnostic modalities, clinical judgment and intraoperative assessment proved sufficient for accurate diagnosis and treatment.

This case serves as a reminder that appropriate clinical judgment, even in the absence of advanced diagnostic tools, can lead to successful management of complex congenital conditions in low-resource healthcare settings.

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Ethical Consideration

Written informed consent was obtained from the patient's legal guardian for the publication of this case report and any accompanying images. All clinical procedures were conducted in accordance with the ethical standards of the institution and relevant national guidelines.

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Conflict of interest

The authors declare that there is no conflict of interests.

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