

Case report

Umbilical hernia of stomach

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Abstract. Herniation of the stomach through the umbilicus is exceedingly rare with only one case reported in the international literature in the past 40 years. One case of a reducible gastric umbilical hernia, not diagnosed by endoscopy, is reported. Diagnosis was made by double-contrast barium examination after 5 years of symptoms and ineffective treatment. Herniation of the stomach is difficult to diagnose by endoscopy and radiological studies can be more sensitive and allow a more specific diagnosis.

Key words: Stomach – Herniation – Umbilicus – Barium examination – Double contrast

Introduction

The umbilicus is a common site of herniation. The protrusion usually consists of omentum and the large and/or small bowel. Stomach herniation through the umbilicus is exceedingly rare, with only one case reported in the international literature in the past 40 years [1]. Endoscopy is usually used to evaluate patients with complaints referable to the upper digestive system because of its superior capacity to diagnose mucosal lesions [2]. Radiological examinations have declined since the introduction of endoscopy and, in some centers, its main role is in providing a map of the lesion before surgical therapy. Barium studies, however, are superior for depicting morphological and topographical abnormalities such as gastric herniation or volvulus.

Case report

A 59-year-old woman with a 5-year history of post-prandial discomfort and sporadic vomiting was sent to our department for a barium gastroduodenal examination.

No constitutional symptoms were present. Upper gastrointestinal endoscopy, performed several times before, revealed no significant gastric abnormality. Barium enema, abdominal ultrasound, and blood chemistry were all normal. On previous physical examination a small umbilical hernia was noticed but was apparently not related to the patient's symptoms. No intra-abdominal abnormality was palpated. During this period the patient tried various medications (famotidine, domperidone, cisapride, pancreatic enzymes) with no significant benefit.

We performed a barium double-contrast gastroduodenal examination which showed a constriction of gastric antrum which, together with the pylorus and duodenal bulb, formed a "sacculatation" that was pulled inferiorly and anteriorly (Fig. 1). Stretching of first part of duodenum was also detected. The lateral view demonstrated herniation of gastric antrum and duodenal bulb through abdominal wall (Fig. 2). The herniated portion of the stomach demonstrated normal peristaltic activity (Fig. 3). The herniation could be manually reduced and when the patient was positioned in the supine position the volume of abdominal protrusion could be reduced, although it never completely disappeared. However, lateral views with a horizontal X-ray beam demonstrated complete reduction of the stomach when the hernia was reduced by hand. The hernia did not twist on its axis.

Retrospective review of the patient's file revealed that 2 years before she had undergone a barium small bowel follow-through study which had demonstrated the herniation (Fig. 4). However, the findings were misinterpreted as representing a diverticulum of the fourth part of duodenum.

The patient's symptoms subsided following surgical repair of the hernia.

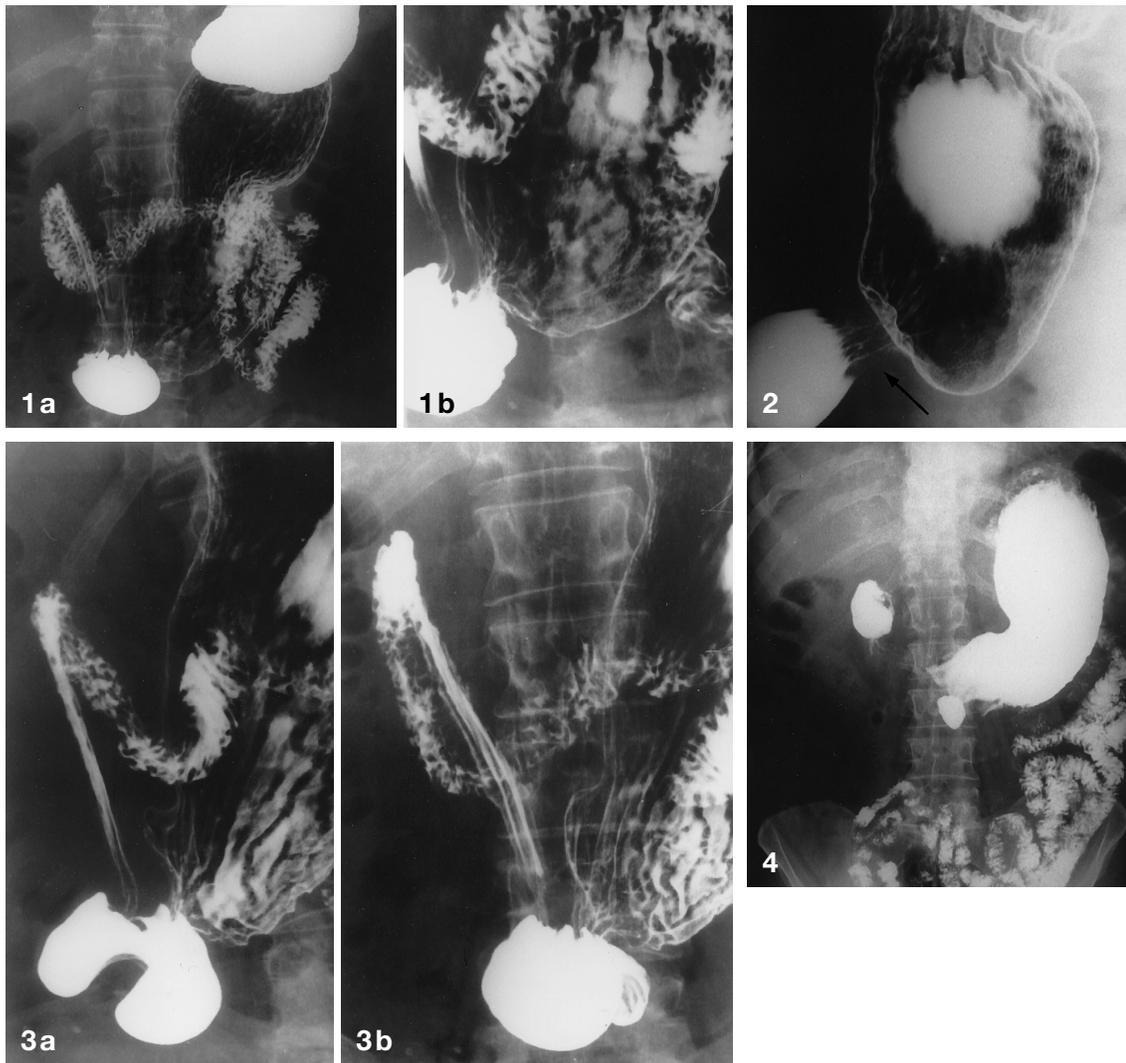


Fig. 1. **a** Frontal view of stomach in supine position. Constriction of antrum and stretching of first portion of duodenum is evident. Gastric and duodenal mucosa is otherwise normal. The hernial sac is formed by the gastric antrum and duodenal bulb. There is no mesenteroaxial twist. **b** Coned view of hernial sac and neck

Fig. 2. Lateral view of stomach in the lateral decubitus position. Herniation of stomach through umbilical ring could be better appreciated with a spotlight. *Arrow* points to the neck of the hernia

Fig. 3 a, b. Frontal views in supine position. Peristaltic activity in the hernial sac and stretching of first portion of duodenum

Fig. 4. Frontal view in the prone position of a barium small bowel follow-through study. Herniation of the greater curvature of the antrum

Discussion

A review of the international literature of the past 40 years revealed only one case of umbilical stomach herniation [1]. The patient was a 63-year-old woman with significant gastric outlet obstruction due to compression of the efferent limb at the neck of the hernia. The involved stomach demonstrated a mesenteroaxial

twist within the hernia sac causing the efferent limb to be superior to the afferent limb.

Endoscopy has a broad range of indications in gastrointestinal disorders and radiological procedures are substituted for or supplanted by endoscopic management in many instances [2]. The unique feature of our case was the inability of endoscopy to diagnose the hernia, perhaps due to spontaneous reduction of the hernia during the performance of the endoscopic examination. However, herniation of the stomach through the umbilical ring when the patient was in the upright position – and even recumbent position – was responsible for the patient symptoms. When only frontal views were available, as in the barium small bowel follow-through examination, the abnormality was not correctly diagnosed. Because only a part of the greater curvature of the stomach was herniated, a duodenal diverticulum was suggested.

The umbilicus is a common site of herniation. Umbilical hernias are seen mostly in middle-aged or elderly multiparous women. Increased pressure on the anterior abdominal wall associated with pregnancy and obesity causes herniation through naturally weak areas. These hernias occasionally become large and usually contain omentum and large and/or small bowel. They are much

more prone to incarceration and strangulation than inguinal hernias and strangulation of colon and omentum is common [1, 3]. In most instances the hiatal ring is a small firm defect less than 1 cm in diameter in the aponeurosis. Umbilical hernias are common in infants and close spontaneously without treatment if the aponeurotic defect is 1.5 cm or less in diameter [2].

The rarity of involvement of the stomach in these hernias is explained by the stomach's relatively fixed position in the abdomen caused by its ligamentous attachments. These ligaments include the gastrohepatic ligament along the lesser curvature, the gastrocolic and gastrosplenic ligaments along the greater curvature, and the gastrophrenic ligament along the posterior aspect of the fundus. Also, the esophagus holds the stomach in place superiorly, and the fixed duodenum tends to anchor it inferiorly [4]. Thus, the stomach is fixed in position compared with the relatively mobile small bowel, transverse colon, and sigmoid colon, which are more

frequently involved in abdominal wall hernias. Apparently, only in the middle-aged or elderly with elongated stomachs due to ligamentous laxity can the mobility of the stomach be sufficient to allow such herniation [1].

References

1. Bryk D (1984) Gastric involvement in abdominal wall hernias. *Gastrointest Radiol* 9: 311–314
2. Michael BK, Fred ES (1991) Gastrointestinal endoscopy. In: Wilson et al. (ed) *Harrison's principles of internal medicine*, 12th edn. McGraw-Hill, New York, pp 1216–1222
3. Wantz GE (1994) Abdominal wall hernias. In: Schwartz SI (ed) *Principles of surgery*, 6th edn. McGraw-Hill, New York, pp 1517–1543
4. Johnson FR (1981) The digestive system. In: Romanes GJ (ed) *Cunningham's textbook of anatomy*, 12th edn. Oxford University Press, Oxford, pp 411–489

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