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Surgical Experience with Gastric Duplication

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INTRODUCTION

Gastrointestinal duplications are relatively rare in frequency and they occur in anywhere the entire gastrointestinal tract with the most common site in the ileocecum. Neverthless, duplication of the stomach was very rare. According to BOWER' report in 1978, only six duplications were reported in the series of alimentary tract duplications of the 64 patients over a 40-year period.

Two children with gastric duplications were surgically treated in our clinic and clinical aspect of gastric duplication was reviewed.

PATIENTS

Patients were listed in Table 1. The age was one year, and three years and six months. Both were girls.

There was no history of abdominal discomfort and no complaint of the digestive tract such as vomiting, abdominal distension and diarrhea so on.

Detection was made by a palpable abdominal mass in one and an abnormal finding of deformity of gas-filling in the cardia on chest X-ray study in the other as shown in Fig. 1.

Endoscopy in Case 2 revealed a dome-like lesion protruding into the fundus posteriorly. In Case 1, a huge abdominal mass was palpated without any complaint, suggesting a benign cyst, possibly arising from the omentum. The findings of echography and CT scan were compatible with this consideration in Fig 2 and 3.

Table 1.

	Case 1	Case 2
age	1yr1M	3yrs6months
Sex	female	female
means of detection	abdominal mass	abnormality on chest-XP
symptom	asymptomatic	asymptomatic
G1 series	filling defect of the stomach detectable	filling defect of the stomach detectable
CT endoscopy	none	protruding lesion
Tumor size (cm)	12.5 5.0	4.0 4.0
location	greater curative	posterior wall in cardia
surgery	excision by dividing the common nuscle wall of the stomach	the same as case 1

Exploration of the abdominal cavity revealed the cystic mass contiguous with the gastric walls, which were along the greater curvature in Case 1 and the posterior wall of the cardia in Case 2 respectively.

The sizes of the cysts were 4.4×3.6cm in Case 1, 4.2×3.0cm in Case 2 respectively.

The cystic walls measured 0.5cm in thickness. The inner layer was smooth and white-glittered,

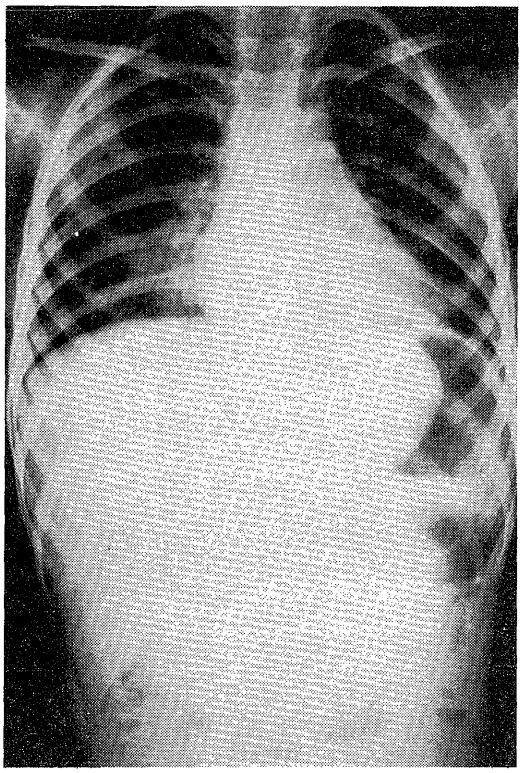

Fig. 1. An abnormal gas filling in the cardia in Case 1

containing transparent serous fluid in the both. Microscopic examination revealed the columner lining epithelium with two or three smooth muscle layers in either cyst as shown in Fig 4.

DISCUSSION

In 1959, ROWLING[1] defined the difinition to make a diagnosis of gastric duplication, that is, (1) the wall of the cyst is contiguous with the gastric wall, (2) the wall is composed of smooth muscle which is continuous with the muscle of the stomach and (3) the wall is lined by alimentary epithelium.

In 1967, BARTELS[2] reviewed the literature and analyzed a clinical feature in 55 cases. In addition, WIECZOREL in 1984 summarised a total of 109 who were reported as gastric duplication. According to a clinical analysis as to gastric duplication, female is more dominant than male in frequency. Both cases were female. Most were diagnosed in the first three months

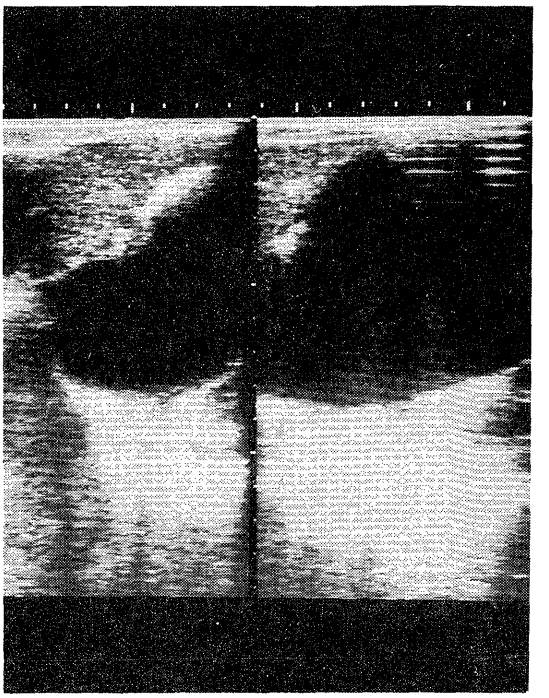

Fig. 2. Air space lesion in the epigastic region in case 1

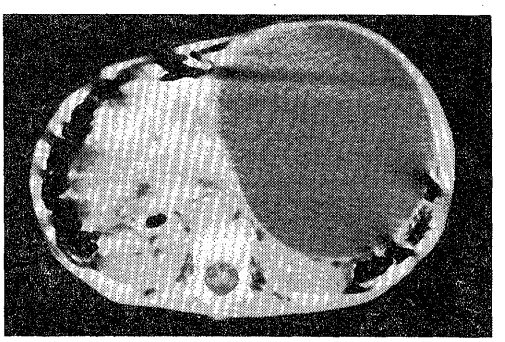

Fig. 3. An abnormal space-occupying lesion on CT

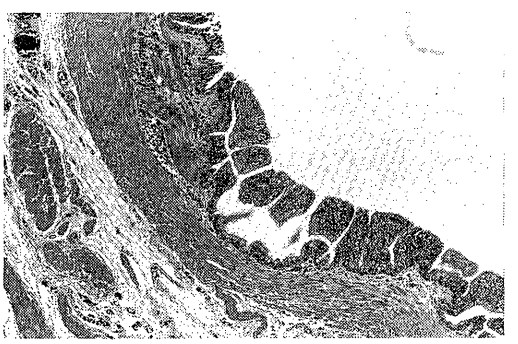

Fig. 4. Histologic pattern of resected cystic surface

of life. However, in our cases they were asymptomatic and diagnosed by periodic examination for infant.

According to collective review, vomiting is the most common symptom. When erosion occurred on the overlying mucosa communicating with the stomach bleeding would accompany. It is of interest for gastric duplication to cause pneumonia by extending into the thorax through the esophageal hiatus and also to lead to chronic pleural effusion resulting in chronic pancreatitis by connecting with the main pancreatic duct.[3]

The most common location of duplication cysts is along the greater curvature, followed by the posterior wall. As usual, gastric duplications form sphenoidal or tubular shapes. The former is non-communicating and the latter is communicating with the stomach, although most of them are non-communicating. Rare cases communicated with the umbilicus and a MECKEL's diverticulum.[4]

In the majority of duplication cysts, the sizes ranged from 3cm to 6cm in diameter. However, for the abdominal cavity of infants it is large enough to be palpated and to produce a symptom by compression. Sometimes it has been resected as a carcinoma to which it was transformed during a long life of 63 years.[5] Sometimes an episode of bleeding was reported by communication with the stomach, probably due to either erosion on the gastric mucosa overlying the cyst or erosion on the inflammatory cystic epithelium. Unusual physical finding was that of pneumonia or pleural fluid which were caused by cyst extension to the mediastinum communicating with pancreatic duct[4] and by fistulous communication of the cyst with the pulmonary lower lobe[5] and sequestrated lobe.[6]

The most common location of gastric duplication was along the greater curvature, followed by posterior wall as experienced in our cases. Most of gastric duplication, 82%, were cystic and not communicating with the stomach or other organs. Although the remainder, 18%, were tubular and did communicate with complex physical findings. Bartels[3] reported some cases containing ectopic pancreatic tissues in the alimentary epithelium, was etiologically experienced.[7] Mayo *et al.*[5] detected a carcinoma arising from the gastric duplication in a 63-year-old woman who was the oldest patient reported.

Associated congenital anomalies listed as follows ; duplication of the esophagus, vertebral abnormalities, aberrant pancreas, duplication of the duodenum, malrotation of gut so on.

The treatment in the majority was surgical excision of the cyst either by dissection of the cyst from the common muscle wall or excision of the cyst between the margin of normal stomach with primary closure with seromuscular stitches. A method of marsupialization should be avoided.

The surgical treatment is recommended, but one must avoid a fistula formation leading to perforation to the aorta, because fatal massive bleeding would follow[8], or perforation leading to acute peritonitis by which life saving should be jeopardized.[9]

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