

Uncommon congenital antral web misdiagnosed twice as a pyloric ulcer: successful treatment with endoscopic balloon dilatation

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Congenital antral webs are quite rare and easily overlooked or misdiagnosed. We report the case of a five-year-old boy who presented with symptoms of gastric outlet obstruction for four years; his condition was misdiagnosed twice as pyloric ulcer. Detailed gastroscopy revealed a congenital antral web. The stricture was successfully treated with endoscopic balloon dilatation without surgery.

Key words: congenital antral web, endoscopic balloon dilatation.

Congenital antral web, first described in 1940 by Touroff et al.¹, is a rare cause of prepyloric gastric outlet obstruction. This condition is present in approximately one in 100,000 births. Antral web is generally regarded as a congenital anomaly characterized by the presence of a circumferential mucosal septum that narrows the gastrointestinal lumen in the prepyloric region, with intraluminal projection perpendicular to the long axis of the antrum².

This anomaly is quite rare and has received little medical attention. In most cases, the presenting symptoms are non-bilious vomiting and weight loss, sometimes accompanied by abdominal pain and cramping³. An atypical clinical manifestation can lead to misdiagnosis, and this condition often cannot be distinguished from gastric outlet diseases such as hypertrophic pyloric stenosis and peptic ulcer.

Here, we report the case of a five-year-old boy with a congenital antral web whose condition was misdiagnosed twice in other hospitals as pyloric ulcer. The stricture-related problems were successfully treated with endoscopic balloon dilatation (EBD) without the need for surgery.

Case Report

Our patient had a four-year history of recurrent non-bilious vomiting and hematemesis. At the age of 12 months, he was admitted to a local hospital due to these symptoms as well

as hematochezia and iron deficiency anemia. At that time, he was diagnosed with a pyloric ulcer based on the endoscopic findings. The details of treatment were not recorded clearly. Four years later, non-bilious vomiting and hematemesis recurred, and the patient was admitted to another local hospital. Again, endoscopic examination led to the diagnosis of pyloric ulcer. No vomiting occurred during fasting, but this symptom recurred several hours later after the patient resumed eating, and it was accompanied by abdominal pain. Two weeks after symptom onset, the patient was admitted to our endoscopy center.

The child weighed 17.5 kg, and the physical examination revealed no remarkable feature of his general condition. The abdomen was soft and non-tender. Laboratory values were all within normal limits, and the patient was not dehydrated. Serology and urease testing yielded no evidence of *Helicobacter pylori*.

Ultrasonography revealed only food debris in a dilated stomach. Contrast radiography (barium swallow test) showed a dilated stomach and changes in the duodenal bulb that were suggestive of duodenal ulcer. A plain X-ray revealed abundant contrast agent in the gastrointestinal cavity. Computed tomography (CT) of the abdomen revealed diaphragmatic stenosis of the gastric antrum (Fig. 1).

An accurate diagnosis was made by gastroscopy.

Endoscopy revealed pyloric stenosis, and a gastroscope 8.2 mm in diameter (EG-450PE5, Fujinon Ltd.; Tokyo, Japan) could not be passed to the duodenum. Endoscopic re-examination with a 5.9 mm gastroscope (EG-530N, Fujinon Ltd.) revealed an apparently narrowed pylorus, which was then correctly identified as an antral web. The web had an opening of constant size, and lacked mucosal folds and the flexibility of a normal pylorus. It was 3 mm thick and had an eccentric 6 mm aperture (Fig. 2). The pylorus, which showed normal peristalsis, was located after passing the endoscope through the web. The endoscope navigated through the distal antral lumen to the duodenal loop without difficulty after bypassing the antral web aperture. No other stricture was found proximally. The resulting diagnosis was a congenital antral web causing gastric outlet obstruction in the prepyloric antrum.

Endoscopic balloon dilatation (EBD) (EG-450WR5, Fujinon Ltd.) was attempted using different sized water-inflated balloons (8, 10, and 12 mm, Microvasive Inc., Boston Scientific Corp Ltd.; Natick, MA, USA) in sequence. The stricture was dilated incrementally to a 12 mm diameter and the web was bluntly torn open (Fig. 3). After the procedure, a gastroscope with an 11 mm external diameter passed through the web smoothly.

The patient's recovery was uneventful. Vomiting ceased, and he rapidly gained the ability to eat solid food. The patient remained asymptomatic during two years of follow-up, and his weight had increased to 25 kg by the age of 6.5 years.

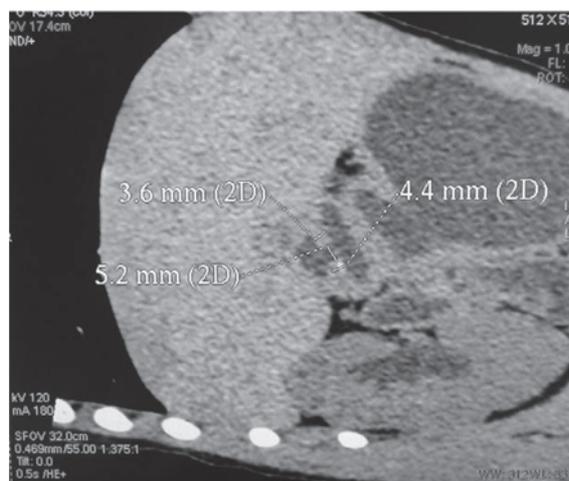


Fig. 1. Computed tomography (CT) of the abdomen revealed diaphragmatic stenosis of the gastric antrum.

Discussion

A congenital antral web induces gastric outlet obstruction in childhood. If the occlusion is complete, symptoms appear at birth. Unfortunately, incomplete antral webs are usually diagnosed later, and some patients are diagnosed in adulthood. The lumen is usually sufficiently narrow to cause the prompt emergence of symptoms. A central or eccentric aperture is present in most cases, varying from a pinhole to several millimeters in diameter⁴.

Because of the low morbidity associated with this condition, antral webs are easily overlooked or misdiagnosed. The details of our case highlight the importance of physicians' awareness of, attention to, and treatment of congenital antral webs. Endoscopy helps to confirm the presence of an antral web, and should be performed repeatedly and carefully to avoid misdiagnosis when findings are inconsistent with clinical symptoms. Accurate diagnosis allows timely and proper treatment and pain relief for the patient.

Radiological findings may suggest the presence of an antral web, which should be suspected in patients with obstructive symptoms. Plain abdominal X-rays are of little diagnostic value. Radiographic studies using contrast media can diagnose up to 90% of antral webs, but the membrane can be identified only when the X-ray beam is parallel to the membrane surface and the stomach is distended with barium sulfate⁵. Radiography may also lead to misinterpretation of the diaphragmatic condition as exaggerated plicae circulares⁶. In our case, the upper

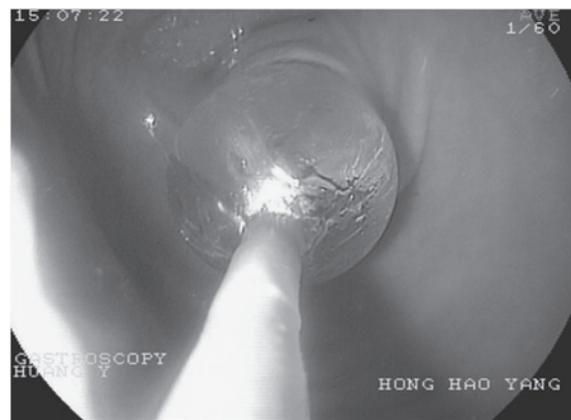


Fig. 2. Endoscopic view of the antral diaphragm; note the absence of mucosal folds.

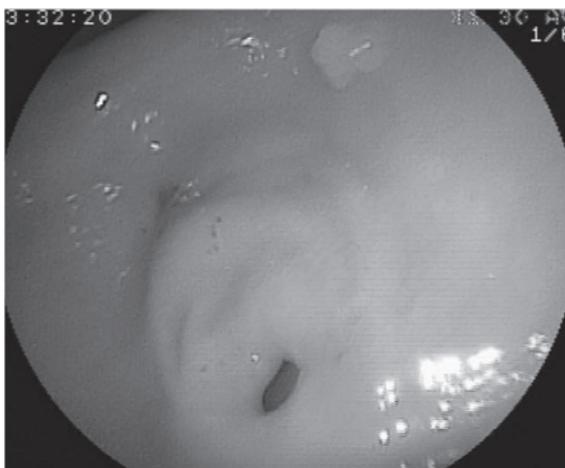


Fig. 3. Endoscopic view of balloon dilatation.

gastrointestinal series did not help to confirm the diagnosis, but abdominal CT revealed diaphragmatic stenosis in the gastric antrum, consistent with an antral web.

Endoscopic ultrasonography is also useful for the diagnosis of gastric disorders, such as congenital antral web. Four criteria have been proposed for the ultrasonographic diagnosis of antral web: demonstration of an echogenic diaphragm-like structure in the antral region, gastric dilatation, delayed gastric emptying, and a normal pylorus⁷. In our case, ultrasonography did not provide definitive evidence of an antral web.

In theory, gastroscopy is the definitive modality for the visualization of an antral web and the exclusion of other diseases. In our case, repeated gastroscopy yielded an accurate diagnosis. Endoscopic diagnostic criteria include a diaphragm with smooth mucosa and an opening of constant size, as well as normal peristalsis distal to the web⁸.

Surgery remains the primary treatment for a symptomatic antral web with gastric outlet obstruction³. Most antral webs can be managed by excision through a simple incision using an open or laparoscopic procedure⁹. If the diagnosis can be made with confidence, nonsurgical procedures such as balloon dilatation or endoscopic resection of the thin membrane can be used. Satisfactory results of endoscopic transection or laser lysis of the web have also been described¹⁰. The best treatment option depends on the thickness of the web, size of its aperture, degree of obstruction, and

the clinical manifestation. The selection of the most suitable method should be based on the minimization of pain and the effectiveness of the approach.

Given our patient's young age, we used blunt-tear EBD to rapidly minimize trauma and pain. This approach successfully treated the stricture induced by the antral web. EBD is an easy, safe, and effective nonsurgical method that can be repeated several times. Our patient experienced immediate resolution of vomiting and hematemesis and was asymptomatic during a two-year follow-up period. Thus, EBD should be considered the preferred method of resolving stenosis caused by an antral web.

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