Case report

Bilious aspirates with metabolic acidosis in a premature infant: Congenital antral web: A case report and review of literature.

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ABSTRACT

Congenital antral web is a rare cause of obstruction in neonates. It is a thin mucosal diaphragm at 1-3 cm from the pyloroduodenal junction with a 1-2mm orifice. The baby was born to a non diabetic primigravida at 35 weeks of gestation with a birth weight of 2.12kg. Baby presented after 12 hours of birth with yellowish mucoid aspirates of 35ml without abdominal distension. Investigations revealed child to be having hypocalcemia and metabolic acidosis. X ray showed a dilated stomach without distal small bowel gas. Barium swallow was done which showed a dilated stomach with no passage of barium beyond the stomach. Baby underwent an emergency laparotomy on the second day of life with a incision of the web, pyloroplasty and a transanastomotic feeding tube insertion. Antral web should be considered in a case of premature neonate with a dilated stomach and bilious aspirates.

Case report

A singleton girl child was born to a non diabetic primigravida at 35 weeks of gestation. The baby was not depressed at birth and her weight was 2.12kg. she presented at 12 hours of life with non bilious vomiting and lethargy. A nasogastric tube inserted drained 35 ml of yellow mucoid stomach contents. She did not have abdominal distension or signs of shock. An x-ray done showed a grossly dilated stomach with no distal gas in the abdomen. The barium swallow that proceeded showed a dilated stomach with a rounded cut off at the level of the antrum with no passage of contrast beyond the stomach( Fig 1). Additionally the child was found to have metabolic acidosis and hypocalcemia. She did not have any other anomalies. The child underwent an emergency laparotomy suspecting a vascular compromise to the bowel. The bowel configuration was normal with a dilated stomach. A Foley catheter passed through a gastrotomy could not be negotiated beyond the antrum. A longitudinal incision was made at the level of the obstruction revealing a 2mm prepyloric web. A pyloroplasty was done incising the web and suturing the incised stomach transversely over a transanastomotic gastric feeding tube. The child was extubated and could be started on feeds through the transanastomotic tube on the 3rd postoperative day. Oral feeds were started on the seventh postoperative day.

Fig 1 Dilated stomach on Plain X ray abdomen and Barium swallow. Barium did not pass beyond pylorus even on delayed films.

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Neonatal period has many causes of non-bilious vomiting such as pyloric stenosis, feeding intolerance, milk allergy, metabolic disorders (e.g., hyperammonemia, metabolic acidosis), increased intracranial pressure, sepsis, necrotizing enterocolitis, or adrenal insufficiency.\(^{(12)}\)

For the diagnosis, Ultrasonography and upper GI series are useful. The conditions causing gastric obstruction on UGI series include prepyloric antral web, pyloric stenosis, pylorospasm, redundant or hypertrophied mucosal folds, perigastric adhesions, or heterotopic pancreatic tissue.\(^{(13)}\) UGI series reveals persistent, sharp band-like linear defect in antrum and the "double bulb sign" in case of antral web. One is normal duodenal bulb and the other one is proximal antral chamber between web and pylorus.\(^{(14,15,16)}\) After filling the stomach with milk or saline shows an echogenic diaphragm-like structure in the antrum with gastric dilatation, and delay in gastric emptying with normal pylorus on ultrasonography.\(^{(15)}\). However, accurate diagnosis often delayed even if the patient undergoes endoscopy or UGI series, because antral web is a very rare entity as described above. Patients often have been treated for ulcer or pyloric spasm. Asymptomatic antral web become worse from peptic ulcer with edema of antrum.\(^{(11,17)}\)

The symptomatic antral web needs surgical correction.\(^{(13)}\) From anatomical lesion, antroplasty or web excision with or without pyloroplasty are possible surgical options. The prognosis is very good after surgical correction.\(^{(10)}\) For our patient we did a gastroscopy horizontally, excision of the web, a transanastomotic stent for early nutrition and closure of the gastrotomy without pyloroplasty are possible surgical options. The prognosis is very good after surgical correction.\(^{(10)}\) For our patient we did a gastroscopy horizontally, excision of the web, a transanastomotic stent for early nutrition and closure of the gastrotomy. The endoscopic treatment is another option of antral web depending on the feasibility of endoscopic intervention. Endoscopic transection is possible if the the mucosal structure is uniform without major vessels or muscular or serosal layers and the membrane is tense and consistent with perpendicular insertion.\(^{(8)}\)

We suggest that vomiting whether bilious or non bilious with a grossly distended stomach with metabolic acidosis should be evaluated by barium swallow after excluding other causes. Because antral web is very rare, it is important to keep this in mind with a premature infant with gross dilatation of the stomach and metabolic abnormalities which can lead to early surgical intervention and a favourable outcome.

**Reference:**


**Discussion**

Congenital antral web is a rare cause of prepyloric gastric outlet obstruction with an incidence of approximately one in 100,000 births.\(^{(1)}\). Infantile hypertrophic pyloric stenosis is the most common cause of gastric outlet obstruction in infants less than 3 months of age.\(^{(2)}\) Touroff and his colleagues were the first to report successful surgical correction of congenital prepyloric membranous obstruction in a premature infant in 1949.\(^{(3)}\)

The condition was further simplified by Gerber and Aberdeen in 1965. Review of literature was done and classified as follows:

- **Pyloric**
  - a) Atresia
  - b) Membrane

- **Antral**
  - a) Atresia
  - b) Membrane\(^{(4)}\)

Antral webs are thin, soft and pliable membranes composed of mucosa and submucosa of sufficient strength to resist manual dilatation, with a 23 mm orifice and located 13 cm proximal to the pyloroduodenal junction.\(^{(5)}\) The cause of webs remains unknown. The developing mechanism is known to be incomplete recanalization of foregut around gestational age 5-6 weeks. In this period, the epithelial cells rapidly overgrow in the lumen, and vacuoles appear and eventually coalesce to recanalize the gut. The webs formation is the result from an excessive local endodermal proliferation early in gastric development.\(^{(6,7,8)}\). There is a slight web formation is the result from an excessive local endodermal proliferation early in gastric development.\(^{(6,7,8)}\). There is a slight

Presentation of antral web depends on the size of the lumen even though it is congenital origin. In general, lumen sizes larger than 1 cm do not lead to obstructive symptoms.\(^{(8)}\) Both pyloric and antral membranes (IA and IIA) occur over a wide age spectrum with peak incidences in infancy and the seventh decades.\(^{(9)}\)

Symptomatic presentation within 10 days after birth is extremely rare according to the literature.\(^{(4-8)}\) Most patients show intermittent atypical symptoms such as vague abdominal pain, vomiting, or abdominal distension. Some of them show melena or hematemesis.\(^{(10,11)}\)

![Fig 2 Intra operative picture showing antral web](image-url)


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