DUODENAL ATRESIA LEADING TO ACQUIRED PULSION GASTRIC DIVERTICULUM IN A NEONATE WITH GASTRIC OUTLET OBSTRUCTION

AUTHORS: Devashis Mukherjee MD, Benjamin Sopczynski MD, Pavan Brahmamdam MD, Martin Espinosa MD

1Depts of Pediatrics and Pediatric Surgery, Beaumont Health System, Royal Oak, MI.

BACKGROUND: We report what is to the best of our knowledge, the first case of a gastric diverticulum due to duodenal atresia in a neonate, since 1940. There are very few case reports of any kind of gastric diverticulum in the neonatal population, and even less of an acquired type.

CASE REPORT: A female infant, born at 34 weeks gestation via spontaneous vaginal delivery to a Group B Streptococcus positive woman of Middle Eastern descent with gestational diabetes mellitus. At 2 days of life the baby was not passing meconium, and there was progressive abdominal distension and hence feeds were stopped. Abdominal radiograph showed marked gastric distension and paucity of bowel gas throughout the rest of the abdomen. Upper gastrointestinal series with small bowel follow through using barium showed contrast filling the stomach without any evidence of gastric emptying, and persistently absent bowel gas throughout the abdomen. The lateral views demonstrated soft tissue fullness behind the stomach, which was displaced forward, with mass effect on the fundus and body of the stomach, with pooling of contrast along the posterior wall, which was read as thickened folds or an umbilication or an ulcer. Sonographic exam demonstrated a dilated fluid-filled proximal duodenal bulb, with collapse of the bowel at the second to third part of the duodenum suggesting presence of duodenal atresia.

Emergent surgery was performed and intraoperatorily an ischemic structure contiguous with the stomach at the greater curve was found, which resembled a diverticulum, extending to the gastroesophageal junction and esophago-phrenic ligament. The diverticulum, found to be communicating with the stomach lumen and composed of gastric mucosa, was resected completely. The proximal duodenum terminated in a bulbous end with an obvious disruption and a duodenal atresia. Normal saline injected through a red rubber catheter placed in the distal part of the duodenum was visualized to the cecum, ruling out an intestinal atresia. A diamond duodenoduodenostomy was performed for the duodenal atresia.

A week after surgery the baby was tolerating full feeds. Histopathology of the diverticulum revealed gastric mucosa and submucosa without muscle with marked ulceration and ischemic necrosis, consistent with a pulsion type of acquired gastric diverticulum.

DISCUSSION: Upon conducting an extensive literature search, we found only one other case of gastric diverticulum in a neonate with a simultaneous duodenal atresia, reported by Brody in 1940.

The fact that all the layers of the stomach were not present in the diverticulum, along with the presence of a concurrent duodenal atresia, which would have resulted in prolonged increased intraluminal pressure in the stomach during the course of pregnancy, leads to the diagnosis of pulsion type of false diverticulum in this patient.

Also, this case suggests that in-utero fetal swallowing of amniotic fluid appears to increase intraluminal pressure enough to produce a diverticulum of the gastric wall.