

Ectopic Gastric Mucosa Of The Common Bile Duct

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The finding of ectopic gastric mucosa is well documented throughout the gastrointestinal tract from the tongue to the rectum. Its presence within the gallbladder and the biliary tree is extremely rare and most probably secondary to an aberrant histogenesis. This brief report presents the second reported case of heterotopic gastric tissue within the common bile duct. A literature review, brief outline of embryologic features, histopathology, and clinical relevance are included in the discussion.

Case Report

A 24-year-old mother of 1 child came to the emergency department of Jackson Memorial Hospital complaining of an acute exacerbation of chronic, recurrent colicky pain in the right upper abdomen. She remembered suffering from recurrent ill-defined epigastric pain since the age of 5 years, with the pain gradually worsening during the next several years. The patient noted that her discomfort was exacerbated by the intake of food and was associated with episodes of nausea and occasional vomiting. A decrease in her fat intake relieved the frequency of colicky pain, but she never reached a symptom-free state.

No jaundice, dark urine, light-colored stools, melena, chills, or fever were observed. The pain was not alleviated by food, milk, antacids, or histamine H₂-receptor antagonists. Findings on a physical examination were normal except for a mild epigastric and right upper quadrant tenderness but no guarding or rebound. The laboratory findings showed an elevated aspartate aminotransferase (AST) 52 U/L, alanine aminotransferase (ALT) 64 U/L, and lipase 234 U/L. Serologic testing for hepatitis, a coagulation profile, and gastrin level were normal. An initial abdominal sonogram showed a dilated common bile duct measuring 1.3 cm in its greatest diameter with echogenic material proximal to the entrance

of the pancreatic duct. Findings on endoscopic retrograde cholangiopancreatography (ERCP), which allows the radiographic visualization of the pancreatic duct and the hepatobiliary tree, were normal, and no filling defects were noted. A computed tomographic scan (CT) of the abdomen with contrast showed no calcification or masses.

A hepatobiliary scintiscan with technetium showed a delayed filling of the gallbladder. Retained activity occurred within the dilated intrahepatic collecting system, and a gallbladder ejection fraction was 60 percent. Because of the chronic nature of the pain and no or poor response to medication, the patient agreed to undergo a cholecystectomy with sphincterotomy. During the surgery, a 1.4 × 1.2 × 1.0-cm mass was palpated around the mid common bile duct. A biopsy of this mass showed a portion of the common bile duct with heterotopic gastric-type glands. The final histopathologic interpretation noted heterotopic gastric tissue in the midportion of the common bile duct containing chief and parietal cells but no evidence of goblet or Paneth cells. At this point the common bile duct was resected, approximately 1.0 cm from the bifurcation of the hepatic ducts near the liver, and the gallbladder was removed. A loop of the jejunum was mobilized and brought up to perform a Roux-en-Y hepaticojejunostomy. This procedure involves the dissection of a jejunum loop and an end-to-side anastomosis of the distal end of the divided jejunum (Roux limb) to the remaining part of the common bile duct at the hilum of the liver, followed by an implantation of the proximal end into the side of the jejunum at a suitable distance below the anastomosis, forming a Y-shaped pattern (Roux-en-Y). This Roux limb, also known as Hudson-Russell limb, is then tacked to the subfascial area. The patient made an uneventful recovery and has remained well to the present time with no recurrence of the preoperative pain.

Discussion

The occurrence of heterotopic tissue in the gallbladder and biliary tree is defined as the presence of gastric epithelium, fundic in type, containing

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both chief and parietal cells. Its existence was first reported by Egyedi in 1934.¹

The clinicopathological findings in all 31 cases of ectopic gastric mucosa of the gallbladder reported in the literature were summarized by Yamamoto, et al.² The authors noted no sex predilection, a male-to-female ratio of 15:16, with an average age of 31.3 years. The incidence of gallstones was low, and no dysplastic features were found. The most common sites of occurrence were neck and fundic regions of the gallbladder in 28 of 31 cases, with three reported locations in the cystic duct. In three cases³⁻⁵ a bleeding peptic ulcer in the gallbladder was reported causing hematemesis and melena. The lesions are generally described as polypoid, and on histologic examination fundic glands with parietal and chief cells and pyloric glands have been noted. Curtis, et al.⁶ have postulated three main themes regarding the genesis of heterotopic tissues: heteroplastic differentiation, congenital or developmental accident, and metaplasia.

Heteroplastic Differentiation

Heteroplastic differentiation is either a development of cytologic and histologic elements that is not typical for the organ or a malposition of tissue in another organ. In regard to stomach and gallbladder, their development stems from the same endodermal foregut origin, and their fully differentiated tissues arise from the same primitive, pluripotential primitive outline, or primordium, which represents the earliest discernible indication of an organ. Alteration of induction of the cell differentiation might permit the development of other adult-type tissue in addition to the normal tissues of that organ. Therefore gallbladder tissue can be found in the stomach, and gastric tissue can appear in the gallbladder.

Developmental Accident

In the second month of gestation, gastric and biliary tree primordia are closely associated in the septum transversum and potentially allow portions of the gastric mucosa to develop normally in the gallbladder.

Metaplastic Differentiation

The terms *ectopia*, *heterotopia*, or *aberrance of tissues* are used to describe the development of tissues in situations where they are not normally found, e.g., gastric tissue in the gallbladder. The term *metaplasia* refers to the transformation of a differ-

entiated tissue of one type into a differentiated tissue of another kind, e.g., the development of bone in skeletal muscle. Injury to the normal epithelium could result in metaplastic changes following inflammation, e.g., chronic cholecystitis.

All three theories are redundant approaches that attempt to explain the unusual histopathologic presentation. In this case the ectopic gastric mucosa was composed of fundic and pyloric type glands with no metaplastic changes. A metaplastic lesion would show less differentiated tissues often containing Paneth and goblet cells. It was concluded, therefore, that the described gastric mucosa was of ectopic origin. Welling, et al.⁷ reported the first and, to the best of my knowledge, only case of heterotopic gastric mucosa occurring in the common bile duct. In this case a mass was found in the common bile duct at the junction of the cystic duct. A frozen section revealed atypical glandular structures in the biliary tree considered to be a metastatic or primary adenocarcinoma. Further section, however, showed heterotopic gastric mucosa. When the clinical symptoms in the 32 reviewed cases are compared with the clinical presentation of this case, it is noteworthy that all were variations of pain in the right upper abdomen. Nothing characteristic would suggest the presence of ectopic gastric mucosa before surgery. The awareness of this unusual histopathologic feature could contribute to the differential diagnosis and management of gallbladder disease in patients.

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