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Bleeding Duodenal Diverticula Managed With Surgical Resection: A Case Report

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The duodenum is the most common extra-colonic site of diverticulum. If present, it rarely manifests with symptoms or complications. A case is discussed involving a 78-year-old female who presented with massive upper gastrointestinal bleeding from duodenal diverticula. Due to hemodynamic instability, she eventually underwent duodenal resection, with a side-to-side duodenojejunostomy as a means of restoring intestinal continuity. The postoperative course was unremarkable. The patient was able to feed enterally and had no recurrence of bleeding.

Key words: upper gastrointestinal bleeding, duodenal diverticulum

Gastrointestinal bleeding is a common reason for hospital admissions and emergency surgical referrals with a reported incidence of 100 per 100,000 annually.[1] Upper gastrointestinal bleeding (UGIB) is defined as bleeding proximal to the ligament of Treitz, and the most common cause is a bleeding peptic ulcer.[1,2] A rare cause of UGIB is a duodenal diverticulum. The duodenum is the most common extra-colonic site of diverticula. Duodenal diverticula are reported to be present in two to five percent of patients undergoing upper gastrointestinal tract imaging, and to have a prevalence of 25 percent in autopsy studies.[3,4,5,6]

However, most patients with duodenal diverticula are asymptomatic and complications, such as bleeding, perforation, or inflammation, are rare.[6,7] Case reports and case series have been published through the years and the management options vary: surgical, endoscopic, angiographic, and conservative. This documents a case of a patient experiencing massive UGIB from duodenal diverticula that was managed with surgical resection.

The Case

This is a case of a 78-year-old female who was admitted for UGIB presenting as a one-week history of melena. The patient reported a similar incident 20 years prior to this admission. She recalled having required blood transfusion then. However, no attempt to locate the source of bleeding was made. Upon admission, the patient was pale and tachycardic. Baseline hemoglobin was noted to be 55 g/L. Blood transfusion was done. CT angiography revealed non-specific inflammatory changes in the area of the 1st and 2nd portions of the duodenum. No arterial or venous contrast extravasation to the bowel was noted.

While admitted, the patient again presented with massive melena and fresh blood per rectum. An emergency gastroduodenoscopy was done. Gastroscopy findings were unremarkable. However, there was a note of reflux of blood on duodenoscopy. A side-viewing scope was then used that revealed a 1 cm diverticular opening at the third portion of the duodenum (D3). There was no note of active bleeding at that time. The patient had hypotensive episodes during, and immediately after, the procedure. She remained responsive to crystalloid and blood transfusion.

The patient was then brought to the operating room for an emergency exploratory laparotomy. Intraoperative findings showed blood-filled small bowels and colon. Further dissection with a Kocher maneuver showed a diverticulum at D3-D4. Also noted was a separate, more proximal diverticulum at D3 consistent with the earlier endoscopic findings. The involved segment of duodenum was resected and a side-to-side duodenojujunostomy

was done. (Figure 1) The specimen consisted of a 7.5 cm segment of the duodenum with two diverticula with 1 cm intraluminal openings and blood clots within their lumens (Figures 2 & 3). Histopathology results confirmed the diverticula (Figure 4). No ectopic tissue were noted.

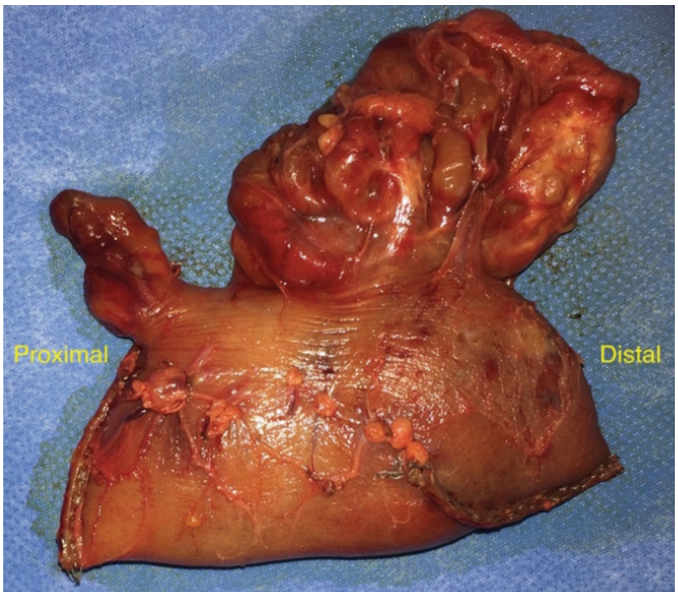

Figure 1. Resected D3 to D4 segment of the duodenum. UP-PGH, 2019.

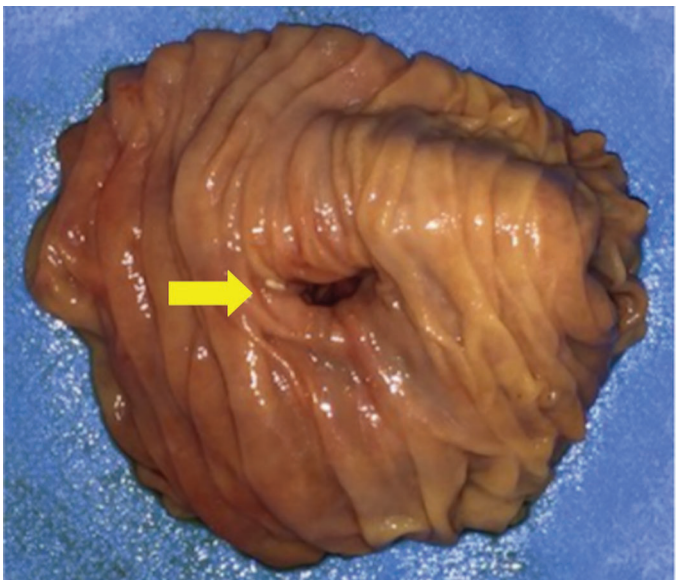

Figure 2. Cut section of the specimen showing the diverticulum at D3 with its intraluminal opening (yellow arrow). UP-PGH, 2019.

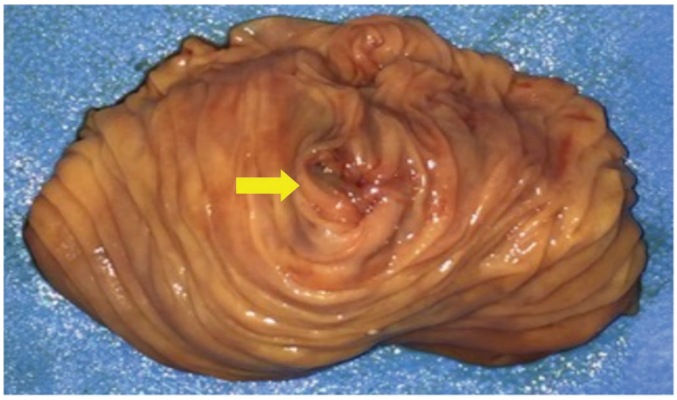

Figure 3. Cut section of the specimen showing the diverticulum at D4 at the area of the ligament of Treitz with its intraluminal opening (yellow arrow). UP-PGH, 2019.

Figure 4A.

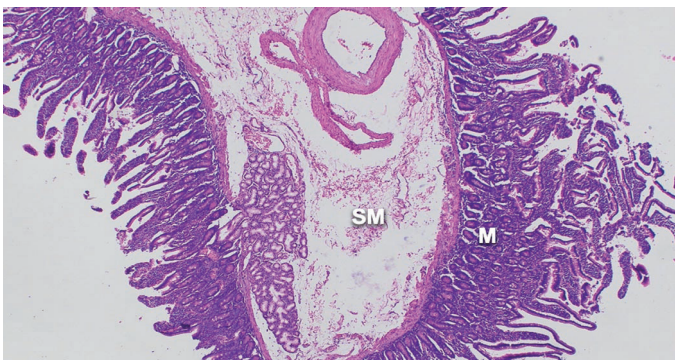

Figure 4B.

Figures 4. A & B. Histopathologic results confirmed the diagnosis of duodenal diverticula. The grossly identified outpouchings of the submitted duodenal segments consist of unremarkable duodenal mucosa (M) and submucosa (SM) with no identifiable muscularis propria. In the proper clinical context, the described findings are compatible with a false or acquired diverticulum. Hematoxylin and eosin stain, 40x magnification. (Courtesy of Dr. Timothy Carl F. Uy of the Department of Laboratories, UP-PGH)

The patient had an unremarkable postoperative course and was able to feed enterally on the third postoperative day. The patient was eventually discharged on the fifth postoperative day. The patient has since had no recurrence of bleeding.

Discussion

Duodenal diverticula are false, or acquired, diverticula. This is in contrast to the congenital Meckel's diverticulum, which is more common but is considered a true diverticulum. Being acquired diverticula, they consist of a layer of the mucosa and submucosa that herniated through a defect in the muscular layer of the intestine.[5,8] The duodenum is the second most common site of diverticular disease, following the colon. Majority of the duodenal diverticula are located in the second (descending) portion of the duodenum, followed by the third and fourth parts.[9]

Clinical presentations of duodenal diverticula are varied. Literature reviews report only symptomatic diverticula to be at five to 10 percent. Symptoms including vague epigastric pain, nausea, and vomiting are reported but their correlation to the presence of a diverticulum is not clear.[10,11,12] However, clinical syndromes and complications that are clearly attributable to the presence of duodenal diverticula are well-documented, and have been reported in a number of case reports. These complications include: 1. mechanical obstruction of the biliary tract, and rarely the duodenum itself; 2. diverticulitis and associated complications like abscess, perforation and peritonitis; and 3. hemorrhage. Another complication reported is pancreatitis although the exact mechanism is still uncertain.[6,12]

"Silent" duodenal diverticula, like in other cases of small bowel diverticula, are usually just observed and warrant no surgical management.[12] But in cases of complications, several management options have been reported, both surgical and non-surgical. For bleeding duodenal diverticula, treatment includes endoscopic control using coagulation or injection, and angiographic transarterial embolization.[12,13] In cases of failure of conservative and non-surgical management, control of bleeding is achieved by diverticulectomy and over sewing, duodenal resection, and even a pancreaticoduodenectomy.[6,13]

The team deemed it necessary for the patient to undergo surgical intervention because of the presence of massive UGIB as manifested by the repeated need for transfusion of blood products to keep her hemodynamically stable, and the inability of endoscopic means to deal with the bleeding.

Conclusion/Learning Points

Duodenal diverticula are rarely symptomatic but remain to be a valid differential diagnosis for cases of massive upper gastrointestinal bleeding. It must be recognized in order to provide the most appropriate management. Surgical resection is indicated for patients who present with hemodynamic instability, or failure to improve by conservative or endoscopic means.

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