CLINICAL CASE - TEST YOURSELF Abdominal Imaging

Polypoid intraluminal duodenal lesion producing epigastric symptoms in an elderly man

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PART A

A 71 – year old male patient complaining of epigastric pain underwent an esophagogastroduodenoscopy in the Gastrointestinal Department of our Hospital. During the procedure a polypoid, mobile lesion protruding from the antimesenteric wall of the duodenum was discovered (Fig. 1). An endoscopic ultrasound (Fig. 2), an upper gastrointestinal study (UGIS) (Fig. 3) and a contrast – enhanced abdominal computed tomography (CT) (Fig. 4, 5) followed in order to better elucidate the nature of the lesion.

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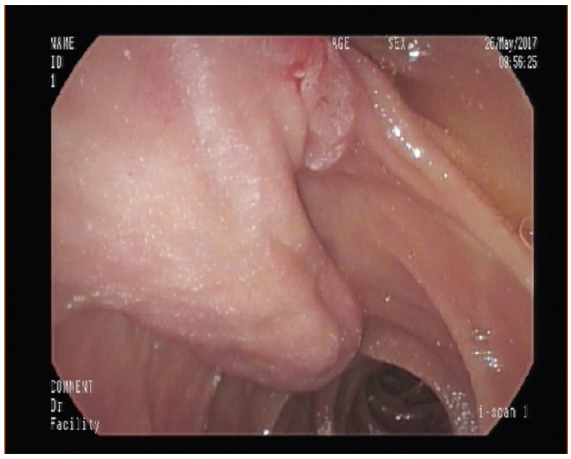

Fig. 1: *Esophagogastroduodenoscopy.*

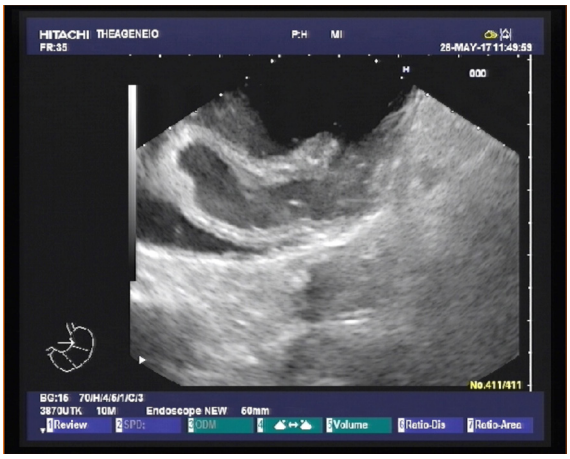

Fig. 2: *Endoscopic ultrasound.*

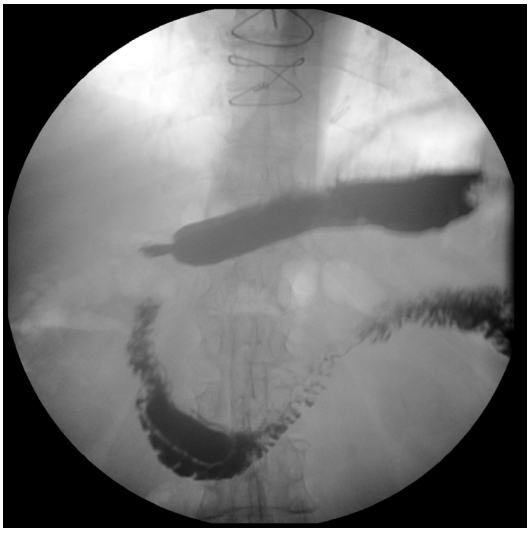

Fig. 3: *Upper Gastrointestinal Study (UGIS) with barium solution.*

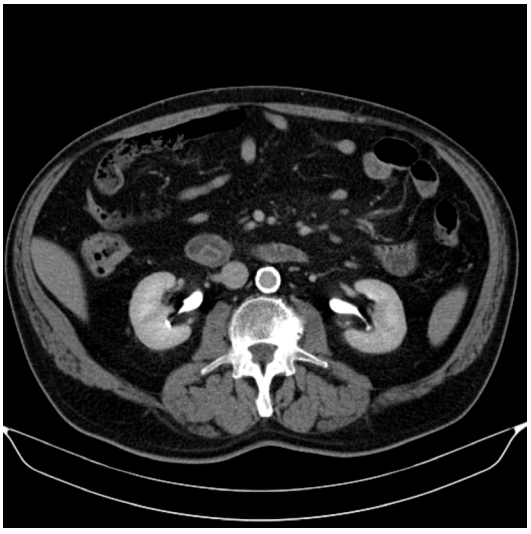

Fig. 4: *Contrast – enhanced Computed Tomography (CT) – axial reconstruction.*

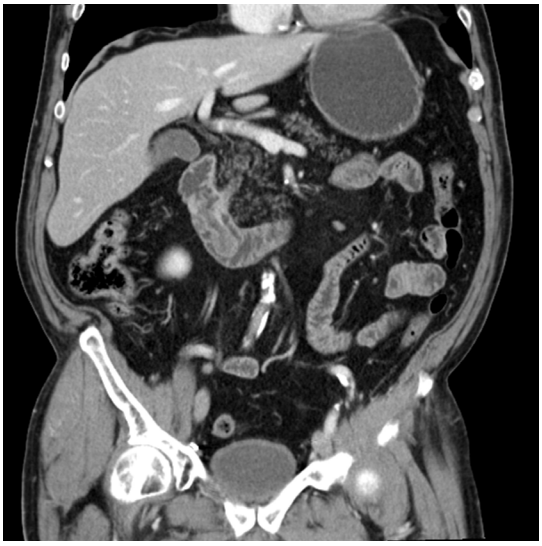

Fig. 5: *Contrast – enhanced Computed Tomography (CT) – coronal reconstruction.*

PART B

Diagnosis: Intraluminal Duodenal Diverticulum

This is a case of intraluminal duodenal diverticulum (IDD), a rare congenital type of duodenal diverticulum. Inadequate recanalization of the foregut lumen between the fourth and eight week of gestation results into the formation of a residual intraluminal diaphragm, which under constant peristaltic forces increases in size and eventually protrudes into the duodenal lumen as a saccular formation (Fig. 1).[1] Although typically asymptomatic, IDD might become clinically apparent with postprandial abdominal discomfort or pain, early satiety and weight loss, nausea, vomiting and anemia due to subclinical hemorrhage. More seldom massive hemorrhage, bowel obstruction and intussusceptions may occur, as well as pancreatitis or biliary symptoms due to obstruction of the major pancreatic ampulla. Because of the enduring development of the IDD, it usually remains indolent until the fourth decade of life.[1], [2]

Imaging investigation for IDD includes UGIS, typically with a barium solution, CT and magnetic resonance (MRI). The IDD appears as a contrast – filled sac surrounded by a radiolucent curved line, representing the residual diaphragm or else, the wall of the diverticulum. [3] This appearance is known as the "windsock" or "finger – in – glove" sign and is the classical diagnostic hallmark of IDD in UGIS. This sign was implemented to validate the diagnosis in our case (Fig. 3). [3], [4] In CT and MRI, IDD appears as a protruding fluid – filled sac within the duodenal lumen (Fig. 4), usually at the second segment, and the "windsock" appearance may be present as well (Fig. 5).[4],[5] If the IDD is empty, confusion with an intraluminal mass may occur.[5] Multiplanar reconstruction allows better visualization of the relationship of the IDD with the duodenal lumen, even without the use of oral contrast material (Fig. 5), although adequate duodenal and sac distention may facilitate an accurate diagnosis. Multiplanar reconstruction also permits the assessment of gastrointestinal and pancreatobiliary complications.[1], [4] Magnetic resonance cholangiopancreatography may also provide supplemental information on the IDD and the width of the duodenal lumen. [6] Esophagogastroduodenoscopy may reveal the presence of two lumens – one true and one false, the latter corresponding to a blind – end pouch.[3], [7] It should be noted however, that endoscopic findings may range from a false positive intraluminal mass, whose features may change over time, to a normal appearing duodenal mucosa with no signs of pathology.[1], [7] Endoscopic ultrasonography has a limited role in the diagnosis of IDD (Fig. 3).[1]

Asymptomatic patients or patients with minor symptoms are preferably treated conservatively. Surgical treatment is reserved for symptomatic patients for whom conservative medical treatment is not successful or those with complications, such as bleeding or bowel obstruction.[1] Diverticulectomy is the treatment of choice and can be performed either surgically or endoscopically, with the latter presenting faster and more often complication – free postoperative recovery.[1], [8] In our case, no further treatment was implemented, since the IDD was an incidental finding with no important clinical implications. **R**

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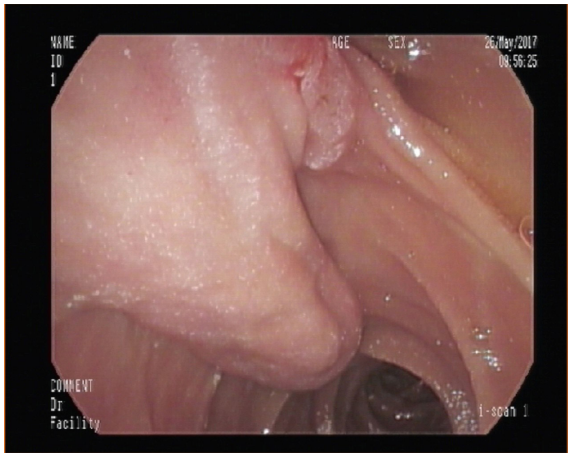

Fig. 1: *A polypoid, mobile mass protruding from the antimesenteric wall of the duodenum was incidentally discovered during esophagogastroduodenoscopy.*

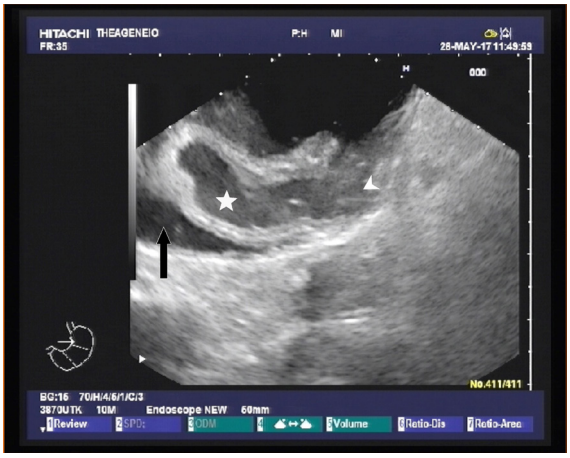

Fig. 2: *At endoscopic ultrasound an intraluminal diverticular sac filled with fluid protrudes within the duodenum. In this case, endoscopic ultrasound was able to demonstrate the two lumens – the true dudodenal lumen (**arrow**) and the false diverticular lumen (**star**), as well as the neck of the IDD (**arrowhead**).*

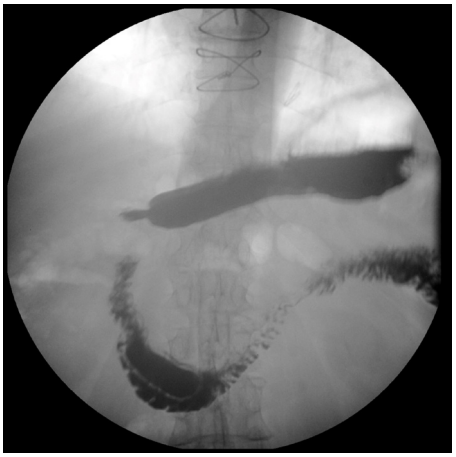

Fig. 3: *The UGIS with barium solution reveals the diagnostic hallmark of the IDD diagnosis: the "windsock" sign. The intraluminal diverticular sac appears filled with the contrast material, while the wall of the diverticulum corresponds to the surrounding lucent line.*

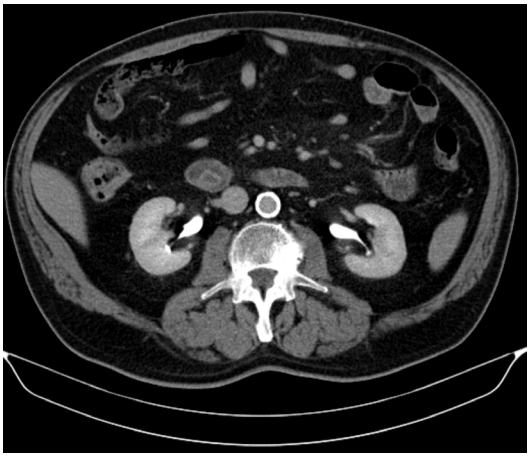

Fig. 4: *A round lesion protrudes into the lumen of the second segment of the duodenum. It has fluid attenuation (~ 10 HU), similar to the duodenal content, and its wall structure resembles the duodenal wall. No solid enhancing components are identified.*

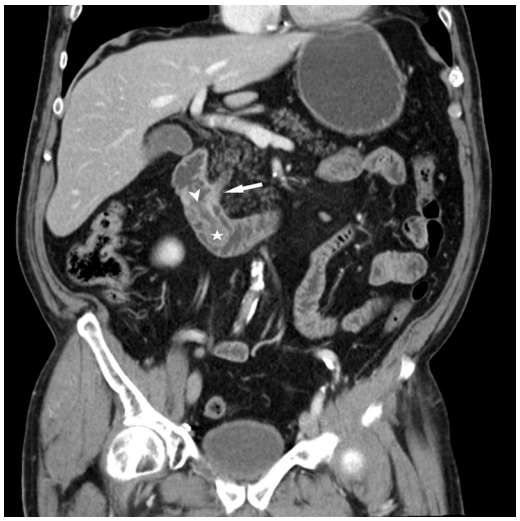

Fig. 5: *The intraluminal fluid – filled sac within the second segment of the duodenum is more easily recognized in coronal MPR (**star**). The ampula of Vater and the final segment of the common bile duct (**arrow**) are identifiable at the level of the IDD neck (**arrowhead**). This lesion corresponds to the endoscopical and sonographic finding. The anatomical proximity to the ampulla could be the eliciting factor of pancreatobiliary complications.*

KEY WORDS | diverticulum; endosonography; barium; computed tomography

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