

*Case report*

# Intraluminal duodenal “windsock” diverticulum; Case Report and discussion

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## ABSTRACT

Intraluminal duodenal diverticulum (IDD) is a rare developmental anomaly usually found in the second portion of the duodenum. The cause appears to be a failure of recanalization of the occluded foregut lumen of the human embryo, resulting in a fenestrated mucosal membrane<sup>[1]</sup>. A small aperture in this diaphragm will gradually cause it to elongate caudally in response to duodenal peristalsis to form the so called “wind-sock” configuration. Symptoms are nonspecific and generally depend on the degree of duodenal obstruction; 25% of cases are associated with GI bleeding. In most documented cases, IDD was diagnosed radiologically, but the value of endoscopy for diagnosis and treatment has been amply demonstrated.

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**Keywords:** Diverticulum; Duodenal Diseases;

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## INTRODUCTION

An intraluminal duodenal diverticulum (IDD) is a true diverticulum, the pathogenesis involves incomplete recanalization of the embryologic foregut in the 8th week of gestation<sup>[1]</sup>. In normal development, there is initially hyperplasia of the epithelial cells of the duodenal mucosa that results in occlusion of the lumen. As a result of years of peristaltic

forces, there is progressive ballooning of the tissue to form a pulsion-type diverticulum. For this reason, the median time of presentation is the fourth decade of life. The site of attachment is almost always in the second part of the duodenum, just distal to the ampulla of Vater<sup>[2]</sup>.

## CASE REPORT:

A 67-year-old male, diabetic patient was admitted to the surgical ward with a history of epigastric pain and recurrent vomiting, revealed serum urea 114 mg/dl, creatinine 2.0 mg/dl, FBS 169 mg/dl, otherwise all laboratory results were within normal range.

early satiety and postprandial fullness for the last two weeks. He had significant weight loss, but no hematemesis, melena or dysphagia. Abdominal examination was unremarkable except for mild epigastric tenderness. Blood biochemistry

Abdominal ultrasound examination revealed marked distension of the stomach and pyloric

thickening. Upper gastrointestinal endoscopy revealed dilated stomach with gastric outlet obstruction, normal mucosa of the first part of the duodenum and an intraluminal mass obstructing the second part of the duodenum with difficulty to pass the scope beyond. Contrast enhanced CT scan of abdomen showed well-defined low density mass, 52X39 mm, seen in the second part of duodenum, with contrast revealing peripheral enhancement semi-solid content [Figure 2], suggestive of cystic benign tumor.

At laparotomy, Kocherization of the duodenum and an enterotomy of the first part of the duodenum revealed an intraluminal duodenal cystic lesion [Figure 1] confirmed by aspiration of a brown content, which measured about 4 x 3 cm, located on the

## DISCUSSION

Duodenal diverticula are common abnormalities seen in 12-27% of endoscopic [1] and 1-6% of upper gastrointestinal contrast studies [2]. Duodenal diverticula are classified into extra- or intraluminal. The exact mechanism of the development of the rare intraluminal duodenal diverticula is unknown. Most authors believe they are congenital abnormalities. Successful recanalization of the solid duodenum during human development can be impaired and initial membranous web-like lesions may elongate during adulthood, creating a pulsion-type intraluminal diverticulum [3, 4]. These lesions typically remain asymptomatic. While is attached to the GI tract and is formed by only 2 layers of the duodenal mucosa.

## CONCLUSION

Surgical diverticulectomy has traditionally been the treatment of choice [1-3]. However, based on multiple case reports, endoscopic diverticulectomy is an emerging alternative [12,13]. The optimal endoscopic approach has

lateral border of the second part of the duodenum. In manipulation, it was blind-ended and covered with all layers of the bowel, and no further communication with the adjacent pancreas or common bile duct was identified. The protruding structure and the cyst in the duodenum were excised completely and specimen sent for histopathology. After this, we primarily closed the lining defect with a 2-0 Vicryl one-layer simple suture and a gastrojejunostomy were constructed. Histopathological examination elicited a true duodenal diverticulum.

2 months after surgery on follow up patient appears to gain weight and in better general condition. An upper endoscopy revealed a normal duodenum without apparent pathology.

some IDD lesions give rise to complaints such as bloating, nausea, vomiting, and abdominal pain, most cases are asymptomatic [2,4,5].

Typically, patients may experience weight loss due to discomfort associated with eating [4]. Common complications of IDD are partial bowel obstruction, bleeding secondary to ulceration, and, rarely, pancreatitis due to intermittent blocking of the ampulla of Vater [3,6-8]. In evaluating patients with such symptoms, the differential diagnosis includes a distal choledochocoele, periampullary cystic mass, and duodenal duplication cyst. Unlike an IDD that is structurally continuous with the duodenal lumen, a duplication cyst

yet to be determined, although various techniques using a needle-knife and snares have been described [7,12-14]. The greatest potential benefit to patients is that endoscopic intervention affords a faster

recovery time than standard surgery, although the paucity of outcomes data is of concern [7]. Further evaluation of such

endoscopic procedures is warranted, particularly in regards to long-term outcomes.

## FIGURES

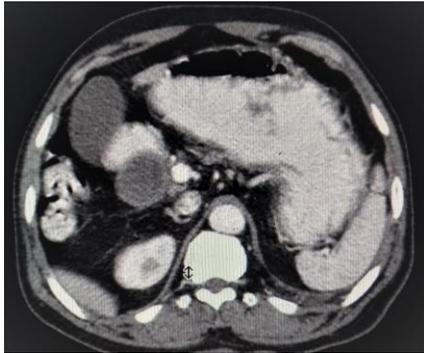
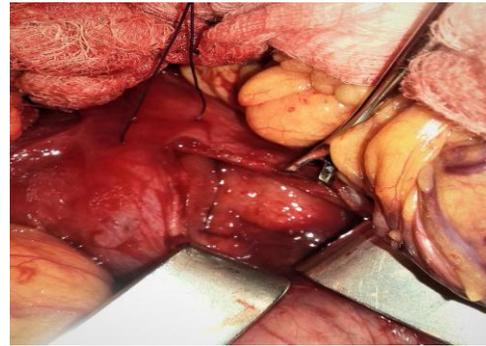


Figure 1 enterotomy of the first part of the duodenum revealed an intraluminal duodenal cystic lesion.

Figure 2 well-defined low density mass, 52X39 mm, seen in the second part of



duodenum, with contrast revealing peripheral enhancement semi-solid content.

## Disclaimer

The article has not been previously presented or published, and is not part of a thesis project.

## Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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