SINGLE LARGE SACCULATED DUODENOJEJUNAL FLEXURE DIVERTICULUM. CASE REPORT AND CLINICAL IMPACT

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SINGLE LARGE SACCULATED DUODENOJEJUNAL FLEXURE DIVERTICULUM. CASE REPORT AND CLINICAL IMPACT (Abstract): A diverticulum can develop in any portion of the intestine. Jejunal diverticulum is a rare congenital malformation and refers to the presence of a sac-like mucosal herniation through vulnerable points of the intestinal wall. We herein report a case of an unusual finding of a single giant sacculated jejunal diverticulum located at the first part of the jejunum just after the duodenojejunal flexure in a cadaver. Diverticula usually remain entirely asymptomatic and commonly present with bloating and nonspecific symptoms. In many cases diagnosis is incidentally reached during surgery, endoscopy or imaging study for other reason. However, serious complications may develop, such as bowel obstruction and acute perforation, diverticulitis, bleeding, volvulus, anemia, malabsorption. Related clinical and surgical implications are discussed as well. Knowledge and familiarity with this rare entity is valuable to gastroenterologists when assessing abdominal symptoms and general surgeons, as well, when performing exploratory laparotomy. Although jejunal diverticular disease is a rare condition, potential complications could be fatal. **Keywords:** JEJUNUM, DIVERTICULUM, DIVERTICULITIS.

Jejunal diverticula (JD) constitute a rare entity of the small-bowel with a reported incidence of 0.5 to 2.3% (1) in enteroclysis studies, and a varying incidence of 0.26 (2) to 4.6% (3) in autopsy studies, predominantly affecting male gender (4). Gastroenterologists and colorectal surgeons should be familiar with this entity because they may deal with it in many different clinical settings, as a JD could be the incidental finding during the pre-operative work-up of a colorectal disease patient or radiographically discovered during diagnostic abdominal imaging studies. Intraoperatively, JD may become evident on routine abdominal exploration, or could be the cause of an acute abdomen (5). Some acute presentations of that jejunal malformation include hemorrhage, anemia, malabsorption, volvulus, intussusception, perforation, small-bowel obstruction (1).

We herein report a case of an unusually large, single diverticulum of the first part of the jejunum, just after the duodenojejunal flexure near the ligament of Trietz. Solid understanding of the underlying anatomy is fundamental to offer the best possible treatment to patients suffering from these lesions.

CASE PRESENTATION

During the routine dissection course for teaching and research purposes in the Department of Anatomy of Aristotle University of Thessaloniki, in the small-bowel of a formalin-alcohol fixed and embalmed 72-year-old Greek male cadaver we came across an unusual finding of a single giant JD adjacent to the ligament of Treitz arising from the mesenteric border and extending into the posterior wall of the jejunum. The JD displayed a broad base with a diameter of 4.85 cm and sacculated outer surface (fig. 1A) Precise shape and dimensions of that anatomical finding were determined after the inflation of the gut's lumen with water through a catheter placed at the fourth part of the duodenum, just proximal to the diverticulum. No abdominal symptoms or diseases were retrieved from the medical records of the body donor (fig. 2B). No other diverticula or a Meckel's diverticulum were found after a careful investigation of the rest of the bowel. The diverticulum was found at the initial portion of the jejunum just distal to Treitz ligament. The cause of death was unrelated to the current study. An uneventful cholecystectomy was performed 18 years ago because of an acute cholecystitis. No other concomitant anatomical variations in the abdomen existed. For documentation purposes, repeated photographs of this rare finding were taken.

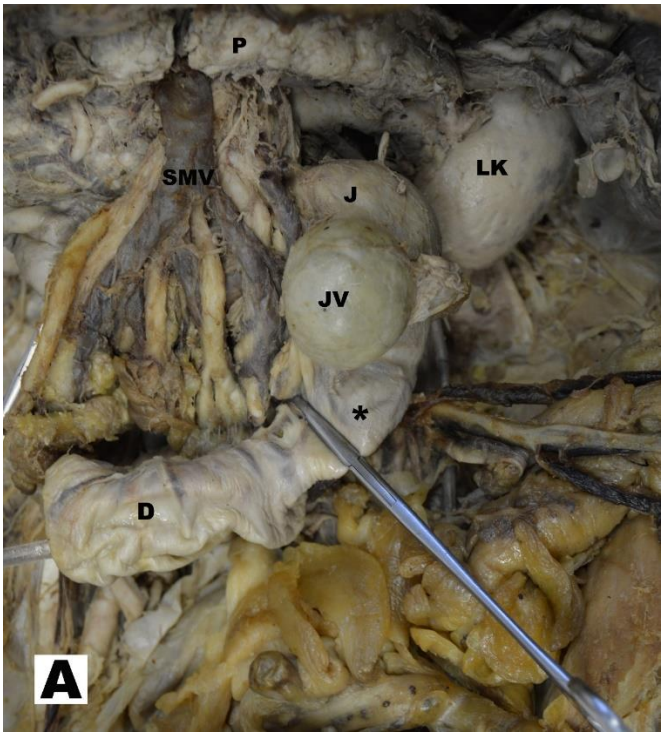

Fig. 1. A. The abdominal organs and vessels of the retroperitoneal space are demonstrated along with the first portion of the jejunum (J), where at the site of the duodenojejunal flexure (asterisk), a jejunal diverticulum (JV) is seen. The fourth portion of the duodenum (D) has been retracted distally. (P: pancreas, LK: left kidney, SMV: superior mesenteric vein).

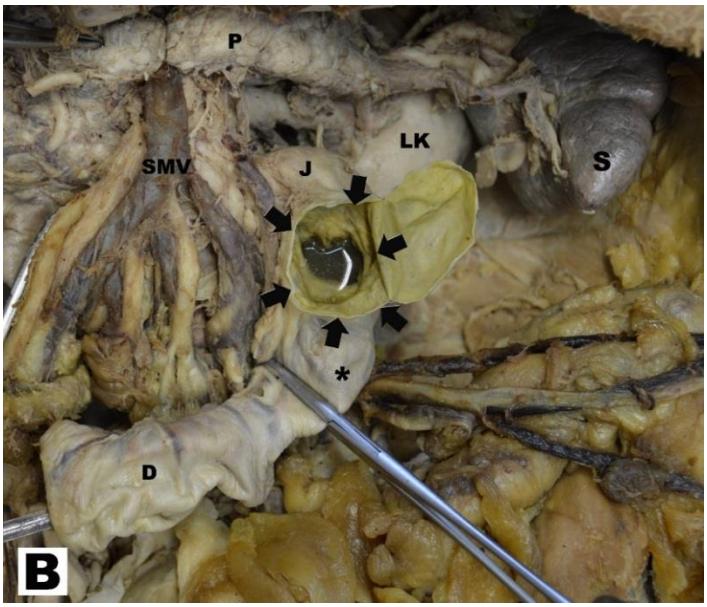

Fig. 1. B. The posterior wall of the jejunal diverticulum has been opened (arrows) to expose its lumen.

DISCUSSION

Although Sir Asley Cooper in 1807 mentioned the presence of JD in his treatise *"The anatomy and surgical treatment of crural and umbilical hernia"* (6), historically the first description of small-bowel diverticula (SBD) in autopsy studies is attributed to Sommering and Baillie in 1794 (7). The first clinical observation, however, was reported by Osler in 1881 (8), whereas the first operation for small-bowel diverticula was undertaken in 1906 by Gordinier and Sampson (9).

The incidence of JD on autopsy studies ranges from 0.26% to 4.6% (10). Noer inflated the small bowel with water, in a large autopsy series and concluded that SBV are more commonly located in the jejunum than in the ileum with an incidence of 8.3%, where twice as many men as women were found affected. In view of the nature of the diverticular wall the perforation cases are surprising low, and should be attributed to the considerable compliance of the submucosa which prevents rupture of the intestinal wall (3). About their precise location, they are most frequent at the proximal jejunum (75%), followed by the distal jejunum (20%) and the ileum (5%) (11). SBV to be more and larger in the proximal jejunum and fewer caudally (12). SBD may co-exist with diverticula of esophagus, stomach, duodenum, colon and urinary bladder, in most cases with that of the colon (11). Benson et al found that 57.65% of their patients with jejunal or ileal diverticula had also diverticula elsewhere in the alimentary tract, mainly in the colon (30 over 85%) (13). SBD are more common in males (13, 14). SBD are usually multiple, as many as 400 reported in one patient (15) SBD are rare congenital malformations of the intestine in children and young adults, most commonly diagnosed over the sixth decade of life, while various other alimentary tract diseas-

es, such as peptic ulcer, cholelithiasis and hiatal hernia may co-exist (13,14).

Non Meckelian SBD are pseudodiverticula, since they are outpouchings containing mucosa and submucosa only. Although etiology remains uncertain it is widely accepted that they develop as a result from high intraluminal pressure, through the muscular layer of the bowel at sites of low resistance, which are usually the points where blood vessels enter the bowel wall. Interestingly, another theory suggests that SBD are the product of intestinal dyskinesia, caused by smooth muscle discoordination (16) or abnormal peristalsis (17).

JD are rare congenital malformations of the small-bowel and most patients are asymptomatic, being the underlying cause of non-specific abdominal symptoms.

Even though clear majority of JD remain clinically silent, 20%- 30% of patients become symptomatic (1, 18). When symptoms become evident they may initially include mild epigastric pain, flatulence and malabsorption. Most commonly encountered acute complications involve inflammation, hemorrhage, perforation, abscess formation and intestinal obstruction (1, 19). Focusing on the location, SBD are statistically more prone to develop acute complications than duodenal ones (17). JD are nearly four times more likely to develop complications compared to duodenal diverticula and nearly 18 times more likely to perforate and develop abscesses (20).

Since most cases of JD remain asymptomatic or appear with vague symptoms, consequently diagnosis is usually delayed. On top of it no reliable diagnostic tests exist for this entity. The diagnosis is made incidentally either by radiographic examination or by laparotomy undertaken for complications (21). Diagnostic methods involved in JD diagnosis include abdominal radiographs where free air in the abdominal cavity may become evident. Computed tomography may reveal an abscess formation or pneumoperitoneum, while barium enema may show the corkscrew sign (22). The triad of obscure pain, anemia and dilated loops of small-bowel on barium radiographs is suggestive of JD presence (23). Diagnostic laparoscopy is very useful in investigating patients with a complicated symptomatology, avoiding, thus, an unnecessary laparotomy. In complicated cases of JD resection of the diseased bowel and a primary end to end anastomosis is required (5). In asymptomatic patients in whom the JD observed incidentally on computed tomography or intraoperatively, no action needs to be taken (24).

CONCLUSIONS

Since most cases of JD remain asymptomatic, general surgeons, gastroenterologists and other physicians involved in the abdominal pain assessment, should be aware and include it in their differential diagnosis. Jejunal diverticular disease may present with non-specific intermittent abdominal symptoms or rarely as acute abdomen with complicated symptomatology which may be fatal, unless prompt diagnosis is made and the appropriate surgical repair is offered to the patient.

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