

Letters to the Editor

Superior mesenteric artery syndrome: Diagnostic and therapeutic considerations

Key words: Superior mesenteric artery syndrome. Wilkie syndrome. Mesenteric duodenal compression syndrome. Duodenal obstruction. Surgery. Diet therapy.

Dear Editor,

We present a case report of a 25-year-old woman with an unremarkable past medical history that was referred to our clinic following a lifelong complaint of recurrent episodes of postprandial dyspepsia, nausea, epigastric pain and vomiting. These symptoms intensified after suffering an acute gastroenteritis 2 years prior to her presentation that entailed a 6 kg weight loss.

As part of the diagnostic approach, an oesophagogastroduodenoscopy (OGD) was performed, which showed alkaline gastritis with abundant bilious content in the stomach. Barium studies demonstrated the presence of a 0.12 cm vertical vascular impression over the third segment of the duodenum corresponding to the superior mesenteric artery (SMA), as well as a retrograde gastroduodenal dilation (Fig. 1).

Additionally, an abdominal computed tomography (CT) scan with intravenous contrast objectivized an aorto-mesenteric distance of 0.53 cm (normal range 1.04-2.16 cm), and an aorto-mesenteric angle of 20° (normal range 25.5-76.3°) (Fig. 2), findings suggestive of superior mesenteric artery syndrome (SMAS).

At the time of diagnosis, the patient's weight and height were 58.1 kg and 178 cm respectively, with a body mass index (BMI) of 18.33 kg/m².

The patient's condition was initially managed conservatively with a 6-week regime of hypercaloric and hyperproteic nutritional

supplementation. This approach did not achieve significant symptomatic relief or weight gain. In view of the failure of conservative treatment, a surgical approach was advocated.

The clinical diagnosis of SMAS was confirmed in the operating theatre: The patient presented a markedly dilated duodenum proximal to the SMA (first, second, and third segments), and a normal-calibre distal duodenum (Fig. 3A). After performing an ample Kocher manoeuvre and duodenal mobilization, the fourth duodenal segment was sectioned and a manual laterolateral duodenojejunostomy was devised anteriorly to the mesenteric vessels (Fig. 3B).

The post-operative period was uneventful and the patient made a full recovery. One month after the surgical intervention, the patient attended our clinic, where a 3 kg weight gain was evidenced and the patient reported an outstanding relief of her symptomatology associated with an improvement in her quality of life.

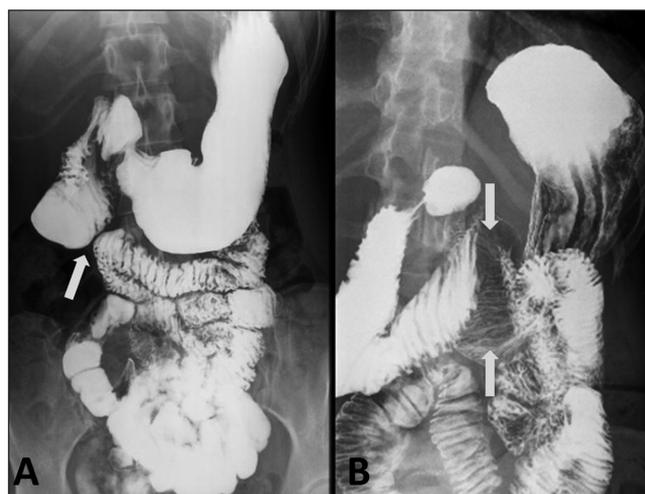


Fig. 1. Barium study. Anteroposterior (A) and oblique (B) projections showing a vertical vascular impression of 0.12 cm (arrows) corresponding to the superior mesenteric artery (SMA) over the duodenum. Also observe the retrograde gastroduodenal dilation present.

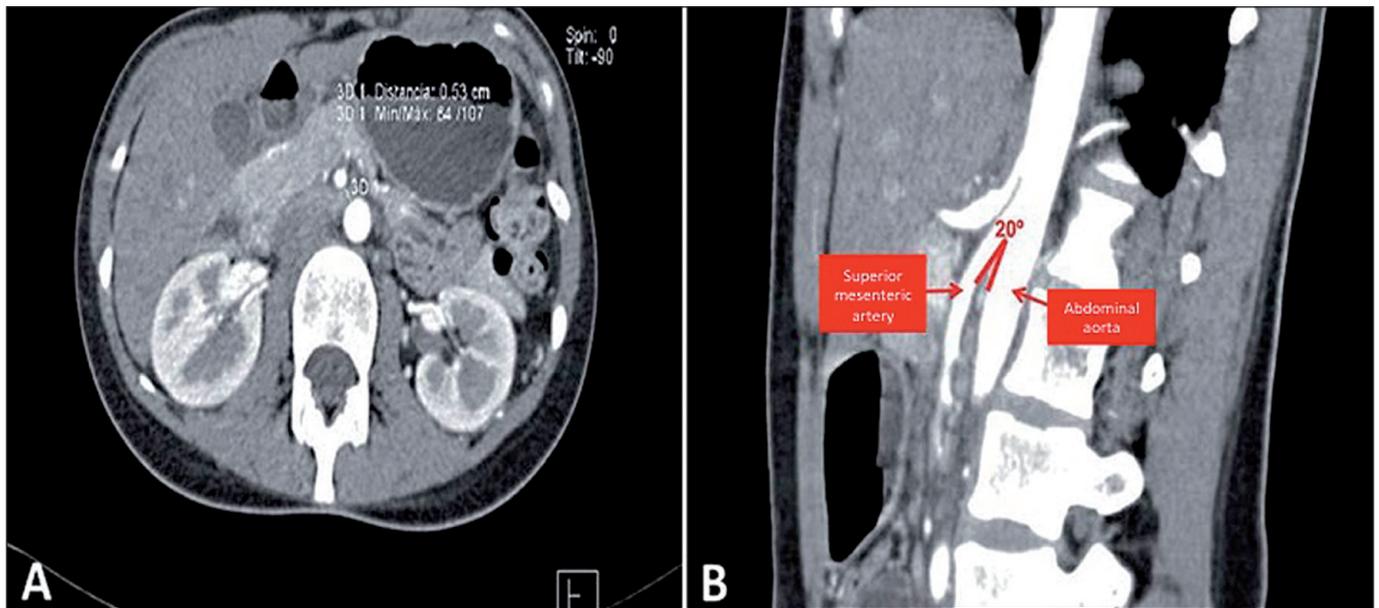


Fig. 2. Abdominal CT scan. A. Axial slide showing the distance (0.53 cm) between the superior mesenteric artery (SMA) and the abdominal aorta (AA) (aortomesenteric distance). Also observe the gastric dilation present. B. CT sagittal reconstruction objectivizes the presence of an angle of 20° between the AA and the SMA (aortomesenteric angle).

Discussion

The SMAS, also referred to as Wilkie syndrome, is a rare cause of intestinal obstruction secondary to the external compression of the third segment of the duodenum between the SMA and the abdominal aorta (1-4).

Epidemiologically, it is more common in young individuals, with a slightly higher incidence amongst females (ratio 3:2) (5-7). In healthy individuals, the adipose and lymphatic tissue separate the abdominal aorta and SMA from the duodenum, avoiding its compression. Hence, a background of significant weight loss is a common finding among patients diagnosed with SMAS, representing the most important precipitating factor. Additionally, a short or abnormally inserted ligament of Treitz, as well as an abnormal or excessive spinal curvature (hyperlordosis) are predisposing factors that are implicated in the SMAS etiopathogenesis (1,4,5,7,8).

In this case, the precipitating factor was a rapid weight loss secondary to an acute gastroenteritic process. However, the presence of gastrointestinal symptomatology since childhood suggests the presence of anatomical predisposing factors.

The clinical presentation of SMAS can either be acute or chronic and is characterized by unspecific gastrointestinal symptomatology, resulting in a lengthy and difficult diagnostic process in most cases. Therefore, a high level of clinical suspicion is required in order to reach the diagnosis of SMAS. Patients present with recurrent episodes of postprandial nausea, vomiting, epigastric pain and distension, early satiety, appetite disturbances and weight loss, which tends to perpetuate the clinical picture irrespective of the precipitating factor (1,2,5).

Barium studies were classically the gold standard imaging technique for the diagnosis of SMAS (4,7). However, currently the use of CT scan with three-dimensional reconstruction is rising, as it allows the measurement of both the aortomesenteric angle and dis-

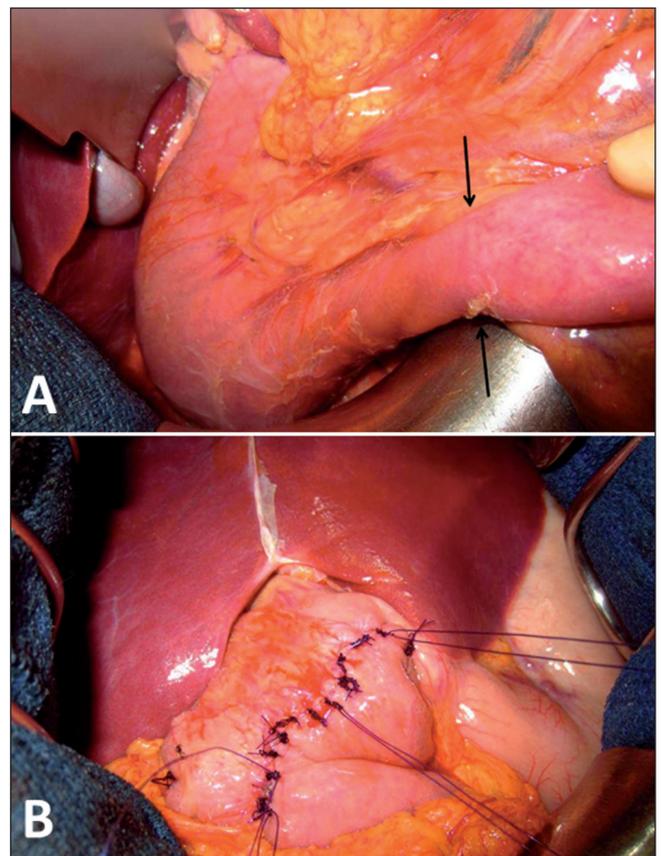


Fig. 3. Intrasurgical images. A. Observe the impression originated by the external compression of the third duodenal segment by the SMA (arrows). Also observe the duodenal dilation proximal to the obstruction point. B. After segmental resection and uncrossing of the duodenum, laterolateral duodenojejunostomy was performed anteriorly to the mesenteric vessels.

tance (2,3). The study by Ünal et al. (3) established that the normal ranges are 16.0 ± 5.6 mm for the aortomesenteric distance and 50.9 ± 25.4 degrees for the aortomesenteric angle. The correlation between the clinical picture and the imaging findings is essential, as imaging findings suggestive of SMAS can be present in healthy individuals and the aorto-mesenteric distance and angle values are affected by factors such as gender and BMI (1,2,3,9).

For those patients with an acute clinical presentation, which generally renders an early diagnosis, a conservative approach is indicated (4,6). However, in those patients with a history of chronic disease, development of complications (significant preobstructive dilation with stasis, ulcerative complications, etc.) or in cases in which conservative management fails, surgical treatment is warranted (5,7).

The surgical techniques used in the present include Strong's procedure (section of the ligament of Treitz), laterolateral duodenojejunostomy, Roux-en-Y duodenojejunostomy, gastrojejunostomy and duodenal uncrossing (1,6,8). Laterolateral duodenojejunostomy between the second duodenal segment and the jejunum is considered the gold standard surgical technique, as it achieves successful outcomes in up to 90 % of the cases.

In our case, we performed a resection of a segment of the duodenum and anastomosis of the remaining to a jejunal segment anteriorly to the mesenteric vessels. Satisfactory results have been recently described with laparoscopic techniques, with similar outcomes to those obtained with open surgery techniques, but with a shorter recovery period and inpatient hospital stay (10).

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