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SURGICAL IMAGES

Chronic hypokalemia due to gastric exclusion after bariatric surgery

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KEYWORDS
Superior mesenteric artery syndrome;
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Summary Hypokalemia is a common complication of repeated vomiting or prolonged gastric suction. In the case we observed, a patient presented with chronic hypokalemia due to gastric dilatation and the development of a superior mesenteric artery syndrome several years after gastric banding. This paper presents pre-operative and post-operative illustrations of a rare but potentially serious entity.

A 47-year old woman was admitted for symptoms of epigastric pain with nausea. She had undergone a gastric banding bariatric procedure 12 years previously and had thereafter been lost to follow-up. Her bariatric procedure had resulted in loss of 72% of excess weight and she had a persistent unexplained chronic hypokalemia that had required hospitalization in intensive care. Studies at that time did not reveal a cause for her hypokalemia and she was treated with potassium supplements.

At her current admission, an abdominal CT scan showed major gastric and duodenal distention (Fig. 1A—C) upstream of a marked duodenal narrowing due to compression between the superior mesenteric artery (SMA) and the aorta (Superior Mesenteric Artery Syndrome (SMAS)). Initial treatment consisted of loosening of the gastric band and placement of a naso-gastric tube. An upper endoscopy showed no intrinsic compression. The patient tolerated a regular diet. She regained 20 kg over six months while her Body Mass Index (BMI) increased to 32.3 kg/m^2 (Fig. 2). There was complete resolution of the SMAS.

After multidisciplinary evaluation, the gastric banding device was removed and a Roux-en-Y gastric bypass was performed. This choice was governed by the need to remove the band to resolve the SMAS and the need for obesity control thereafter. Although the weight loss associated with gastric bypass can result in narrowing of the angle between the aorta and SMA, the volume of pancreatic and biliary secretions that must pass only rarely results in SMAS [1]. Potassium supplementation was discontinued without any recurrence of hypokalemia. One year after the gastric bypass, alimentary tolerance was good with the BMI stabilized at 30 kg/m^2.

Hypokalemia is a classic complication of chronic vomiting or prolonged naso-gastric aspiration. Loss of chloride and acid initiates a complex mechanism with transfer of intracellular potassium to equilibrate loss of extracellular cations and to equilibrate the metabolic alkalosis. In the case reported here, the placement of a gastric band resulted in SMAS due to profound weight loss and also to an inability to vomit resulting in a marked but asymptomatic gastric dilatation. In this case, gastric exclusion resulted in the unexplained chronic hypokalemia.

SMAS is a rare cause of high gastrointestinal obstruction [2] due to compression of the third portion of the duodenum (D3) between the aorta and the SMA. Major weight loss following bariatric surgery can lead to loss of mesenteric

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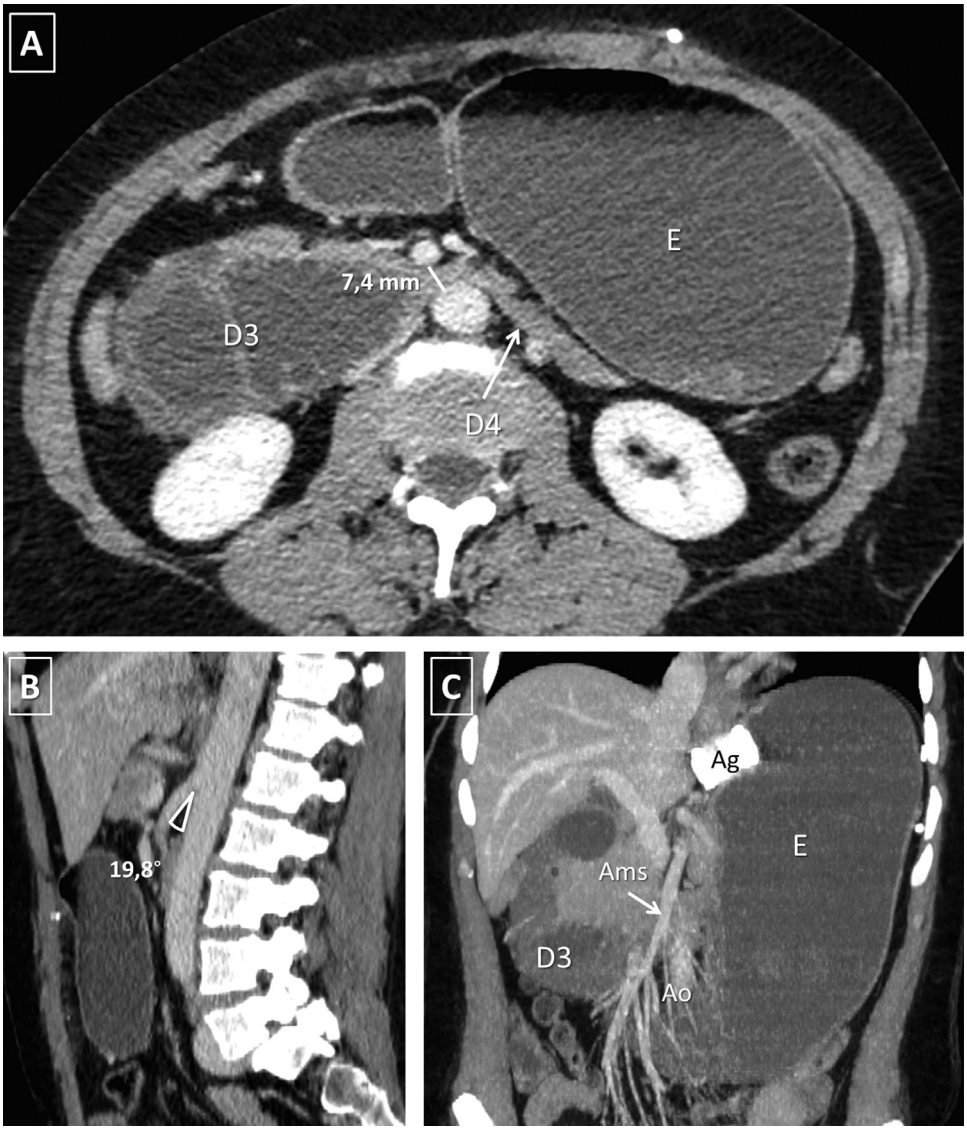

Figure 1. Initial abdominal CT scan. A. Axial cut showing distention of the stomach (E) and the third portion of the duodenum (D3) upstream of compression by the pincer effect of the aorta and the SMA defined as a < 8 mm distance between the two vessels. The fourth portion of the duodenum (D4) appears flat. B. Sagittal cut showing an aorta-SMA angle of < 22°, which defines the SMAS. C. CT reconstruction showing distention of the stomach (E) and D3 between the gastric band (Ag) and the pincers of the aorta (ao) and SMA (ams).

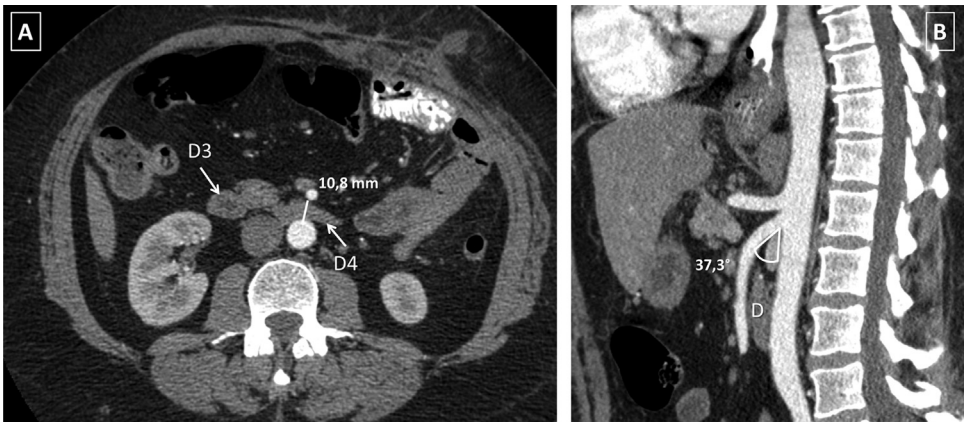

Figure 2. Abdominal CT after regain of weight A. Axial cut showing (D3) passing through the pincer of the aorta and the SMA. The distance between the aorta and the SMA has become greater than 8 mm. D4 appears flat. B. Sagittal cut showing the aorto-SMA junction with an angle greater than 22° through which the duodenum passes (D).

fat, favoring the development of this syndrome, which has only rarely been reported after sleeve gastrectomy, gastric bypass or gastric banding [1,3].

Disclosure of interest

The authors declare that they have no competing interest.

References

[1] Clapp B, Applebaum B. Superior mesenteric artery syndrome after Roux-en-y gastric bypass. JSLS 2010;14(1):143—6.

[2] Sabbagh C, Santin E, Potier A, Regimbeau JM. The superior mesenteric artery syndrome: a rare etiology for proximal obstructive syndrome. J Visc Surg 2012;149(6):428—9.

[3] Barrett AM, Harrison DJ, Phillips EH, Felder SI, Burch MA. Superior mesenteric artery syndrome following sleeve gastrectomy: case report, review of the literature, and video on technique for surgical correction. Surg Endosc 2015;29(4):992—4.