Case Report

Superior mesenteric artery syndrome post-total proctocolectomy: A challenging post-operative dilemma

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ABSTRACT

Superior mesenteric artery (SMA) syndrome is a rare condition characterized by small bowel obstruction due to compression of the third portion of the duodenum by the SMA and the abdominal aorta. Also, known as Wilkie's Syndrome, it has a reported incidence of 0.1–0.3%. Confirmation of SMA is classically demonstrated by the decreased aortomesenteric angle with dilatation of the second part of the duodenum and compression of the third part. Medical treatment is usually successful in patients with a short history and a relatively minor degree of duodenal stasis. In patients not responding to conservative management, surgical interventions have been implicated. Post-operative incidence of SMA syndrome is still rarer and has been most commonly seen after spinal surgeries. SMA syndrome after colectomies has a few reported cases in world literature. We present a case of SMA syndrome after total proctocolectomy for carcinoma colon with polyposis coli, managed successfully with conservative treatment.

Key words: Superior mesenteric artery syndrome, Wilkie's syndrome, Total proctocolectomy, Rare complications

Superior mesenteric artery (SMA) syndrome is a rare condition characterized by small bowel obstruction due to the compression of the third portion of the duodenum by the SMA and the abdominal aorta (Fig. 1). In 1927, Wilkie published the largest and most complete study of this disease which was later on, referred to as Wilkie's Syndrome [1]. SMA syndrome has a reported incidence of 0.1–0.3% [2]. Although the post-operative incidence of SMA syndrome is still rarer, it has been seen after surgeries such as colectomy, ileoanal pouch anastomosis, Nissen fundoplication, and aortic aneurysm repair. Corrective spinal surgery for scoliosis, which requires relative lengthening of the spine and results in the narrowing of the aortomesenteric angle, is the most frequently cited cause of post-operative SMA syndrome with an estimated incidence of 2.5% [3]. A high degree of clinical suspicion is required to diagnose a case of SMA syndrome which can be further confirmed radiologically. Dilatation of the first and second portions of the duodenum, with or without gastric dilatation, is considered as an important radiological finding.

CASE REPORT

A 46-year-old lady presented to our hospital with complaints of on-and-off pain abdomen, passage of blood in stool, and features of chronic obstruction for 6 months. Her height was 156 cm and weight was 44 kg (body mass index, 18.1 kg/m^2).

Her initial parameters revealed Hb 9 g/dL, normal liver function tests, and renal profile. A colonoscopy examination revealed a growth in the sigmoid colon with numerous colonic and rectal polyps. Biopsy from sigmoid growth showed moderately differentiated adenocarcinoma. There was no history of bilious vomiting. After staging workup and tumor board decision, the patient underwent total proctocolectomy with end-ileostomy.

Postoperatively, the patient's recovery was uneventful for the first 2 days. Accordingly, the nasogastric tube was removed and was started on oral liquids from post-operative day (POD) 2. However, from the 3rd POD, she developed features of abdominal discomfort and bloating with a sudden onset of bilious vomiting. Consequently, the nasogastric tube had to be reinserted, and the patient on kept nil per orally with parenteral fluids and other supportive therapy. Decompression through nasogastric tube drained large amounts of bilious fluid with daily output of up to 1000 mL. After 2 days of observation, we noticed a gradual increase in the nasogastric output reaching 1200 mL/day with an associated decrease in ileostomy output of approximately 800 mL/day.

An upper GI (UGI) X-ray showed a dilated stomach and proximal duodenum and a straight cutoff line at the third part of the duodenum (Fig. 2). Corroborating imaging findings with the

Access this article online	
Received - 12 September 2023 Initial Review - 23 September 2023 Accepted - 18 October 2023	Quick Response code
DOI: 10.32677/ijcr.v9i11.4275	

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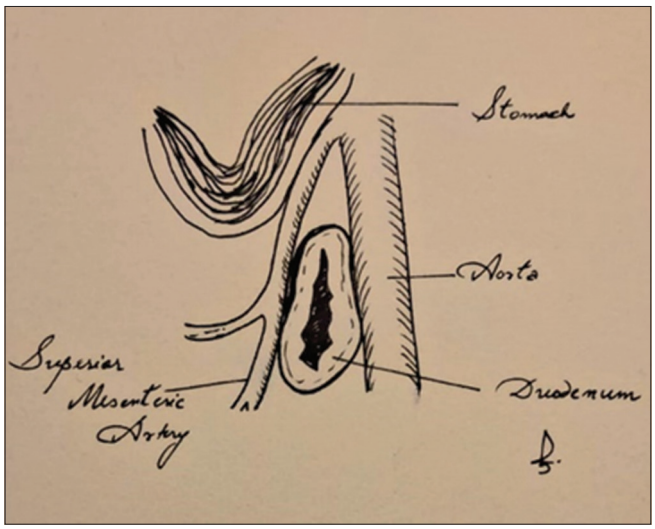

Figure 1: Description of superior mesenteric artery syndrome

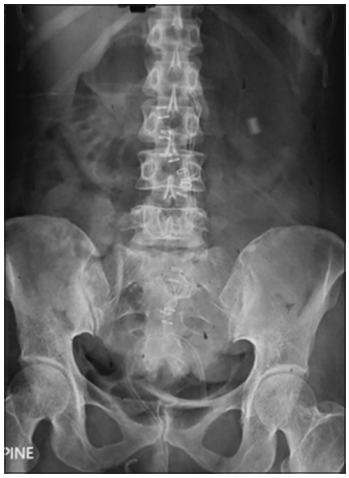

Figure 2: An upper GI X-ray showed a dilated stomach and proximal duodenum, and a straight cutoff line at the third part of the duodenum

clinical picture made us venture into thinking of the rare etiology of SMA syndrome. A contrast-enhanced computed tomography (CT) scan of the abdomen was promptly done which revealed distention of the stomach and the duodenum, with hold up of dye in the second part of the duodenum and an abnormal narrowing of the aortomesenteric distance. CT angiography demonstrated an abnormally decreased aortomesenteric angle of 9.9° (Fig. 3). Thus, a diagnosis of SMA syndrome was established.

Following this, the patient was managed conservatively maintaining her in a left lateral decubitus, providing nutritional support by nasojejunal tube and parenteral nutrition, continuous nasogastric decompression, monitoring fluid and electrolyte balance, and other supportive care. The patient maintained the status quo till POD 8, after which she gradually showed a slight trend toward a gradual decrease in nasogastric output and a mild increase in ileostomy content. By POD12, the patient's nasogastric output came down to <200 mL/day, following which we clamped the nasogastric tube, maintained interval suction, and slowly started her on oral liquids. With gradual, careful advancements, nutrition could be maintained by oral diet and the patient was

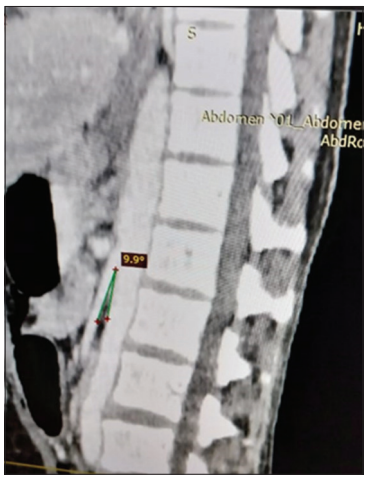

Figure 3: Computed tomography angiography demonstrated an abnormally decreased aortomesenteric angle of 9.9°

made free of the nasogastric tube by POD 23. Intravenous fluid and nasojejunal nutrition support were completely weaned off by Day 30.

DISCUSSION

Clinical symptoms of SMA syndrome include epigastric pain, a sensation of fullness, nausea, and bilious vomiting [1]. Weight loss, as a result of the inability to eat, leads to weight loss can in turn exacerbate the condition. Symptoms can be relieved by postural changes in the prone or knee-chest position, suggesting vascular compression. However, its absence does not exclude its diagnosis [4,5]. The majority of patients are adolescents or young adults. Females are affected more often than males [5].

The most common cause of SMA syndrome is due to the narrowing of the aortomesenteric with consequent extrinsic compression of the duodenum (Fig. 1). Other suggested causes include high insertion of the duodenum at the ligament of Treitz or a congenitally low origin of the SMA, caused by peritoneal adhesions due to duodenal malrotation [6].

In SMA syndrome, the aortomesenteric angle ranges from 6° to 15°(mean 8°) and the mean aortomesenteric distance is 6 mm (range from 2 to 8 mm). Normal values have been reported to be 25°–60° and 10–28 mm, respectively. Confirmation of SMA syndrome by imaging (by contrast CT, fluoroscopy, and or magnetic resonance angiography) is classically demonstrated by the decreased aortomesenteric angle with dilatation of the second part of the duodenum and compression of the third part. On fluoroscopy, an improvement in duodenal transit may be demonstrated with the patient in the left lateral decubitus position [7].

Medical treatment is usually successful in patients with a short history and a relatively minor degree of duodenal stasis shown radiologically [8]. Duodenojejunostomy from the second portion of the duodenum to the jejunum is now considered to be the surgical treatment of choice. Furthermore, lysis of the ligament of Treitz has also been found effective and also has the advantage of avoiding intestinal anastomosis [9,10].

After a detailed search of the literature, we found only three cases of SMA syndrome following colectomies (one case following left hemicolectomy, one following right hemicolectomy, and the third case following a subtotal colectomy) [11-13]. While the first two cases were successfully managed conservatively, the third patient following subtotal colectomy developed deep vein thrombosis and eventually suffered fatality due to a cerebrovascular accident.

CONCLUSION

SMA syndrome is an extremely rare condition and needs a high degree of suspicion for diagnosis. However, awareness of this rare condition among surgeons can help them in prompt diagnosis and thus initiate an early intervention.

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Funding: Nil; Conflicts of interest: Nil.

How to cite this article: Sahu SK, Deb PK, Bhattacharyya S, Gupta A. Superior mesenteric artery syndrome post-total proctocolectomy: A challenging post-operative dilemma. Indian J Case Reports. 2023;9(11):338-340.