Acute superior mesenteric artery syndrome following left hemicolecction: a case report.

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Abstract

Acute superior mesenteric artery syndrome (SMAS) following a major surgical procedure is extremely rare, and represents an iatrogenic cause of postoperative upper gastrointestinal obstruction. In this report, the first documented case of acute SMAS following a left hemicolecctomy is presented in an obese patient. Upper gastrointestinal roentgenographic series and conservative management remain to be the first line diagnostic and therapeutic modalities and were successful in our patient. Up to date no patient with SMAS reported to be obese but apparently obesity per se, can not be considered as an insurance. A postoperative acute SMAS is impossible to predict depending on the previous history, predisposing factors and the physique of the patient. Therefore, the surgeon should be aware of the SMAS and it is his task to secure all the precautions in order to preclude excessive traction on the mesenteric vasculature and vascular compression of the duodenum during surgery. In cases in which SMAS is suspected during extended colonic resections with lymph node dissection, duodenal mobilization seems to be selectively justifiable.

KEYWORDS: superior mesenteric artery syndrome, duodenal obstruction, colectomy

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Acute Superior Mesenteric Artery Syndrome Following Left Hemicolecction: A Case Report

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Acute superior mesenteric artery syndrome (SMAS) following a major surgical procedure is extremely rare, and represents an iatrogenic cause of postoperative upper gastrointestinal obstruction. In this report, the first documented case of acute SMAS following a left hemicolecction is presented in an obese patient. Upper gastrointestinal roentgenographic series and conservative management remain to be the first line diagnostic and therapeutic modalities and were successful in our patient. Up to date no patient with SMAS reported to be obese but apparently obesity per se, can not be considered as an insurance. A postoperative acute SMAS is impossible to predict depending on the previous history, predisposing factors and the physique of the patient. Therefore, the surgeon should be aware of the SMAS and it is his task to secure all the precautions in order to preclude excessive traction on the mesenteric vasculature and vascular compression of the duodenum during surgery. In cases in which SMAS is suspected during extended colonic resections with lymph node dissection, duodenal mobilization seems to be selectively justifiable.

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Superior mesenteric artery syndrome (SMAS) was first described by Rokitansky in 1861 and since then about 400 cases have been reported under synonyms like cast syndrome, Wilkie’s syndrome and arteriomesenteric duodenal compression (1-5). SMAS is usually, a chronic disorder, causing recurrent symptoms of upper gastrointestinal (UGI) obstruction such as postprandial epigastric fullness-pain, nausea, vomiting and weight loss. This syndrome is curable but an occasionally fatal if left untreated (1, 2, 5). The cause of this syndrome is the compression of the transverse portion of the duodenum by the superior mesenteric artery (SMA) in the acute angle formed between the SMA anteriorly and the aorta and spine posteriorly. It mainly affects young and thin adults and a predisposing factor can be found in more than 50% of the patients (1, 3, 6). Surgical interventions, which alter the normal anatomy around the fixed third portion of the duodenum have the potential of initiating an unusual, acute variety of SMAS. A case of acute SMAS, which became apparent as postoperative UGI obstruction after a left hemicolecction is presented herein. To our knowledge, this is the first documented case of

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SMAS complicating a partial colonic resection and the first obese patient who suffered from SMAS reported in the English literature.

Case Report

A 70 year old, obese woman (height: 155 cm, weight: 66 kg) was referred to our hospital after testing positive for occult blood in her stools in a mass screening program. She was in perfect health and free of any digestive complaints. X-ray and fiberoscopic examination of the colon revealed multiple polyps in the transverse and left colon with synchronous descending and sigmoid colon carcinomas. A curative left hemicolectomy was performed including the three fourths of the transverse colon with R3 lymph node dissection (7). Bowel continuity was restored by a transverso-rectal anastomosis, constructed in the pelvis under minimal tension. Upon removal of the nasogastric tube on the third postoperative day (POD), she started to complain of nausea and eructation with a gradually distending epigas-trium. Plain abdominal roentgenograms were normal and there were no clinical or laboratory signs of leakage or infection. A nasogastric tube was reinserted and drained two liters of bilious fluid. Parenteral hyperalimentation and metoclopramide administration were started in addition to continuous nasogastric decompression. Bowel movements were normal, the abdomen became flat and she was passing flatus. Daily volume of the gastric drainage was decreased, but the removal of the nasogastric tube on the tenth POD resulted in nausea and severe vomiting episodes. Plain X-rays were still not informative, but a UGI series revealed a duodenal obstruction at its third portion. Vertical linear cut-off and the to-and-fro movements of the contrast with abnormal hyperperistalsis proximal to the obstruction, intact duodenal mucosal folds and the partial relief which was achieved by positioning the patient in the left lateral decubitus position were all consistent with SMAS (Fig. 1). Her condition was managed conservatively by nasogastric decompression, parenteral hyperalimentation and position adjustments. Drainage decreased to a minimum over a three-week period and frequent small portion, liquids by mouth were commenced after the nasogastric tube was removed on the 32nd POD. She was discharged on the 42nd POD and in good condition with a complaint of mild postprandial discomfort at six-month follow-up.

Discussion

SMAS has two distinct forms, chronic and acute. The most common form is chronic and it is frequently associated with longstanding, emaciating diseases, in which the decrease of the mesenteric adipose tissue and prolonged bed stay in supine position are the main factors that initiate SMAS by narrowing the angle between the SMA and the aorta (1, 3, 6). The acute form is rare and occurs in patients without any previous digestive complaints; invariably following a trauma, severe
weight loss or a surgical procedure, in which the normal anatomy around the fixed third portion of the duodenum might be endangered (8, 13).

Acute SMAS, following a surgical procedure represents a troublesome, iatrogenic cause of early postoperative UGI obstruction. Few cases after aortic (10) and spinal (11) surgery and two cases following total colectomy (12, 13) have recently been reported. Asthenic habitus and the encroachment of the duodenum between the SMA and aorta, because of the surgical alteration of the anatomy, were the common characteristics in all previously reported cases (10, 13). Up to date, no patients with acute or chronic SMAS reported to be obese. Furthermore, Muller reported failure to compress the duodenum of obese cadavers by traction on the SMA (14). The protective role of obesity was explained by the subsequent increase in the amount of mesenteric adipose tissue, which in turn prevents the bending of SMA (1, 3). Although the presence of considerable mesenteric adipose tissues was evident during surgery and confirmed by the reexamined preoperative computerized tomography (CT) scans, this did not preclude the occurrence of SMAS in our obese patient (Fig. 2). Muller's findings may be argued because the aorta and mesenteric vessels of living individuals are pressurized and pulsating. We can only speculate on the cause of the syndrome in this patient because the second operation was not performed. It seems possible that the low anastomosis after the extended resection of the transverse colon with preservation of the right marginal branch of the middle colic artery might have resulted in increased but overlooked traction on the SMA. The UGI series remains the best diagnostic modality (4) and recently, CT scans have been proposed as an alternative (12, 15). In our case, differential diagnosis, including postoperative prolonged atony and pseudo-obstruction was not problematic once the UGI series were performed and the abrupt cut-off of the contrast at the third portion of the duodenum, absence of dilatation in stomach and duodenum and hyper-peristalsism were visualized. Duodenal dilatation, which is a prominent finding in classical SMAS, was precluded in this patient due to continuous nasogastric suction and its absence was also suggestive of an acutely triggered SMAS.

This situation represents a serious therapeutic dilemma, the management of an acute UGI obstruction in an already compromised patient by a recent major operation. Conservative therapy which must be the first approach after the definitive diagnosis of SMAS is established, was successful in our patient. Among the two previously reported SMAS cases following total colectomy, one patient required reoperation (13) and the other one received similar conservative management (12). The favored operative procedures such as duodenal mobilization (1, 6) or duodeno-jejunostomy (2) should be reserved for patients who do not respond to more conservative treatment and emergencies. Ylinen et al. results are note worthy, regarding the unacceptable high rate of symptom recurrence after surgical therapy (93 %) in chronic SMAS, and emphasize the importance of conservative approach (3).

It is important that the traction on the mesenteric vasculature, and the anatomy around

![Fig. 2 Preoperative computerized tomography scan. Duodenum (D) lies freely in the wide space between the superior mesenteric artery (SMA) and aorta (A). Note the presence of the considerable amount of adipose tissue around the SMA and the absence of any signs of duodenal compression. S: spine, V: vena cava.](image-url)
the fixed portion of the duodenum, especially during extended colectomies, should be carefully assessed following the completion of the anastomosis if this potentially dreadful complication is to be avoided. Christie et al. (13) and Ballantyne et al. (12) have proposed routine mobilization of the duodenum after total colectomy and ileo-anal anastomosis in order to prevent SMAS. This procedure seems to be also justifiable in selected cases of left hemicolecctomies.

In conclusion, neither obesity nor the absence of previous history or risk factors can predict the occurrence of posthemicolecctomy SMAS. It is therefore, the task of the surgeon to be aware of the condition and to secure all the precautions to avoid the inadvertent vascular compression of the duodenum during surgery. The underlying pathology behind some of the prolonged postoperative ileus states associated with extended colonic resections may actually be overlooked and less severe forms of acute SMAS.

References


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