

# SMA Syndrome with Peptic Ulcer Perforation: A rare co-existence

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## Citation

S Dalal, R Sahu, P Garg, Nityasha. *SMA Syndrome with Peptic Ulcer Perforation: A rare co-existence*. The Internet Journal of Gastroenterology. 2007 Volume 7 Number 1.

## Abstract

Superior mesenteric artery (SMA) syndrome is a rare acquired cause of high small bowel obstruction resulting in repeated vomiting. Only few cases have been reported in literature so far mostly associated with chronic debilitating diseases. We encountered an adult male who presented with repeated vomiting when he was recovering from an exploratory laparotomy done for peptic ulcer perforation. He was diagnosed as a case of SMA syndrome on clinical suspicion and Barium meal study. Subsequently duodenal obstruction was relieved by re-exploration and duodeno-jejunostomy. Patient recovered well with above procedure.

## CASE REPORT

A 28 year male of thin built was brought to emergency department with acute abdomen. Investigations revealed free air in peritoneal cavity for which exploratory laparotomy was carried out. There was a single perforation of about 1 cm size in first part of duodenum which was closed with Graham's patch. In postoperative period, patient was recovering well but suddenly developed repeated, billious vomiting on 7<sup>th</sup> postoperative day. A provisional diagnosis of postoperative adhesive obstruction was made and patient was managed accordingly with I.V. fluids, antibiotics, electrolyte correction etc.

Since patient did not show any sign of improvement after one week of conservative treatment, he was subjected to upper gastrointestinal endoscopy and con contrast study. Upper G.I. Endoscopy found dilated stomach, healing duodenal ulcer in first part and dilated duodenum upto third part with copious amount of billious fluid present in it. Barium meal study revealed mildly dilated stomach and significantly dilated duodenum with sudden cut off in the third part (Fig. 1).

## Figure 1

Figure 1: Barium study film showing dilated stomach and duodenum with sudden cut-off in the third part.



He had lost about two kg weight in postoperative period. Patient was re-explored and the operative findings, suggested SMA as the cause of duodenal obstruction, for which duodeno-jejunostomy was done. Patient recovered well in postoperative period.

## DISCUSSION

Superior mesenteric artery (SMA) syndrome is a rare acquired disorder in which acute angulation of SMA causes compression of third part of duodenum. It was first described in 1861 by Rokitanaky and later by Wilkie<sup>1</sup>, and has been referred to by a variety of other names including cast syndrome, Wilkie syndrome and arteriomesentric duodenal obstruction. The third part of duodenum passes between aorta and proximal SMA. In majority of persons, the angle between aorta and SMA is about 45-60 degrees due in part to the mesenteric fat pad. In SMA syndrome, the angle is reduced to as low as 6 degrees due to the loss of mesenteric fat pad allowing SMA to compress the duodenum against aorta.<sup>2</sup>

There are several causes of SMA syndrome described in literature. It has been seen, following surgical correction of scoliosis, in patients with congenitally short ligament of Treitz, in pregnancy. But the most common cause is significant weight loss leading to loss of mesenteric fat pad in patients with severe debilitating illnesses like malignancy, malabsorption syndromes, burns etc.<sup>3</sup> In postoperative period, it has been seen following gastric bypass surgeries after significant weight loss.<sup>3</sup> A few cases of this syndrome have been reported with severe peptic ulcer disease, but not with peptic ulcer perforation.<sup>4</sup>

For making diagnosis of SMA a high index of suspicion is required specially in poorly built patients since symptoms are generally nonspecific. In such cases even lesser amount of weight loss can become relatively significant like in our case. Diagnostic evaluation in these patients should begin with upper G.I. Endoscopy and abdominal radiographs which will suggest findings of gastric dilatation and dilatation of proximal duodenum. Barium meal study of

upper G.I. reveals characteristic dilatation of first and second part of duodenum, with an abrupt linear cut off in the third part, as in our case. If the diagnosis still remains unclear, contrast enhanced CT with angiography or MR-angiography may be required.<sup>5</sup> Accepted treatment after confirming the diagnosis is conservative initially followed by duodeno-jejunostomy, since gastro-jejunostomy is not adequate for relieving duodenal obstruction. Recently the role of laparoscopy is coming up for division of short ligament of Trietz and for duodeno-jejunostomy.<sup>6</sup>

The case is being reported to highlight following points:

- SMA syndrome is an uncommon cause of proximal intestinal obstruction.
- Since the symptoms are nonspecific, a high index of suspicion is required to make the diagnosis specially in postoperative settings and in patients with thin built.
- Prompt treatment is required after confirming the diagnosis.

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