

## Case Report

# Superior mesenteric artery syndrome masquerading as chronic gastric volvulus in a child with severe acute malnutrition: a case report

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## ABSTRACT

Superior mesenteric artery (SMA) syndrome is a rare cause of high intestinal obstruction. It is commonly seen in severely malnourished patients presenting with repeated episodes of vomiting. We report a case of SMA syndrome in a 3 years old male child provisionally diagnosed as chronic gastric volvulus with severe acute malnutrition. The diagnosis of SMA syndrome was confirmed on abdominal exploration. SMA syndrome is a rare cause of intestinal obstruction in paediatric age group. Chronic malnutrition is one of the common causes of this entity. There should be a high index of suspicion for this syndrome when we encounter a child with severe malnutrition and recurrent vomiting.

**Keywords:** Malnutrition, Paediatric, Recurrent vomiting, Superior mesenteric artery syndrome

## INTRODUCTION

Superior mesenteric artery syndrome is a rare cause of intestinal obstruction. It is characterized by extrinsic compression of third part of duodenum between aorta posteriorly and superior mesenteric artery anteriorly. It occurs due to loss of mesenteric fat between artery and aorta leading to narrowing of normal angle causing compression of duodenum.<sup>1</sup> Here, we report a case of SMA syndrome in a severely malnourished child who was evaluated for symptoms of repeated episodes of bilious vomiting and wrongly diagnosed as gastric volvulus on the basis of upper gastrointestinal (UGI) study. It was found to have superior mesenteric artery syndrome during abdominal exploration.

## CASE REPORT

A three years old child was presented in emergency department with complaints of recurrent vomiting for six months. Vomiting was projectile in nature, almost 10-15

times per day and usually occurred immediately after meals. Occasionally, vomitus was greenish. On general examination, patient had cachexic look. Anthropometrically, height was 85.5 cm with weight of 6.5 kg which falls below the third centile for the age. Based on these history and clinical findings, he was being managed as a case of severe acute malnutrition. He was being fed via nasogastric (NG) tube, however, patient was not tolerating feed and had continuous bilious aspirates in NG tube. Due to persistence of symptoms, contrast enhanced computed tomography (CECT) abdomen was done which was reported to have gastric distension with thickening and narrowing of pylorus. Upper GI study was done which showed features of gastric volvulus (Figure 1).

Based on UGI study with diagnosis of gastric volvulus, patient was taken for exploratory laparotomy. On exploration with mid-line incision, stomach was found to be distended but there was no gastric volvulus. However, the duodenum was dilated till its third part with collapsed fourth part distal to it. Superior mesenteric vessels were

seen running anterior to the third part which was causing partial compression of this part of duodenum (Figure 2). Rest of small bowel was normal. Diagnosis of superior mesenteric artery syndrome was made. Retro colic isoperistaltic gastrojejunostomy was performed to bypass the compressed segment. In postoperative period, patient was started on NG feed on postoperative day 4, which the patient tolerated well. Nutritional status of the patient improved gradually.



**Figure 1: UGI contrast study reported as gastric volvulus due to presence of distended stomach (red arrow).**



**Figure 2: Superior mesenteric vessels (black arrow) crossing third part of duodenum causing dilatation of proximal duodenum.**

## DISCUSSION

Superior mesenteric artery syndrome also known as Wilkie's syndrome is a rare cause of intestinal obstruction with reported incidence of 0.1-0.3%.<sup>2</sup>

The common causes of SMA syndrome are rapid weight loss, thin built patient, prolonged bed rest, cachexic states and other malabsorption states. Anatomical causes include short ligament of Treitz and unusual low origin of superior mesenteric artery.<sup>3</sup> Usually, the superior mesenteric artery forms an angle of approximately 45 degree with the abdominal aorta at its origin, while the third part of the duodenum crosses in between the SMA anteriorly and aorta posteriorly.<sup>4</sup> The loss of this normal aortomesenteric angle (less than 25 degree) causes compression of third part of duodenum resulting into symptoms of obstruction i.e. repeated bilious vomiting, feed intolerance and gastric distension.<sup>1</sup>

Gastric volvulus (GV) is a rare condition in paediatric age defined by pathological rotation of stomach. This rotation may be along longitudinal axis (organ axial) or along transverse axis (mesenteric axial). Gastric volvulus may be acute or chronic. Chronic GV is often suspected in children with history of chronic vomiting, abdominal distension, failure to thrive and recurrent chest infection. The diagnosis is confirmed by upper GI contrast study which shows stomach dilated, lying horizontally and upside down. Acute GV volvulus requires urgent surgical intervention in form of derotation and gastropexy. Chronic GV can be managed by conservative approach which includes medications such as prokinetics, anti-secretory drugs and diet modifications (thickening of meals) along with positioning the patient on his/her right side or in the prone position after feeding.<sup>5</sup>

Patients with SMA syndrome often present with chronic symptoms such as epigastric pain, nausea, voluminous vomiting (bilious or partially digested food), postprandial discomfort, and early satiety and rarely as subacute small bowel obstruction. The diagnosis of SMA syndrome is based on interpreting clinical signs and symptoms with clinical suspicion combined with radiological investigations. Upper GI contrast study demonstrates unusual dilatation of stomach, first and second part of duodenum with sudden narrowing at the third part. CECT abdomen with reconstruction can demonstrate narrow aortomesenteric angle with dilatation of proximal duodenum.<sup>6</sup>

Both chronic gastric volvulus and SMA syndrome present with features of gastric dilatation both clinically and radiologically leading to diagnostic dilemma.

Most cases of Wilkie's syndrome can be managed by conservative approach which includes nutritional build up, weight gain and treating underlying cause. Duodenal and gastric decompression by making the patient to lie in prone or left lateral decubitus position helps to relieve compression on third part of duodenum. If conservative management fails, surgical options aim to bypass the compressed duodenum which can be achieved by duodenojejunostomy or gastrojejunostomy (as done in the index case).

In our case, the child presented with severe malnutrition and complaints of recurrent vomiting and feed intolerance. CECT abdomen was reported to have distended stomach with thickened pylorus. UGI contrast study showed features of gastric volvulus. Thus, imaging in this case did not give any hint of SMA syndrome. It was only during laparotomy that we found the above diagnosis. The stomach was unusually dilated and the duodenal compression was obvious. In this patient we performed gastrojejunostomy which not only provided bypass to the duodenal compression but also provided some anchorage to stomach.

## CONCLUSION

SMA syndrome is a rare case of intestinal obstruction in pediatric age group. Chronic malnutrition is one of the common causes of this entity. Hence, there should be a high index of suspicion for this syndrome when we encounter a child with severe malnutrition and recurrent vomiting. Also, this condition can easily mimic chronic gastric volvulus due to similar presentations. Though, UGI contrast study and CECT abdomen are recommended modalities for diagnosing SMA syndrome, it can be readily missed if the treating team is not aware of its possibility.

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## REFERENCES

1. Samdani PG, Samdani V, Goel A. Superior mesenteric artery compression syndrome. Indian J Pediatr. 2006;73(6):523-5.
2. Shiu JR, Chao HC, Luo CC, Lai MW, Kong MS, Chen SY, et al. Clinical and nutritional outcomes in children with idiopathic superior mesenteric artery syndrome. J Pediatr Gastroenterol Nutr. 2010;51(2):177-82.
3. Scovell S, Hamdan A. Superior mesenteric artery syndrome. Upto Date. Waltham, MA: Upto Date; 2015.
4. Raissi B, Taylor BM, Taves DH. Robotic duodenojejunostomy for superior mesenteric artery syndrome in a teenager. Canadian J Surg. 1996;39:410-6.
5. Hsu YC, Perng CL, Chen CK, Tsai JJ, Lin HJ. Conservative management of chronic gastric volvulus: 44 cases over 5 years. World J Gastroenterol. 2010;16:4200-5.
6. Unal B, Aktas A, Kemal G, Bilgili Y, Guliter S, Daphan C, et al. Superior mesenteric artery syndrome: CT and ultrasonography findings. Diagn Interv Radiol. 2005;11:90-5.

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