

# The superior mesenteric artery syndrome : a diagnostic dilemma

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**Abstract: Objectives :** This is a case of SMA syndrome with atypical presentation in an elderly female. We report this case to emphasize the role of prompt radiological diagnosis of SMA syndrome which presents atypically sometimes wherein diagnosis becomes a dilemma which has a tremendous impact on further course of disease and management.

**Methods:** An Elderly female presented with clinical features of intestinal obstruction . She was evaluated and radiologically confirmed to have SMA syndrome by CECT Abdomen .Emergency Exploratory laparotomy with Duodeno-jejunostomy done.Patient recovered well post-operatively.

**Results :** CECT Abdomen proved to be the most promising radiological modality to approach and manage SMA syndrome as it requires emergency intervention.

**Conclusion:** SMA Syndrome presents with typical features of intestinal obstruction. An Erect X-ray of the Abdomen with over-distended Stomach should be suspected for SMA syndrome.CECT scan of the abdomen confirms the diagnosis of SMA syndrome wherein Duodeno-Jejunostomy by laparoscopy or open method is the mainstay of treatment .

**Keywords :** Superior mesenteric Artery syndrome, Duodenal obstruction, Contrast enhanced CT Abdomen, Duodeno-jejunostomy

## Introduction:

SMA syndrome was first described by Professor Von Rokitansky in 1842. It is also known by names such as Aorto-Mesenteric Duodenal Compression, Wilkie's syndrome, Cast syndrome and Chronic Duodenal Ileus<sup>1</sup>

SMA Syndrome is very rare. So far only 400 cases have been reported in literature<sup>1</sup> Pathologically there is a decrease in the angle between SMA and Aorta from the Normal 45°, down to 15°. This exerts a clam-like or striding action on 3<sup>rd</sup> part of duodenum leading to obstruction.

Incidence of SMA syndrome is 0.0130.3% in the general population<sup>2</sup>, most frequently occurring in young patients<sup>5</sup> with a chronic relapsing pattern of presentation. We report a case of SMA Syndrome in an elderly female wherein prompt recognition of intestinal obstruction in Erect X-ray abdomen and immediate CECT Abdomen helped in early diagnosis and correction of SMA Syndrome.

**Case Report:** A 62 Year female patient presented with complaints of Upper Abdominal Distension and repeated episodes of Bilious vomiting along with

undigested food particles since one day. The patient denies any history of having abdominal pain or any recent history of weight loss. Abdominal Examination showed strikingly peculiar clinical features with gross distension of the Upper Abdomen .

Ryle's tube was inserted immediately which drained around 500 ml of bilious aspirate mixed with food particles. Intravenous fluids and antibiotics were started as primary management.

An Erect X ray of the abdomen was done and it showed grossly distended Stomach shadow and Proximal duodenum with 1 significant Air-fluid level and absence of air in remainder of the intestines.

CECT of abdomen was done, which showed a massively dilated Stomach and 1<sup>st</sup> & 2<sup>nd</sup> part of duodenum(Fig. No : 1)secondary to the compression of 3<sup>rd</sup> part of duodenum between SMA and Aorta with Aorto-mesenteric angle 16.92° and Aorto-Mesenteric distance 3 mm suggesting SMA syndrome.(Fig. No: 2)

Exploratory Laparotomy was done. Stomach and Proximal Duodenum were found to be grossly dilated( Fig. No : 3). Decompression of the Stomach was done.The distal portion of the 3<sup>rd</sup> part of

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Duodenum was found to be compressed between the Abdominal Aorta and the overlying SMA (Fig. No : 4). Bowel loops distal to the compression were found to be collapsed and had absent peristalsis. Kocherization of Duodenum was performed. Lateral Duodeno-Jejunostomy was planned to by-pass the obstruction. Jejunal loop around 18-20 cms from the Duodeno-Jejunal flexure was selected for the anastomosis. Hand sewn 2 layered Duodeno-jejunosomy was performed and the Anastomotic site was ensured to be intact and Non-leaky (Fig.No:5) After ensuring complete haemostasis, a drain was secured at the site of anastomosis. Abdomen was closed in layers. Patient tolerated the procedure well and was shifted to Post-operative ward. Post-operative recovery was uneventful and the patient was allowed to take orally on the 3<sup>rd</sup> post-operative day and tolerated well.

**Discussion:** SMA syndrome is a rare cause of upper intestinal obstruction. The characteristic feature is extrinsic compression of the 3<sup>rd</sup> portion of the duodenum between SMA & the posterior structures<sup>2</sup>. Reported for the first time in 1842 by Von Rokitanski, the pathogenic mechanism, as described by Wilkie in 1927, involves a narrow aorto-mesenteric angle of 15.2° (range 1°40°) and a narrow aorto-mesenteric distance of 2 to 8 mm<sup>3</sup>

SMA syndrome is usually under-diagnosed<sup>4</sup>. High index of suspicion is needed when a Plain Erect X-ray abdomen shows grossly dilated Stomach with Duodenal dilatation with an air-fluid level and absence of air in the remainder of gut<sup>4</sup>. Increased awareness is needed to reduce irrelevant tests and unnecessary treatments. A delay in this diagnosis can potentially lead to many complications, such as electrolyte imbalance, catabolic wasting, peritonitis and gastric perforation<sup>4</sup>. This case report proves that CECT Abdomen should be the immediate first line investigation of choice in all cases both young and elderly and surgery is the mainstay of treatment with Duodenojejunosomy being the surgery of choice. CECT Abdomen proved to be the most promising radiological modality to approach and manage SMA syndrome as it requires emergency intervention.

In Duodeno-Jejunostomy the compressed portion of the Duodenum is released and an anastomosis is created between the Duodenum and Jejunum anterior to the Superior Mesenteric Artery.

Successful Laparoscopic Duodeno-Jejunal bypass consists of a loop of Jejunum anastomosed to the dilated Duodenal segment, which is seen below the

transverse Mesocolon. Laparoscopic Duodeno-Jejunostomy is safe and effective and should be considered the optimal treatment for patients presenting with Duodenal obstruction from SMA syndrome<sup>5</sup>. Shorter hospital stay, low morbidity, and that the high success of Laparoscopic enteric bypass make this approach favorable to traditional open techniques<sup>5</sup>.

In this case, Laparoscopic duodeno-jejunosomy could not be performed due to the non-affordability of the patient for Laparoscopic surgery.

### Conclusion

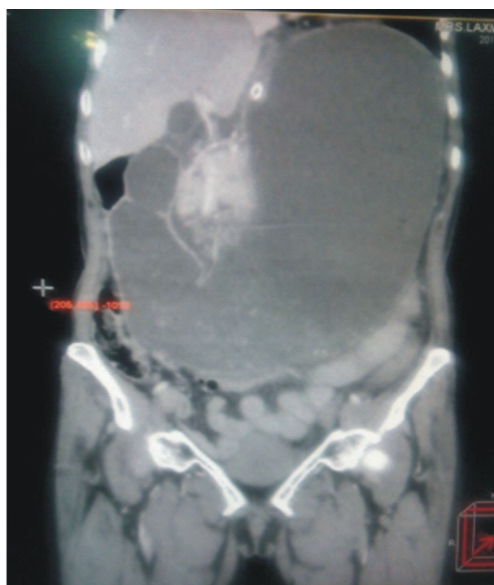
SMA syndrome is an unusual cause of potentially life-threatening high mechanical intestinal obstruction presenting with typical features of intestinal obstruction. CECT of abdomen confirms diagnosis and should be the first line investigation of choice. Duodeno-jejunosomy done by open or laparoscopic approach is the operation of choice, with a success rate up to 90% [4]

### Conflict of interest

"The authors declare no conflict of interest whatsoever arising out of the publication of this manuscript."

### References

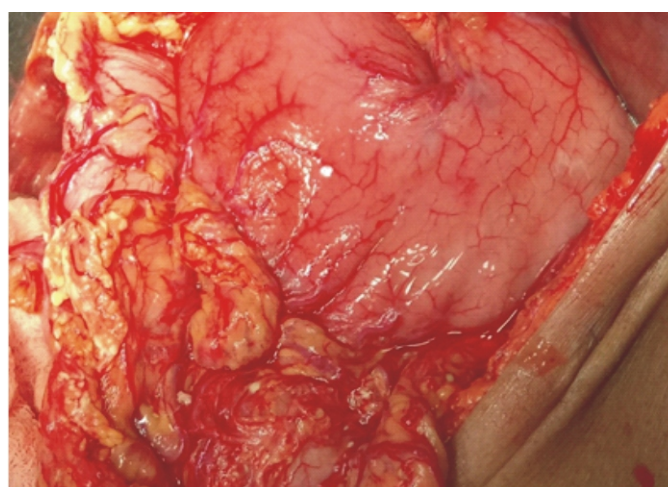
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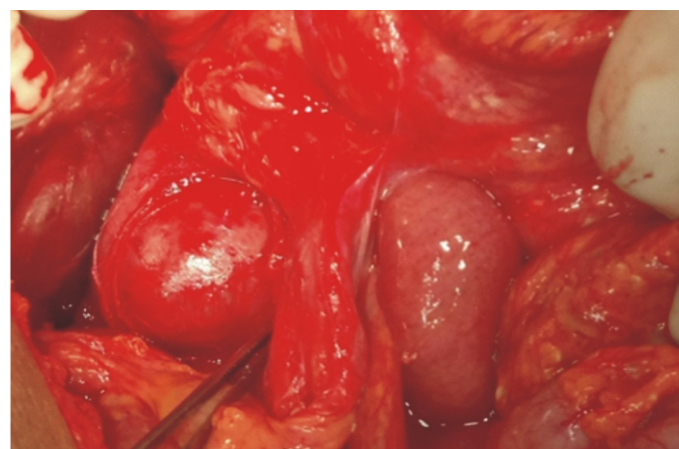
**Fig.No : 1** CECT of abdomen showing a massively dilated Stomach and 1st & 2nd part of duodenum



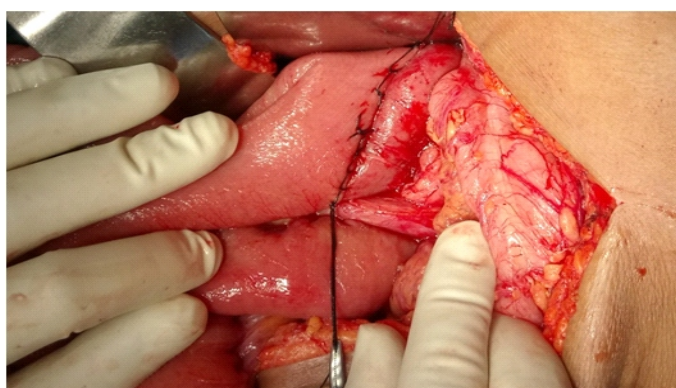
**Fig.No : 2** Sagittal reconstruction of CT angiography demonstrated an aorto-mesenteric angle of 16.92°



**Fig.No : 3** Grossly dilated Stomach with Duodenum evident on laparotomy



**Fig.No : 4** Superior Mesenteric Artery compressing the 3rd part of duodenum classically evident on laparotomy.



**Fig.No : 5** Hand-sewn 2 layered Duodeno-jejunosomy

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