The General Surgeon

ISSN 2687-7007

Case Report

Laparoscopic Duodeno-Jejunostomy for Superior Mesenteric Artery Syndrome with D3 Obstruction: A Case Report

Vinay HG and Vijay R*

Department of GI Surgery, Vamshodaya Hospital, Kolar, India

Abstract

Superior Mesenteric Artery (SMA) syndrome is an uncommon proximal intestinal obstruction resulting from compression of the third part of the duodenum between the abdominal aorta and the superior mesenteric artery. We report the case of an 18-year-old female who presented with recurrent abdominal pain and postprandial vomiting for two years. Barium meal follow-through demonstrated narrowing at the D3 segment with proximal gastro duodenal dilatation. Contrast-enhanced computed tomography revealed a reduced aorta mesenteric angle and distance with compression of the third part of the duodenum, consistent with SMA syndrome. The patient underwent laparoscopic Duodeno-Jejunostomy. Operative findings confirmed a dilated proximal duodenum with abrupt narrowing at the point where the SMA crossed the D3 segment. The postoperative course was uneventful; oral feeds were initiated on the second postoperative day, and the patient was discharged on the fifth postoperative day. This case emphasizes the value of early radiological diagnosis and the effectiveness of laparoscopic Duodeno-Jejunostomy as definitive treatment in symptomatic SMA syndrome.

Keywords: Superior mesenteric artery syndrome; Duodenal obstruction; D3 obstruction; Laparoscopic Duodeno-Jejunostomy; Proximal intestinal obstruction

Introduction

Superior mesenteric artery syndrome is a rare clinical condition in which the third part of the duodenum becomes compressed within the narrowed space between the abdominal aorta and the superior mesenteric artery. Loss of the normal aortomesenteric fat pad decreases both the angle and distance between these vessels, resulting in partial or complete obstruction of the duodenum [1,2]. Although uncommon, the syndrome should be considered in young patients with persistent upper gastrointestinal obstructive symptoms, particularly when routine investigations fail to identify a cause. Modern imaging, especially contrast-enhanced computed tomography, plays a central role in confirming the diagnosis by demonstrating characteristic vascular and duodenal findings.

Case Presentation

An 18-year-old female with a history of laparoscopic Cholecystectomy presented with recurrent episodes of upper abdominal pain and vomiting for the preceding two years. The symptoms were intermittent initially but had gradually increased in frequency, prompting further evaluation (Figure 1). On examination, she was conscious, oriented, and haemodynamically stable. Her pulse rate was 87 beats per minute, blood pressure was 110/60 mmHg, temperature was 98.6°F, and oxygen saturation was 98% on room air [3-6]. General examination showed no pallor, icterus, cyanosis, clubbing, lymphadenopathy, or pedal oedema. Respiratory, cardiovascular, abdominal, and neurological examinations were unremarkable except for symptoms suggestive of proximal intestinal obstruction. Barium meal follow-through demonstrated narrowing of the third part of the duodenum with dilatation of the stomach and proximal duodenum. Contrast-enhanced CT of the abdomen and pelvis showed fluid-filled dilatation of the stomach and duodenum with compression of D3 between the abdominal aorta and the superior mesenteric artery. A reduced aortomesenteric angle and distance were noted (Figure 2), with mild associated ascites. Based on the clinical presentation and imaging findings, a diagnosis of superior mesenteric artery syndrome causing D3 obstruction was established.

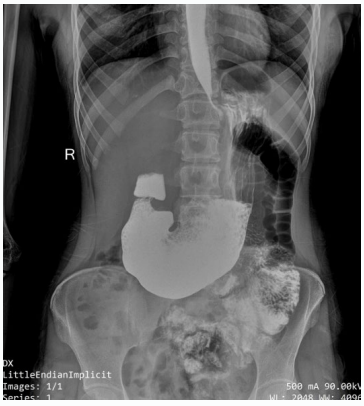


Figure 1: Oral contrast study demonstrating narrowing of the third part of the duodenum with proximal gastroduodenal dilatation.

Citation: Vinay HG, Vijay R. Laparoscopic Duodeno-Jejunostomy for Superior Mesenteric Artery Syndrome with D3 Obstruction: A Case Report. Gen Surg. 2026; 2(1): 1020.

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Publisher Name: Medtext Publications LLC

Manuscript compiled: Oct 27th, 2026

***Corresponding author:** Vinay HG, Department of GI Surgery, Vamshodaya Hospital, Kolar, India

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Figure 2: Postoperative oral contrast study showing free passage of contrast through the duodenojejunostomy into the small bowel.

Surgical management

The patient underwent elective laparoscopic Duodeno-Jejunostomy. Intraoperatively, the first and second parts of the duodenum were markedly dilated, with an abrupt narrowing at the third part where it passed beneath the superior mesenteric artery. The distal jejunal loops were collapsed beyond the obstruction (Figure 3). A side-to-side laparoscopic Duodeno-Jejunostomy was fashioned to bypass the compressed segment and restore intestinal continuity.

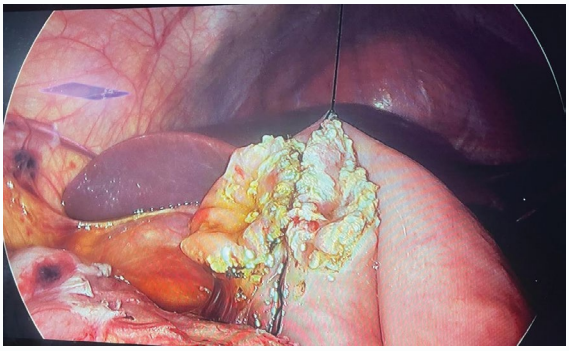


Figure 3: Intraoperative laparoscopic view showing the dilated proximal duodenum.

Outcome

The postoperative recovery was satisfactory. Oral liquids were started on postoperative day two and gradually advanced to a regular diet without recurrence of symptoms. The patient was discharged on postoperative day five in stable condition and remained symptomatically improved on follow-up.

Discussion

Superior Mesenteric Artery Syndrome (SMA syndrome) represents an uncommon but important cause of duodenal obstruction. The condition develops when the aortomesenteric angle and distance become reduced, compressing the third part of the duodenum [8]. Patients typically present with chronic abdominal pain, early satiety, nausea, vomiting, and weight loss, although the presentation is often nonspecific and diagnosis may be delayed. Barium contrast studies can demonstrate an abrupt cut-off at the third part of the duodenum with proximal dilatation. Contrast-enhanced CT provides additional diagnostic information by measuring the aortomesenteric angle and distance while excluding other causes of obstruction. Initial treatment is usually conservative and includes nutritional rehabilitation [9], gastric decompression, and correction of fluid and electrolyte imbalances. Surgical intervention is recommended when conservative therapy fails or when symptoms are persistent and severe. Laparoscopic Duodeno-Jejunostomy is widely accepted as the preferred operative procedure because it bypasses the obstructed segment, offers excellent symptom relief, and provides the benefits of minimally invasive surgery (Figure 4). In the present case, characteristic radiological findings correlated well with intraoperative observations, and the patient experienced rapid postoperative recovery following laparoscopic bypass.

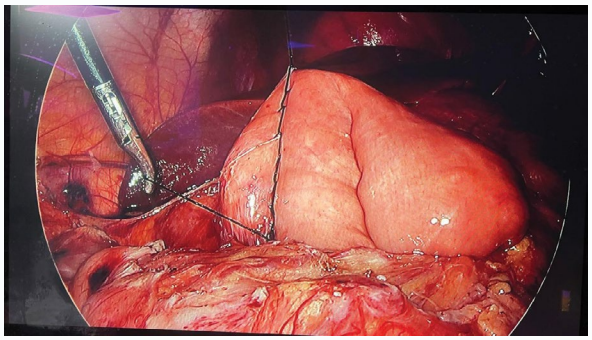


Figure 4: Completed laparoscopic side-to-side duodenojejunostomy.

Conclusion

Superior mesenteric artery syndrome should be considered in young patients with recurrent symptoms of proximal intestinal obstruction. Careful correlation of clinical features with radiological findings allows timely diagnosis. Laparoscopic Duodeno-Jejunostomy is a safe and effective definitive treatment for patients with symptomatic D3 obstruction due to SMA syndrome, providing excellent early postoperative recovery.

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