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RESEARCH ARTICLE

LAPAROSCOPIC REVISION OF GASTRO-JEJUNOSTOMYTO DUODENOJEJUNOSTOMY WITH ROUX-EN-YJEJUNOJEJUNOSTOMY FOR PERSISTENT SMA SYNDROME; A CASE REPORT

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ABSTRACT

Background: Superior Mesenteric Artery Syndrome (SMA syndrome) is a condition that occurs when the third part of the duodenum is compressed between the Aorta and the Superior Mesenteric Artery which causes postprandial abdominal pain, nausea, and vomiting due to partial or complete blockage of the duodenum. It is thought to be caused by rapid weight loss leading to sudden decrease in the angle between the Aorta and SMA which results in gastric outlet obstruction, failure to gain weight, and electrolyte disturbances. **Case presentation:** We report an original case of a previously diagnosed 35-year-old female with SMA syndrome through history and radiological findings who initially underwent gastrojejunostomy for the treatment of her SMA syndrome two years prior to her presentation without resolution of her gastric outlet obstruction symptoms. CT scan of the abdomen at the time of presentation revealed an aortomesenteric angle of 22 and distance of 8.5mm with an intact anastomosis of the gastrojejunostomy. Laparoscopic revision of gastro-jejunostomy followed by duodenojejunostomy with Roux-en-Y jejuenojejunostomy was successfully performed with resolution of the patient's symptoms. **Conclusion:** Surgical intervention is the mainstay in cases of SMA syndrome refractory to conservative management. Gastrojejunostomy is not commonly preferred due to the high recurrence rate of symptoms. We report an original case of persistent SMA syndrome post gastrojejunostomy which was treated with laparoscopic revision of gastrojejunostomy followed by duodenojejunostomy with Roux-en-Y jejuenojejunostomy. No previous reports of this surgical intervention or similar presentations were found in the literature.

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INTRODUCTION

Superior Mesenteric Artery Syndrome was first described by Professor Rokitansky in 1861. (1) The SMA typically forms an angle of around 45 degrees with the aorta. SMA syndrome is presumed to be present if the aortomesenteric angle is less than 25 degrees in adults with resultant proximal duodenal and gastric dilatation and obstruction (2. Several etiological factors have been identified to cause SMA syndrome through rapid weight loss such as anorexia nervosa, burns, immobilization in body casts, and idiopathic weight loss (3).

Management of SMA syndrome commences as conservative management through decompressing the stomach via nasogastric tube placement, in addition to encouraging weight gain. If the patients' symptoms are too severe to allow them to tolerate oral intake, weight gain can be achieved with nasojejunal tube feeding or total parenteral nutrition (TPN). If the former conservative management options fail to relieve the obstruction, surgical intervention is warranted.

Case Presentation: A 35-year-old female patient presented to our hospital complaining of postprandial epigastric pain,

nausea, and vomiting of three years duration. Two years prior to presenting to our hospital, she was diagnosed to have SMA syndrome, and she underwent gastrojejunostomy for treatment. Despite the surgical intervention, her symptoms persisted over the two years. The patient did not have a history of rapid weight loss and did not have any co-morbidity. On physical examination, her BMI was 20.3 and she denied any change in her weight over the previous 2 years. She had abdominal distention with epigastric tenderness on deep palpation, and her hernial orifices were intact. Laboratory investigations of a complete blood count, kidney function, and liver function were all within normal range. CT scan of the abdomen revealed an aortomesenteric angle of 22 and an aortomesenteric distance of 8.5mm in addition to gastrojejunostomy anastomosis opposite the incisura angularis with no evidence of leakage (Figure 1).

Figure 1. CT scan of the abdomen.

The patient refused inserting a feeding jejunostomy tube to aid her in gaining weight, and she was initially managed with nil by mouth and intravenous fluids. Afterwards, the patient underwent Laparoscopic revision of gastrojejunostomy followed by duodenojejunostomy with Roux-en-Y jejuenojejunostomy. First, dissection was done around the gastrojejunostomy to release it from the adherent omentum, and then the gastrojejunostomy was resected from the incisura. The lumen of the stomach was maintained by performing the resection while a 40 F boujie was inserted in the stomach (Figure 2).

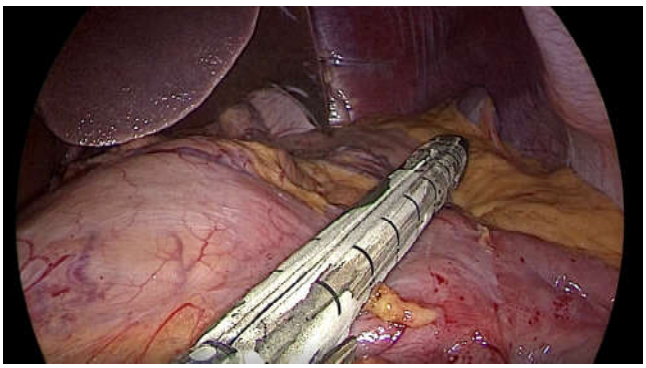

Figure 2. Laparoscopic view showing the preservation of the lumen of the stomach while performing gastrojejunostomy

Afterwards, kocherization of the duodenum was performed. (Figure 3) The alimentary limb and biliary limb from the gastrojejunostomy were identified and a side-to-side duodeno-jejunostomy was created with Endo-GIA stapler ™ and the enterotomy was closed and re-enforced with 3-0 V-lock suture ™.

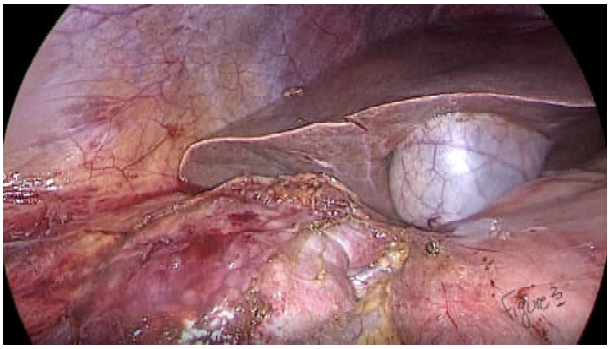

Figure 3. Laparoscopic view shows kocherization of the duodenum

(Figure 4) Roux-en-Y Jejunojejunostomy was performed afterwards using an Endo-GIAstapler ™ and the enterotomy closed using the V-Lock suture 3/0 in 2 layers. Intra-operative gastroscopy was then done, and a leak test was performed which was negative. During a follow-up 3 months later, the patient reported feeling well with resolution of her symptoms resulting in adequate weight gain and an increased BMI to a value of 24.

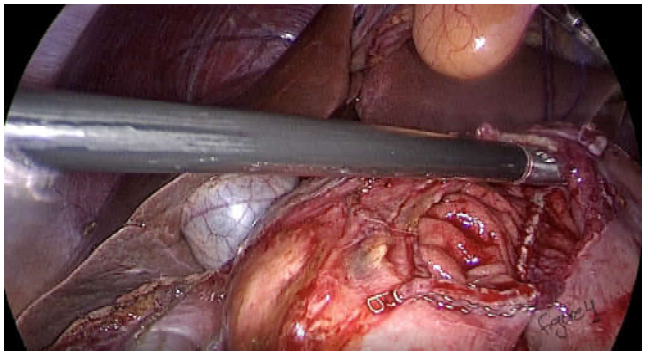

Figure 4. Laparoscopic view of aside-to-side duodeno-jejunostomy with Endo-GIA stapler

DISCUSSION

Superior Mesenteric Artery Syndrome is characterized by compression of the third portion of the duodenum when the angle formed by the aorta and the superior mesenteric artery decreases to less than its normal range, and it has been attributed to loss of the intervening mesenteric fat pad due to rapid and excessive weight loss (4) Clinically, the patients present with features of gastric outlet obstruction. Sense of satiety, postprandial epigastric pain, and vomiting are characteristic features. A variety of diagnostic modalities including a Computed tomography of the abdomen (CT) can reveal decreased aortomesenteric distance as well as aortomesenteric angle which can be seen on sagittal reconstructed images (5) SMA syndrome is presumed to be present if the aortomesenteric angle is less than 25 degrees in adults and the aortomesenteric distance is decreased to 2-8 mm (normal is 10-20 mm) (6).

Management of SMA syndrome begins with a conservative approach for uncomplicated cases. The aim of conservative management is to resolve the symptoms of intestinal obstruction. It includes gastric decompression through nasogastric tube placement, rehydration, and electrolytes replacement, in addition to nutritional supplement through either encouraging oral intake, inserting a feeding nasojejunostomy tube, or total parenteral nutrition, depending on the severity of symptoms. The formerly mentioned steps are meant to prevent further weight loss and to help regain adequate weight to restore the lost mesenteric fat pad (7). Surgical management is warranted if initial conservative management fails to resolve the symptoms. It includes a variety of options with duodenojejunostomy being the commonest procedure with a success rate of over 90%. Gastrojejunostomy is a less common surgical approach due to the blind loop syndrome and the persistence of symptoms due to the non-decompression of the duodenum, which was encountered in this case. (8) Surgical management can either be done via open approach or laparoscopic technique. Laparoscopic technique is preferred for its less reported post-operative pain and rapid time of recovery following surgery leading to overall reduced hospitalization time. (9) We report an original surgical intervention of laparoscopic revision of gastro-jejunostomy followed by duodenojejunostomy with Roux-en-Y jejuenojejunostomy for the relief of persistent SMA syndrome post gastrojejunostomy.

Conclusion

Complicated cases of SMA syndrome and cases refractory to medical management are treated with surgical management. Gastrojejunostomy is not commonly preferred due to the high recurrence rate of symptoms because of failed duodenal obstruction relief as encountered in this reported case. We opted for Laparoscopic revision of gastrojejunostomy followed by duodenojejunostomy with Roux-en-Y jejuenojejunostomy for such a case with good follow-up records. This surgical intervention has not been previously reported in the literature. Advantages of laparoscopic technique over open surgery include rapid time of recovery, less reported post-operative pain, and reduced hospitalization time.

Declarations

Ethics Approval and consent to participate: Not applicable.

Consent for Publication: Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal on request.

Availability of data and materials: Not applicable.

Competing interests: The authors declare that they have no competing interests.

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