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Surgical Management of Superior Mesenteric Artery Syndrome in Children

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Surgical Management of Superior Mesenteric Artery Syndrome in Children

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IRB Number: 18020074

Describe role of Submitting/Presenting Trainee in this project (limit 150 words):

Submitting Trainee: Pediatric Surgical Scholar (research fellow in department of surgery) and primary author

Presenting Trainee: Pediatric Surgical Scholar (research fellow in department of surgery)

Background, Objectives/Goal, Methods/Design, Results, Conclusions limited to 500 words

Background: Superior mesenteric artery syndrome (SMAS) is caused by compression of third portion of the duodenum by the superior mesenteric artery which can lead to abdominal pain, early satiety, emesis, and weight loss. Operative approaches vary from the more complex Roux-en-Y duodenojejunostomy to the more conservative division of the ligament of Treitz with duodenal derotation. The outcomes following the latter procedure are not well known. Our aim was to examine outcomes following division of the ligament of Treitz with duodenal derotation for the management of SMAS at our institution.

Objectives/Goal:

To determine efficacy of division of the ligament of Treitz with duodenal de-rotation for surgical treatment of superior mesenteric artery syndrome.

Methods/Design: We conducted a retrospective chart review of children <18 years old, diagnosed with SMAS, who underwent surgical management at our institution between January 2008 and December 2017. To examine long-term outcomes, an online survey regarding symptom resolution, current feeding practices, and the need for additional testing and procedures, was distributed. If there was no response, a telephone call was made to complete the survey. Data analysis is reported in medians and proportions and used to compare patients with and without symptom resolution.

Results: Seven patients met inclusion criteria for the study. The study population had a median age of 15 years (IQR 8, 16) with a median BMI of 16.9 (IQR 12.6, 22.1). There were multiple symptoms at presentation with the most common being pain (71%, n=5), nausea (57%, n=4), and vomiting (43%, n=3). An upper gastrointestinal study was used to diagnose six patients, and a computed tomography angiography was used to diagnose one. While four were able to tolerate feeds orally, two required a nasojejunal tube and one required a gastrojejunostomy. Three were on TPN for a median of 3.5 days (IQR 2.1, 17.5). All patients underwent surgical division of the ligament of Treitz with duodenal derotation and 100% had symptom resolution at a postoperative follow-up of 22 days (IQR 45, 15). However, three of the seven patients reported recurrence of symptoms at a median of 34 days (IQR 90, 4) post-operatively. Of these, three reported nausea, two reported abdominal pain, one reported vomiting, one reported other symptoms, and none experienced early satiety or weight loss. Ultimately, two patients with recurrence required re-do surgery.

Six patients responded to the survey at a median of 2.3 years (IQR 1.7, 3.2) post-operatively and 50% (n=3) still had no symptoms. Of patients with symptom recurrence, two required feeding tubes, and one had undergone multiple operations. This patient ultimately underwent a duodenal resection with anastomosis over the top of the mesentery, after which, the patient's symptoms resolved.

Conclusions: Division of the ligament of Treitz with duodenal derotation results in resolution of symptoms in half of patients. This more conservative operative approach should be considered first before performing more complex operations for SMAS.