

Case Report

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Intraoperative trans-esophageal echographic evaluation of the celiac artery flow after arcuate ligament resection in a case of Dunbar Syndrome. A case report

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Introduction

Dunbar Syndrome (DS), also known as Median Arcuate Ligament (MAL) syndrome, is a rare disease in which the celiac trunk is compressed by a fibrous attachment at the diaphragmatic crura causing abdominal angina with a large spectrum of symptoms including nausea, vomiting, weight loss, and post-prandial epigastric pain.

First anatomically described by Lipshutz in 1917 [1], this syndrome has a prevalence of 2/100,000 patients, women being more affected than men (3:1 ratio). DS usually involves young adults aged between 18 and 30 years. The traditional onset of the disease includes weight loss, nausea with vomiting, diarrhea and epigastric pain [2].

The MAL is a band of fibrous tissue that surrounds the aortic hiatus which can predispose to DS in case of higher origin or lower insertion on the diaphragm. This finding is significant in a small subset of patients, leading to compression of the celiac trunk during expiration, and relief during deep breath inspiration.

The pathophysiologic mechanism of this rare disease still remain unclear, but the most widely accepted theory suggests the post prandial increased demand for blood flow by the gut through a compressed celiac artery ultimately leads to transitory intestinal ischemia and epigastric pain. Possibly, chronic pressure on the celiac ganglion by the MAL can be associated with the development of neuropathic pain due to an overstimulation and irritation of sympathetic pain fibers triggering epigas-

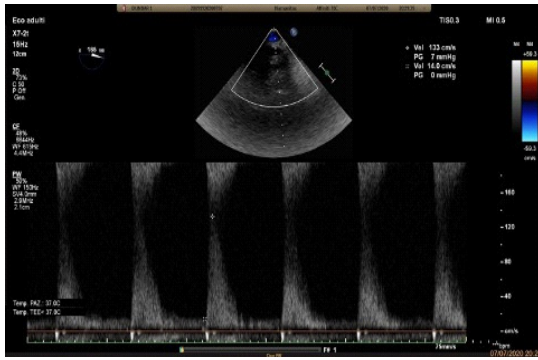


Figure 3: Trans-esophageal pulse Doppler of the celiac trunk after induction of general anesthesia.

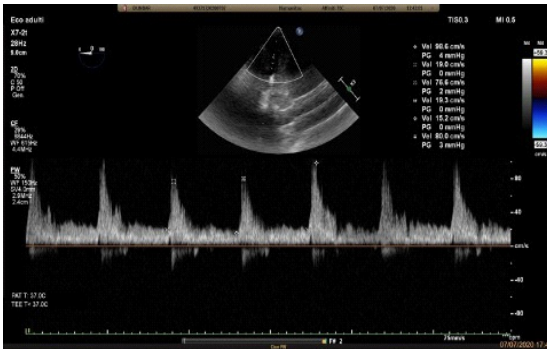


Figure 4: Trans-esophageal pulsed wave Doppler evaluation of the celiac trunk at the end of the laparoscopic section of the arcuate ligament. Notice the variation of the PSV with the mechanical respiratory cycle.

Discussion

In this case of DS we opted to evaluate the celiac artery blood flow by trans-esophageal color-Doppler to obtain a real-time confirmation of the successful surgical correction.

Trans-esophageal Echocardiography (TEE) has been extensively used to evaluate the heart and the thoracic aorta, but there are still few evidences of its usefulness in the evaluation of the superior portion of the abdominal aorta and the celiac trunk [5]. Since trans-gastric visualization of the celiac artery through TEE was proved to be feasible [6], it has been used as an anatomical marker for the orientation on the descending thoracic aorta [7] and a diagnostic tool for the evaluation of aortic dissection [8].

Our patient had already received a surgical treatment for DS, but after that first operation the MAL syndrome re-occurred. Similar outcomes have been described in literature [9]. Hence, we considered that intra-operative evaluation of the surgical efficacy was mandatory in this case. An evaluation of the resection of the MAL could have been obtained by other techniques before and after the operation, but TEE measurement allowed us to do this real-time intra-operatively. Thus, surgeon was assured of the technical success of the operation or conversely he would have been persuaded to change the surgical approach from laparoscopic to a traditional open correction.

Indeed, in our patient the MAL resection was considered successful only after having re-evaluated the celiac artery blood flow velocity and measured its reduction after the correction.

Conclusion

Transoesophageal echocardiography showed to be a practical and reliable tool for the evaluation of the celiac trunk flow alteration due to the Dunbar Syndrome. The intraoperative monitoring of the PSV of celiac artery during the laparoscopic section of the MAL allows the surgeon to confirm the successful outcome of the operation before the awakening of the patient.

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