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Case Report

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Dunbar Syndrome Treated by Laparoscopic Surgery

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ABSTRACT

Median arcuate ligament syndrome (MALS) or Dunbar syndrome is a rare condition resulting from compression of the celiac trunk by the median ligament at the level of the diaphragmatic crus. Abdominal tomography contributes to the diagnosis by demonstrating the level of obstruction and the presence of collateral arterial circulation in the gastroduodenal region, typical of the disease in chronic cases. The therapeutic options, although few, find in the laparoscopic surgical treatment the best option for releasing the muscle fibers in the arcuate ligament region. We report a rare case of a 38-year-old woman diagnosed with MALS successfully treated laparoscopically.

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Introduction

The first description of median arcuate ligament syndrome (MALS) was made by Harjola in 1963 and Dunbar in 1965, and it can also be described as Dunbar syndrome or middle arcuate ligament syndrome [1].

MALS is characterized by extrinsic compression of the celiac trunk by the median arcuate ligament, being a more common condition in young women. Symptoms initially comprise the classic triad of mesenteric ischemia: postprandial abdominal pain, nausea and vomiting, and weight loss [2].

The pain is linked to compression of the celiac trunk and its ganglia (probably by compression of the celiac plexus) at the level of the diaphragmatic crus, due to its insertion at a lower level [3].

The diagnostic suspicion can be confirmed with imaging tests, computed tomography with intravenous contrast can show the level of compression as well as the existence of collateral circulation in the region, a finding that is suggestive of MALS [4].

The treatment can be done by laparotomy or laparoscopy, the latter presenting a great advantage when taking into account the length of hospital stay, earlier refeeding and early return to work activities.

We report here a case of a 38-year-old woman diagnosed with this rare condition after bariatric surgery, which could simulate an internal hernia, being successfully treated laparoscopically with complete resolution of the clinical picture.

Case Report

A 38-year-old female with a history of bariatric surgery (Roux-en-Y gastric bypass) for 4 years due to morbid obesity. The patient sought medical care in an emergency unit due to severe abdominal pain in the epigastrium, after feeding, which spontaneously improved after 2 hours. She reports that he had the same symptoms 3 times in the last week, but now with worse intensity. She denied complaints such as vomiting, nausea or changes in bowel habits. Abdominal physical examination showed no signs of peritoneal irritation or pain on palpation and the patient was hemodynamically stable.

The patient was hospitalized and submitted to laboratory tests that were within the normal range and computed tomography (CT) of the abdomen and pelvis with intravenous contrast, which showed moderate stenosis at the emergence of the celiac trunk due to probable extrinsic compression by the arcuate ligament at the height of the diaphragmatic pillars, associated with a compensatory prominence of arterial collateral circulation in the pancreatoduodenal region, but without signs of intestinal ischemia (Figures 1 and 2).

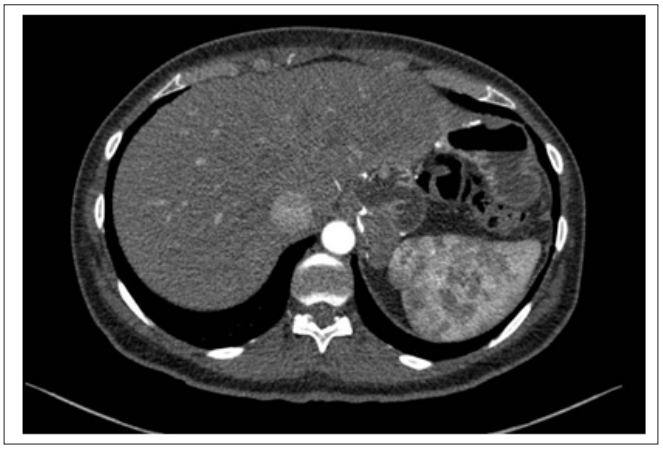

Figure 1: CT of the abdomen with intravenous contrast evidencing the presence of compression of the celiac trunk at the level of the arcuate ligament with evident collateral circulation in the duodenopancreatic region

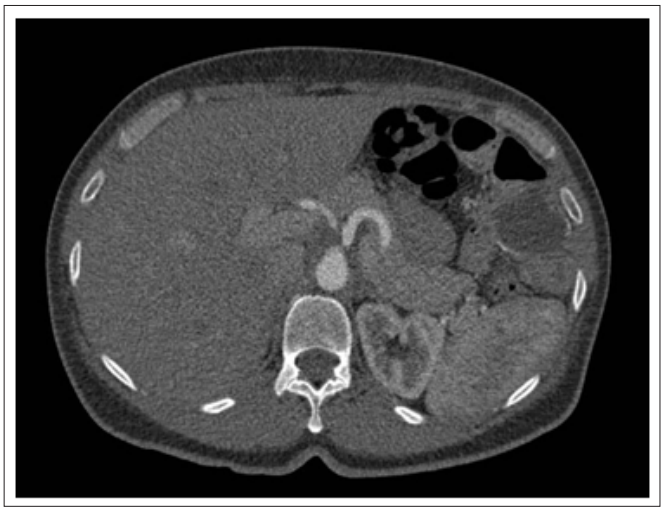

Figure 2: CT of the abdomen with intravenous contrast showing pinching at the level of the celiac trunk, causing extrinsic compression and the presence of a fibrotic band at the level of the arcuate ligament

Laparoscopic surgical treatment was indicated with dissection and release of the arcuate ligament, a procedure performed without intercurrences, with surgical recovery being performed within the first 24 hours in the intensive care unit. The patient was re-fed within 24 hours and was discharged after 72 hours without symptoms.

Discussion

Median arcuate ligament syndrome (MALS) is a very rare condition in clinical practice characterized by the presence of a musculofibrous structure that connects the diaphragmatic crus at the level of the anterior esophageal hiatus to the aorta [2].

The incidence of MALS is much higher in females (81%) with the age group between 20-40 years being the most prevalent [3].

When blood flow from the celiac trunk is interrupted by extrinsic compression, regardless of the etiology, the symptom of abdominal pain due to intestinal ischemia angina becomes present, becoming more evident in the postprandial moment.

It has been widely recommended that musculofibrous structures that cause mechanical compression in the diaphragmatic crus region be treated in symptomatic patients [3,4].

In 1965, Dunbar described 13 cases of MALS with good results with surgical treatment by the conventional laparotomy, however currently the laparoscopy approach has a wide advantage because it causes less postoperative pain, shorter hospitalization time and early recovery from the routine. Since Roayaie et al in 2000 first reported the laparoscopic surgical treatment of MALS, it has become standard treatment [1,5,6].

From an anatomo-surgical point of view, all fibrotic bands must be treated, leaving the celiac trunk completely free, however, for the surgeon this leads to two major challenges: first, having a broad anatomical view of the diaphragmatic crus and exposing the retroperitoneal vessels, and, second, to avoid vascular injuries, taking into account the clinical repercussion of a vascular injury in this region [1,4].

Jimenez et al, in a meta-analysis of more than 400 cases, listed the most common symptoms found in MALS cases, as follows: abdominal pain (80%), nausea (97%) and diarrhea (7.5%) [7].

From a radiological point of view, CT of the abdomen and pelvis plays an important role in the diagnosis, and compression of the celiac trunk can be evidenced during expiration, forming a ‘’J’’ in the crura region with the angulation of the celiac trunk. Poststenotic dilatation and the presence of collateral arterial circulation in the gastroduodenal region suggest prolonged compression. CT may also show arcuate ligament fibers, if greater than 4 mm are broadly suggestive of MALS [8].

Tulloch et al compared the results of laparotomy and laparoscopic surgery for the treatment of MALS, demonstrating that the laparoscopically treated group was re-fed earlier 1 day versus 2.8 days respectively ($p \leq 0.005$) and the length of hospital stay in the group operated laparoscopically was 2.3 days versus 7 days, respectively [9].

Conclusion

MALS is a rare disease caused by compression of the celiac artery by the median arcuate ligament in the diaphragmatic crus, and its diagnosis is an exception criterion. MALS should be considered as a differential diagnosis in patients diagnosed with abdominal pain. Surgical treatment consists of the surgical release of musculofibrotic adhesions in the crura. We report a case treated by videolaparoscopy with satisfactory evolution despite the technical difficulties imposed by the unfavorable anatomical conditions of the disease.

Research Ethics Committee Approval: We declare that the patient approved the study by signing an informed consent form. The study followed the ethical guidelines established by the Declaration of Helsinki.

Conflict of Interest: we have no conflict of interest

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