

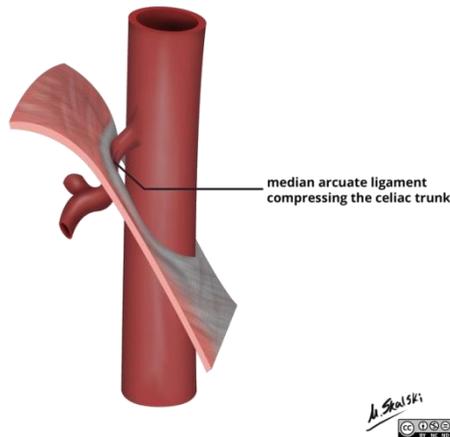
Median arcuate ligament syndrome (Dunbar Syndrome)

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This rare condition is caused by extrinsic compression, given the low abnormal insertion of median arcuate ligament or fibrous bands and ganglion periaortitis tissue from the celiac plexus. The

ligament is composed of tendon medial edges of the two poles of the diaphragm which meet in the median plane to form an arch before the aorta.

Figure 1. Graphic image of the arcuate ligament compressing the celiac trunk
Case courtesy of Dr Matt Skalski, Radiopaedia.org, rID: 36837



The clinical presentation is variable:

- In most cases asymptomatic
- Weight loss
- Chronic abdominal pain
- Postprandial abdominal discomfort
- Hypertension and tachycardia in the case of renal artery compression

The diagnosis is one of exclusion. Symptomatic patients have numerous investigations for most cases of abdominal pain and underwent cholecystectomies and appendectomies, many unnecessary in order to

alleviate the pain. Diagnosis methods: Doppler, angio-CT, angiography or MRI. The gold standard is the angioCT.

Angio-CT: it is highlighted, on sagittal reconstruction, a focal stenosis in the proximal portion of the celiac trunk, bent (hooked appearance). 3D reconstructions can be helpful in identifying stenosis. Gastro-duodenal and hepatic arteries can often be seen as prominent with multiple collaterals.

Differential diagnosis based on imaging is made with atherosclerotic disease.

Our patient D.G., male, aged 53, known with hypertension responsive to treatment and diabetes type II non-insulin requiring, with no clinical complaints, came to the Nephrology Department where an abdominal ultrasound was performed and a pancreatic formation was detected. He came to our department for abdominal pelvic CT with contrast iv.

During examination, multiple arterial branches arising from the pancreaticoduodenal artery and superior mesenteric artery (arch pancreatitis) are observed, which include pancreaticoduodenal region; filiform stenosis in the aortic origin of the celiac trunk, through the median arcuate ligament.

Figure 2. Axial section acquired during early arterial time that highlights arterial type collateral circulation between AMS and the celiac trunk at the level of the pancreaticoduodenal arch.

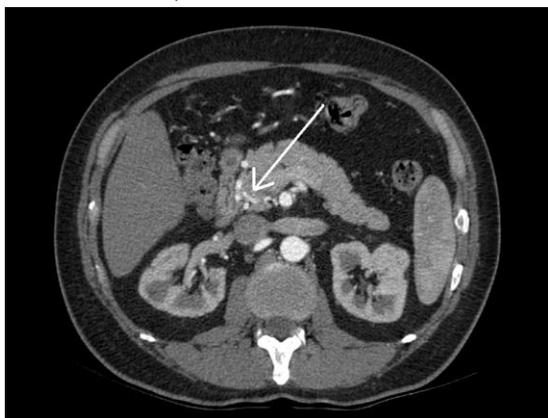
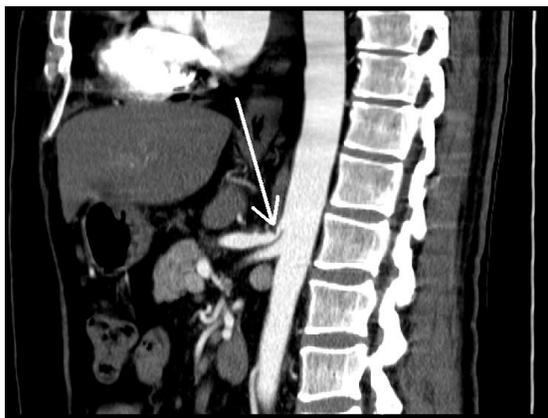


Figure 3. Sagittal MPR highlighting the trunk celiac filiform stenosis.



Treatment

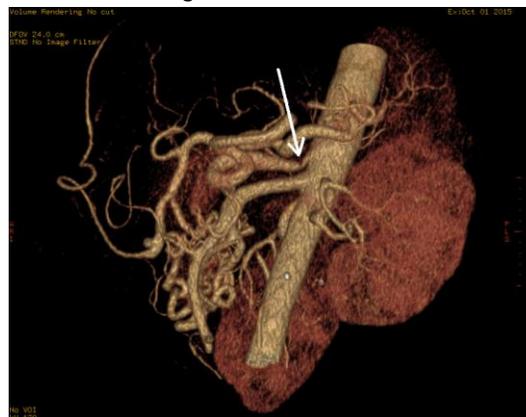
The goal of the treatment is to decompress and obtain celiac artery revascularization.

Treatment options are quite limited and the revascularization surgery has a risk of morbidity and mortality of 5% to 15%.

As treatment methods may be used: conventional laparotomy, laparoscopy or endovascular methods (percutaneous transluminal angioplasty, stent implantation).

Laparotomy, by retroperitoneal approach via left subcostal incision or by transabdominal approach via midline incision, allows surgical separation of the median arcuate ligament fibers to decompress the celiac artery. Decompression is completed by celiac ganglion resection and evaluation of celiac artery blood flow using a Doppler ultrasound intraoperatively. In case of low blood flow, celiac artery revascularization is performed.

Figure 4. 3DVR image highlighting the filiform stenosis at the origin of the celiac trunk



Revascularization methods include aorto-celiac bypass, angioplasty patch.

Literature studies show that classical laparotomy is no longer preferred, due to an increased risk of morbidity and mortality, especially in patients with associated pathologies.

Laparoscopy is used more frequently compared to laparotomy because it is less invasive presenting a lower risk of morbidity and mortality, with low cost due to short hospitalization.

Laparoscopic intervention also allows decompression of celiac artery, but if the celiac artery requires revascularization, surgical management should be changed and the classic approach should be used (laparotomy).

Percutaneous balloonangioplasty is an attractive method because it is a minimally invasive procedure, ideal for patients with associated comorbidities. This method delivers suboptimal results because most lesions develop in the ostium. Percutaneous balloonangioplasty in ostial lesions is associated with more severe residual stenosis due to intense elastic recoil caused by a large number of circular elastic fibers from the ostium. Because of this, the rate of complications (acute occlusion) and restenosis increases.

References:

1. Baccari P, Civilini E, Dordoni L, Melissano R: Celiac artery compression syndrome managed by laparoscopy. *Journal of vascular surgery*, vol. 50 pp.134-139 2009.
2. Muqetadnan M, Amer S, Rahman A, Nusrat S, Hassan S: Celiac artery compression syndrome. *Case reports in gastrointestinal Medicine*, vol.2013, article ID 934052, 3 pages, 2013.

Stent implantation offers a metallic support that prevents elastic recoil and thus decreases the complications of this type. The risks of this method included distal embolism with secondary ischemia, fat embolism, aortic dissection.

Percutaneous angioplasty and stent implantation, according to a 2009 study, are complementary methods to laparoscopy after decompression of celiac artery was performed.

DISCUSSION

The peculiarity of this case is that the patient did not present any symptoms. This may be due to the development of a rich collateral blood supply that compensates for celiac artery stenosis.

3. Radiopaedia.org (internet). UBM Medica network; c2005-2015 rID:1143 Accessed at http://radiopaedia.org/articles/coeliac_artery_compression_syndrome.
4. Schaan de Quadros A, Sarmiento-Leite R, Moraes C. Stent Implantation in Critical Stenosis of Celiac Trunk: Enlarging the Frontiers of Percutaneous Vascular Intervention. *Arquivos Brasileiros de Cardiologia*, vol 83, no.5 pp. 445-447, 2004.