

The laparoscopic approach in the median arcuate ligament syndrome

A case report

Emanuele Baldassarre^a, Giovanni Torino^b, Andrea Siani^b, Marco Barone^c, Gabriele Valenti^b

^a Department of Urology, Regional Hospital, Aosta, Italy

^b Department of Surgery, San Pietro Hospital – Fatebenefratelli, Rome, Italy

^c Department of Anesthesiology, Regional Hospital, Aosta, Italy

Summary

A malposition of the median arcuate ligament (MAL) is a rare entity causing the celiac axis compression syndrome (CACS), first described by Harjola in 1963. The presence of anomalous fibrous diaphragmatic bands of the diaphragm compresses the celiac axis, especially during the expiration. In this report we present the fourth case in literature that was ever successfully treated by laparoscopy. A 38-year-old male presented with a history of intermittent epigastric pain, 15 kg weight loss caused by inappetence and frequent diarrhoea, over a 5-year period. The clinical examination revealed only a loud systolic bruit in the epigastrium, with loss of intensity during deep inspiration. Suspecting CACS, a spiral CT angiography

was requested. The CT demonstrated the MAL crossing anteriorly to the celiac artery (CA) and the sagittal and the tridimensional reconstructions demonstrated the CA narrowing due to compression, while the superior mesenteric artery (SMA) was normal. The MAL was laparoscopically divided, releasing the celiac axis. The surgical time was 130 minutes, without significant blood losses. At 3-months follow-up, the CT-scan demonstrated no evidence of CACS with complete recovery.

Key words: median arcuate ligament; celiac axis compression syndrome; malposition

Introduction

The celiac axis compression syndrome (CACS) is an infrequent entity caused by a low insertion of the diaphragmatic crus or by the malposition of the median arcuate ligament (MAL) [1].

Its incidence is unknown and its diagnosis involves different methods: angiography, angio-CT scan, gastric exercise tonometry and laparoscopic ultrasound scanning [2, 3].

The pathophysiology of this syndrome is again unclear, however it seems related to the anomalous fibrous bands of the diaphragm that compress the celiac axis, especially during expiration [4].

Here we present an interesting case, laparoscopically treated with success.

Case report

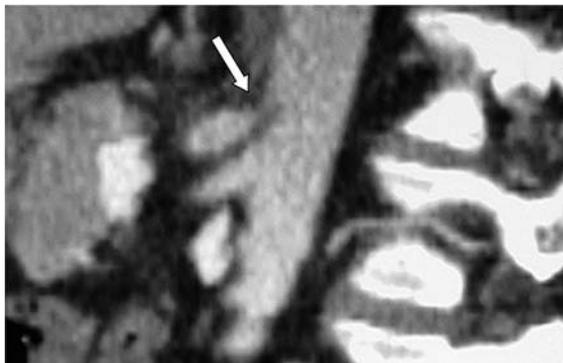
A 38-year-old male marathon runner presented with a history of intermittent epigastric pain increased during running, 15 kg weight loss caused by inappetence and frequent diarrhoea, over a 5-year period. His medical history was negative for significant diseases or operations. The repeated endoscopies, laboratory examinations, ultrasonography and bowel series were negative. The clinical examination revealed only a loud systolic bruit in the epigastrium, with loss of intensity during deep inspiration. Suspecting CACS, a spiral CT angiography was requested. The exam showed the MAL crossing anteriorly to the

celiac artery (CA) and the sagittal and the tridimensional reconstructions demonstrated the CA narrowing due to compression, while the superior mesenteric artery (SMA) was normal (figure 1-2)

The operation was performed under general anaesthesia in reverse Trendelenburg position. After establishing a pneumoperitoneum (set to 12 mm Hg carbon dioxide pressure) and positioning four trocars (three 5 mm and one 10 mm in epigastrium), we performed a wide adhesiolysis to expose the decussation of the crural fibres and the MAL. The MAL was divided with a 10 mm Harmonic

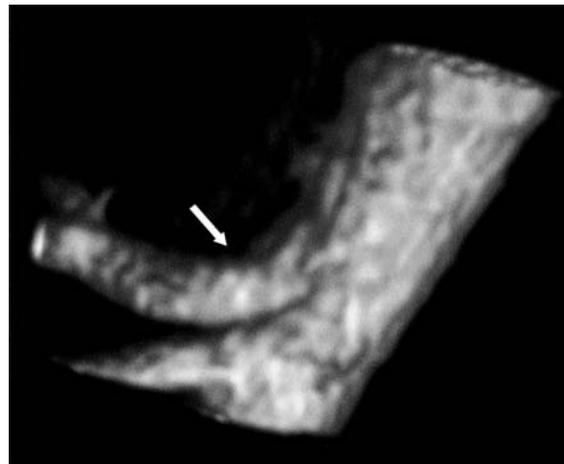
Figure 1

Spiral CT angiography.



Scalpel (Ethicon-Johnson & Johnson, New Brunswick, NJ), releasing the celiac axis.

The surgical time was 130 minutes, without significant blood losses. At 3-months follow-up, the CT-scan demonstrated no evidence of CACS with complete recovery. Actually he restored his normal activity as a runner.

**Figure 2**

Extrinsic compression of the celiac axis during expiration.

Discussion

A CACS due to MAL is a rare anomaly of the abdominal vessels first described by Harjola in 1963, with a case of untreatable chronic abdominal pain in a young woman [1]. In the following published series the patients were generally young and presented usually postprandial epigastric pain and weight loss. In these patients the MAL compressed the celiac axis during expiration, with partial relief with inspiration. The treatment consists in the surgical division of the MAL with the adequate assessment of the artery after decompression for adequacy of flow. Traditionally the open surgical treatment with careful monitoring of the patency of the celiac artery after its release is the best approach [5]. In 2000 Roayaie et al. first proposed the laparoscopic treatment such as a valid alternative. Dordoni et al. in 2002 and Carbonell et al. in 2005 presented two other cases successfully treated [4, 6–7]. To our knowledge this is the fourth case presented.

Our results confirm these preliminary results, in terms of duration of surgery, intraoperative safety and postoperative success. In particular in

this case we retained the laparoscopy which is ideal for young sportive patients in view of little postoperative pain and faster recovery.

Other advantages of the minimally invasive approach are the imaging magnification of the surgical theatre, decreased intraoperative blood losses, small risk of cardiopulmonary complications, fewer adhesions, cosmetic benefits and a shorter hospital stay.

In conclusion, waiting for additional cases or larger series, we promote this novel approach as a valid alternative to traditional surgery, especially in young sportive people.

Correspondence:

Emanuele Baldassarre, MD
 UB Urologia
 Ospedale Regionale della Valle d'Aosta
 Viale Ginevra, 3
 11100 Aosta
 Italy
 E-Mail: ebaldas@tiscali.it

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