Trauma Induced Median Arcuate Ligament Syndrome is an Under-Recognized Source of Chronic Abdominal Pain

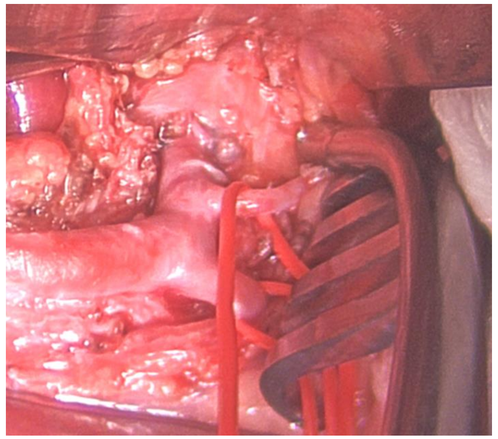
UNIVERSITY of MARYLAND SCHOOL OF MEDICINE

Department of Vascular Surgery

Khanjan Nagarsheth MD, Suzanna Fitzpatrick CRNP, Nora Dunlap CRNP

Background:

Median arcuate ligament syndrome (MALS) can be a debilitating condition resulting in epigastric pain, nausea, difficulty eating due to postprandial pain, weight loss, and malnutrition in otherwise healthy individuals. The pain is caused by the compression of the celiac artery and neural ganglia by the median arcuate ligament as it attaches from the spine to the diaphragm. Diagnostic imaging, either duplex or angiography, can show the abnormality however due to vague symptoms can lead to a missed diagnosis. While MALS is a known anatomical variation in the population, to our knowledge, has not been identified to be caused by trauma.



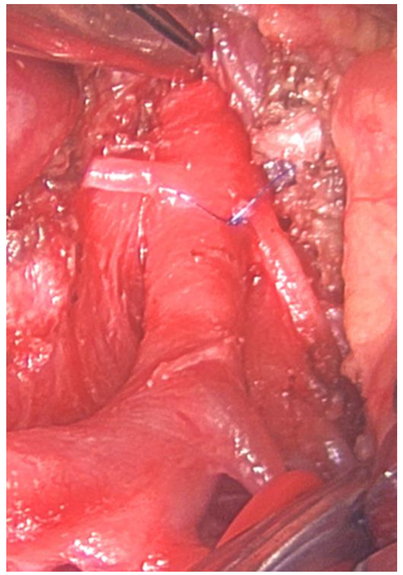
ABOVE: Median arcuate ligament (thin black arrow) and celiac artery (thick black arrow)

Demographics/Symptoms:

We present four patients who developed MALS following abdominal or spinal trauma who all required surgery to alleviate lifestyle limiting pain:

Age	Gender	BMI	Symptoms	Trauma	Duplex/CTA	Celiac Block
34	Female	15.5	Abdominal pain, pain with eating, 20-pound weight loss	Car Accident	60-99% celiac artery stenosis	Positive
33	Male	20	Wrenching epigastric pain with nausea and vomiting, worse after eating	Dirt Bike Accident	60-99% celiac artery stenosis	Positive
17	Female	16.6	Chronic epigastric pain, worse after oral intake, alleviated with positional changes	T10 fracture after fall	hooking of the celiac artery along with 90% compression	Positive
37	Female	18.8	Abdominal pain, worse with oral intake, weight loss	Iatrogenic abdominal injury	60-99% celiac artery stenosis	Positive

Each patient underwent surgical decompression to alleviate the celiac trunk compression by resecting the median arcuate ligament along with extensive neurolysis of surrounding ganglia. Post operatively there was complete resolution of postprandial pain, nausea and oral intake improved. Follow up imaging showed no celiac compression or variability with respirations.



ABOVE: Celiac artery after median arcuate ligament removed (thin black arrow)

Discussion:

Because of the variability of the patient presentations, non-specific abdominal symptoms, and diagnostic imaging criteria which was not intended to examine the external compression of vascular structures all makes the diagnosis of MALS more challenging. In the literature over 70% of patients who undergo surgical intervention report symptom relief once recovered from surgery making it important to not miss this possible diagnosis.

Conclusion:

Median arcuate ligament syndrome is a complex diagnosis requiring a high clinical suspicion index. If left undiagnosed or untreated MALS can result in severe disability and poor quality of life due to chronic pain and malnutrition. Each of these four patients had a significant trauma that led to the development of symptomatic MALS. While this is a small case series, if a patient develops chronic abdominal pain following either abdominal or spinal trauma, MALS should be considered in the differential diagnosis. To our knowledge, this is the first series to identify a correlation between abdominal and spinal trauma being an antecedent event to MALS.