



MEDIAN ARCuate LIGAMENT SYNDROME DIAGNOSED BY CECT ABDOMEN IN A MIDDLE-AGED MALE: A CASE REPORT

Dr. Rounak Sankhala

Junior Resident, Department Of Radiodiagnosis, Dr.VM GMC Solapur

Dr. Vivek A Choudhary

Professor, Department Of Radiodiagnosis, Ashwini Medical College, Solapur

ABSTRACT

Background: Median Arcuate Ligament Syndrome (MALS) is a rare vascular disorder characterized by external compression of the celiac artery by the median arcuate ligament of the diaphragm. It often presents with nonspecific gastrointestinal symptoms, making diagnosis challenging. **Case Presentation:** We report a case of a 38-year-old male presenting with chronic postprandial epigastric pain for three months. Contrast-enhanced computed tomography (CECT) of the abdomen revealed focal narrowing at the origin of the celiac artery with a characteristic "hooked" appearance on sagittal view, consistent with MALS. No other vascular or gastrointestinal abnormalities were detected. **Management And Outcome:** The patient was referred to vascular surgery for further evaluation and potential laparoscopic ligament release. **Conclusion:** MALS should be considered in patients with unexplained chronic abdominal pain. CECT plays a pivotal role in diagnosis, guiding timely surgical management and improving patient outcomes^{1,4,5}.

KEYWORDS :

INTRODUCTION

MALS is an uncommon condition wherein the median arcuate ligament, a fibrous band connecting the diaphragmatic crura, compresses the celiac artery, potentially resulting in foregut ischemia¹. Patients commonly present with postprandial epigastric pain, nausea, vomiting, bloating, and unintended weight loss^{2,4}. Due to its nonspecific symptomatology, MALS often mimics other gastrointestinal disorders and remains a diagnosis of exclusion³. The incidence is low and underreported¹.

CT angiography is crucial for diagnosis, showing focal stenosis and a typical "hooked" or J-shaped appearance of the celiac artery during expiration^{5,6}. Doppler ultrasound may indicate elevated velocities, but cross-sectional imaging provides definitive anatomical detail³. Treatment options include laparoscopic or robotic surgical release of the ligament, with favorable symptomatic relief in most patients^{4,13}.

Case Presentation

A 38-year-old male presented to the outpatient department with a chief complaint of intermittent upper abdominal pain persisting for the past three months. The pain was localized to the epigastric region, dull in nature, and worsened after meals, suggesting a postprandial pattern. The patient denied any associated symptoms such as nausea, vomiting, weight loss, bloating, early satiety, or altered bowel habits. There was no relevant past history of gastrointestinal disorders, trauma, or abdominal surgeries. He had no known comorbidities like diabetes, hypertension, or dyslipidemia, and no significant family history was noted.

On clinical examination, vital parameters were within normal limits. Abdominal examination revealed no tenderness, masses, or organomegaly, and no bruit was appreciated over the epigastric region. Routine laboratory investigations, including complete blood count, liver function tests, and pancreatic enzymes, were within normal limits.

To further investigate the cause of persistent pain, a contrast-enhanced computed tomography (CECT) scan of the abdomen was performed in the arterial phase. The sagittal reformatted images revealed focal narrowing at the origin of the celiac trunk from the abdominal aorta, showing a superior indentation with a "hooked" or J-shaped contour—findings characteristic of MALS^{5,6}. Axial images confirmed

circumferential compression without evidence of post-stenotic dilatation or collateral formation. The patient was referred for vascular surgical evaluation^{8,11}.

A Contrast-enhanced Ct Scan Of The Abdomen (Performed On July 21, 2025) In Arterial Phase Revealed The Following: Imaging Findings



- **Sagittal View:** There was focal narrowing at the celiac artery origin, forming a superior indentation with a characteristic "hooked" appearance—diagnostic of MALS^{5,6}. No post-stenotic dilatation was evident.
- **Axial View:** Circumferential narrowing of the celiac artery was noted with reduced luminal diameter. Adjacent viscera appeared normal, with no evidence of collaterals or ischemia.

The findings confirmed MALS. The patient was referred to a vascular surgeon for evaluation for surgical release^{8,11}.

DISCUSSION

MALS presents a diagnostic challenge due to overlapping symptoms with functional gastrointestinal disorders such as dyspepsia and peptic ulcers^{4,7}. It primarily affects young to middle-aged individuals, with a slight female predominance noted in some studies^{2,4}. Chronic intermittent compression explains the prolonged duration of symptoms. CT angiography remains the gold standard for diagnosis, demonstrating greater than 50% stenosis at the proximal celiac artery and a classic hooked configuration, best seen during expiration^{5,6}. This imaging modality helps rule out differentials like atherosclerotic disease or vasculitis⁷. While Doppler ultrasound can show elevated peak systolic velocities suggestive of MALS, it lacks specificity, and cross-sectional imaging is superior for structural assessment³. Symptomatic MALS is typically managed surgically. Laparoscopic median arcuate ligament release shows

excellent outcomes, with symptom relief rates exceeding 70% in several series^{4,13,14}. In refractory or anatomically complicated cases, vascular reconstruction or stenting may be considered, though long-term efficacy remains limited due to recurrence risks⁸.

Conservative approaches are only appropriate in mild or asymptomatic individuals⁴. Follow-up imaging is essential to monitor recurrence or development of complications such as aneurysms or restenosis^{9,10}.

CONCLUSION

MALS should be included in the differential diagnosis of patients with unexplained chronic postprandial abdominal pain. Prompt recognition and diagnosis using CECT, as demonstrated in this case, can facilitate early intervention, preventing prolonged morbidity and improving quality of life. Further studies are needed to develop standardized diagnostic criteria and refine treatment pathways^{4,5,13}.

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