

Revisional Robotic-Assisted Surgery for Median Arcuate Ligament Syndrome: Is There a Role?

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INTRODUCTION

Surgical treatment for Median Arcuate Ligament Syndrome (MALS) has been reported to have a failure-to-treat rate of 28%¹. Optimal indications for a repeat intervention and postoperative outcomes after revisional surgery have not been well documented. We evaluate the safety and efficacy of revisional surgery for MALS through a robotic-assisted approach by a single surgeon.

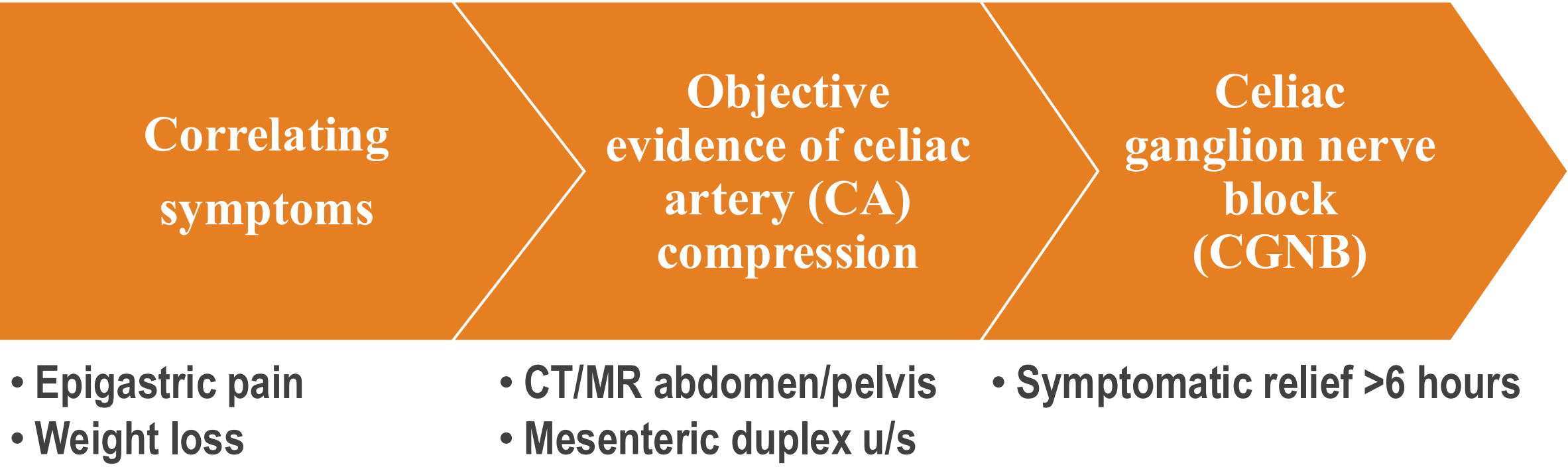
METHODS

STUDY DESIGN

- Retrospective chart review
- Patients who underwent revisional surgery for MALS
- Duration: November 2016 to July 2025
- $n = 10$

PATIENT SELECTION

- Patients were diagnosed with recurrent MALS based on:



- All patients underwent a complete gastrointestinal (GI) workup
- Consideration was also given to the primary surgeon
- Patients were offered revisional surgery after meeting diagnostic criteria

RESULTS

- 10 patients underwent robotic revisional median arcuate ligament release and celiac ganglion and nerve plexus resection.
- 2 patients underwent primary operation by this surgeon
- Average patient age: 32.6 years
- 70% female**
- Mean length of symptom duration: 14.7 months

Table 1. Baseline Characteristics

Clinical Symptoms	<i>N</i> = 10
Chronic abdominal pain	10 (100%)
Epigastric pain	9 (90%)
Lower abdomen	1 (10%)
Weight loss	9 (90%)
Required supplemental nutrition pre-op	5 (50%)
Supportive Studies	<i>N</i> = 10
CA stenosis on CT/MR	9 (90%)
PSV > 200 cm/s on mesenteric u/s	6 (60%)
Celiac ganglion nerve block	8 (80%)
Symptomatic relief	7 (70%)

Table 3. Key Perioperative Outcomes

Perioperative Outcomes	<i>N</i> = 10
Mean operative time, min	197.8
Median estimated blood loss, mL	10
Mean length of stay, days	3.1
Intraoperative complications	
Intraoperative injury	1 (10%)
Conversion to open	1 (10%)
Blood transfusion	1 (10%)

- 3 patients underwent concurrent hiatal hernia repair
- No mortalities, readmissions, or postoperative complications

Table 2. Associated Comorbidities

Comorbidities	<i>N</i> = 10
Compression Syndromes	
SMA Syndrome	1 (10%)
May-Thurner	1 (10%)
Nutcracker	1 (10%)
POTS	6 (60%)
Ehlers-Danlos	1 (10%)
MCAS	4 (40%)
Gastroparesis	2 (20%)
Anxiety or depression	7 (70%)
Chronic opioid use	4 (40%)

Table 4. Postoperative Outcomes

Abdominal Pain Improvement	<i>N</i> = 10
Complete relief	4 (40%)
60-80% improvement	4 (40%)
< 50% improvement	1 (1%)
No improvement	1 (1%)

- 1 patient with pre-op lower abdominal pain and a **negative celiac ganglion nerve block** only experienced 60% relief
- 1 patient experienced delayed symptomatic relief at 6 weeks & recurrent symptoms at 2 years
- 1 patient who experienced < 50% improvement was later found to have Superior Mesenteric Artery Syndrome

CONCLUSION

- Favorable outcomes can be achieved in carefully selected patients.**
- We have found that the following symptoms may be **predictors of surgical success** in the setting of a successful response to a CGNB:
 - Postprandial epigastric pain
 - Pain with all foods and liquids
 - Worsened pain with large volumes
 - Rapid and unexplained weight loss
- We have also found that patients in this population often present with an array of comorbidities, which can make diagnosis and treatment more challenging²⁻⁴.
- In this series:
 - 90%** achieved **long-term symptomatic relief** postoperatively
 - 40% achieved complete relief of chronic abdominal pain
 - Only 1 patient (10%) experienced recurrence
- All patients underwent celiac ganglion and nerve plexus resection**, indicating there may be an underappreciated **neurogenic** rather than vascular component to MALS.
- Based on this series, there is a 10% chance of major bleeding. Surgeons considering performing revisional MALS surgery should be well prepared for the possibility of significant vascular injury.

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