



Robotic-Assisted Median Arcuate Ligament Release (R-MALR): Perioperative Outcomes from a Single-Surgeon Consecutive Series

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BACKGROUND

- Median arcuate ligament syndrome (MALS) is a rare condition caused by compression of the celiac artery by the median arcuate ligament
- Classic presentation: post-prandial abdominal pain, weight loss, and poor oral intake
- Surgical approaches include open and laparoscopic techniques; robotic-assisted MALR (R-MALR) is increasingly utilized
- We report perioperative outcomes from a 10-year consecutive single-surgeon series of R-MALR (2015–2025)

METHODS

- Retrospective review of 37 consecutive patients undergoing R-MALR by a single surgeon at a tertiary care center (2015–2025)
- Mesenteric duplex ultrasound performed preoperatively and at 1 month postoperatively
- Data collected from electronic medical records
- Descriptive statistics used to summarize patient characteristics and outcomes

RESULTS AT A GLANCE

1.9d	5%	84%	–110
Avg Length Stay ±2.3 days	Readmission at 90 days 2 patients	Symptom Relief Complete or partial	PSV Reduction cm/s (±136)

Parameters	Result
Total (N)	37
Female, % (N)	84% (31)
Age (y), mean±SD	37±15
Presenting Symptoms	
Post-prandial abdominal pain, % (N)	100% (37)
Nausea, % (N)	84% (31)
Weight loss, % (N)	86% (32)
Perioperative Information	
Preoperative Celiac Plexus Block, % (N)	31% (11)
Operative time (min), mean±SD	85±46
Intraoperative Complication, % (N)	3% (1)
Postoperative Complication, % (N)	8% (3)
Length of Stay (d), mean±SD	1.9±2.3
Readmission at 90 days, % (N)	5% (2)
Symptom Relief	
Complete/Partial	84% (31)
None	13% (5)
Worse	3% (1)
Peak Systolic Velocity change (cm/s), mean±SD	–110±136
Follow-up (m), mean±SD	6.5±8.6

KEY FINDINGS

- ◆ 100% of patients had post-prandial pain preoperatively - confirming classic MALS presentation in all cases
- ◆ Intraoperative hemorrhage from aortic branch managed robotically — NO conversion to open surgery
- ◆ 84% achieved complete or partial symptom relief over 6.5-month follow-up
- ◆ Mean PSV reduction of 110 cm/s confirms hemodynamic improvement post-release
- ◆ Short LOS of 1.9 days supports outpatient recovery potential
- ◆ Only 5% (2 patients) required readmission within 90 days

CONCLUSION & FUTURE DIRECTIONS

- R-MALR is safe and efficacious for patients with MALS
- Low complication rate, short hospital stay, and high rate of symptom relief (84%)
- Robotic approach enabled management of intraoperative hemorrhage without open conversion
- Further studies are needed to assess long-term outcomes and compare R-MALR to open and laparoscopic approaches