UHealth Jackson Rehabilitation Care
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Fifteen Years of Neuropathic Pain: Thoracic Outlet Syndrome from Pseudarthrosis of the First and Second Ribs

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INTRODUCTION

Neurogenic thoracic outlet syndrome (nTOS) is the most common form of TOS and a diagnosis of exclusion, with positional upper-extremity pain and paresthesia that mimic cervical radiculopathy and entrapment.[1]

Recognized bony causes are usually a cervical or anomalous first rib; a pseudarthrosis involving the first and second ribs is exceptional.

We report such a case, with lower-trunk brachial plexus displacement, treated definitively by robotic-assisted thoracoscopic rib resection.

SYMPTOM PROFILE

Feature	Detail
Duration	**More than 15 years**
Symptoms	Right upper-extremity numbness, tingling, and paresthesia
Distribution	Right lateral neck, radiating into the hand
Triggers	Overhead activity and arm elevation
Associated	Positional dizziness; post-exertional fatigue
Frequency	Daily
Prior care	Refractory to physical therapy and analgesics; endocrine workup for hypoglycemia-like episodes negative

CASE AT A GLANCE

34 year-old man

>15 yrs of symptoms

Ribs 1–2 resected

POD 2 discharge

CLINICAL COURSE

1. **History.** More than 15 years of daily right upper-extremity paresthesia, refractory to physical therapy and analgesics.
2. **Examination.** Positive right Roos/EAST test; radial pulse preserved on Adson maneuver; no atrophy.
3. **Workup.** Right first–second rib fusion on radiographs; MRI showed pseudarthrosis compressing the lower trunk; CTA and electrodiagnostics negative.
4. **Surgery.** Robotic-assisted thoracoscopic resection of the right first and second ribs; discharge on postoperative day two.
5. **Follow-up.** Preoperative neurologic symptoms and positional dizziness resolved completely.

TREATMENT & OUTCOME

Item	Detail
Procedure	Robotic-assisted thoracoscopic resection of the right first and second ribs
Anticoagulation	Apixaban for recurrent deep vein thrombosis, bridged with enoxaparin perioperatively
Hospital stay	Discharge on postoperative day two
Neurologic symptoms	**Preoperative neurologic symptoms and positional dizziness resolved completely**
Postoperative pain	Self-limited neuropathic and incisional pain, controlled with opioid-sparing gabapentin and acetaminophen with a planned taper
Respiratory	Transient reduced inspiratory effort, improved with incentive spirometry
Vascular	No vascular intervention was required

DIAGNOSTIC WORKUP

Test	Finding
Roos / EAST test	Positive, right
Adson maneuver	Radial pulse preserved
Inspection	No atrophy
Radiographs	Fusion of the right first and second ribs; no cervical rib
CT angiography	Arterial pathology excluded
Brachial plexus MRI	**Pseudarthrosis of the first and second ribs with superior displacement and compression of the lower trunk**
Electrodiagnostics	Radiculopathy and entrapment excluded

DISCUSSION

Lower-trunk (C8–T1) involvement, a positive elevated arm stress test with a preserved pulse, and dedicated brachial plexus MRI localized a fixed neurogenic lesion and excluded vascular and costoclavicular causes.

First- and second-rib pseudarthrosis is a rare structural etiology;[2] unlike chronic neuropathic pain, definitive structural decompression removed the pain generator and permitted analgesic de-escalation. Robotic resection afforded full rib and neurovascular exposure with short stay,[3] supporting reconsideration of structural TOS in refractory upper-extremity neuropathic pain.

REFERENCES

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