

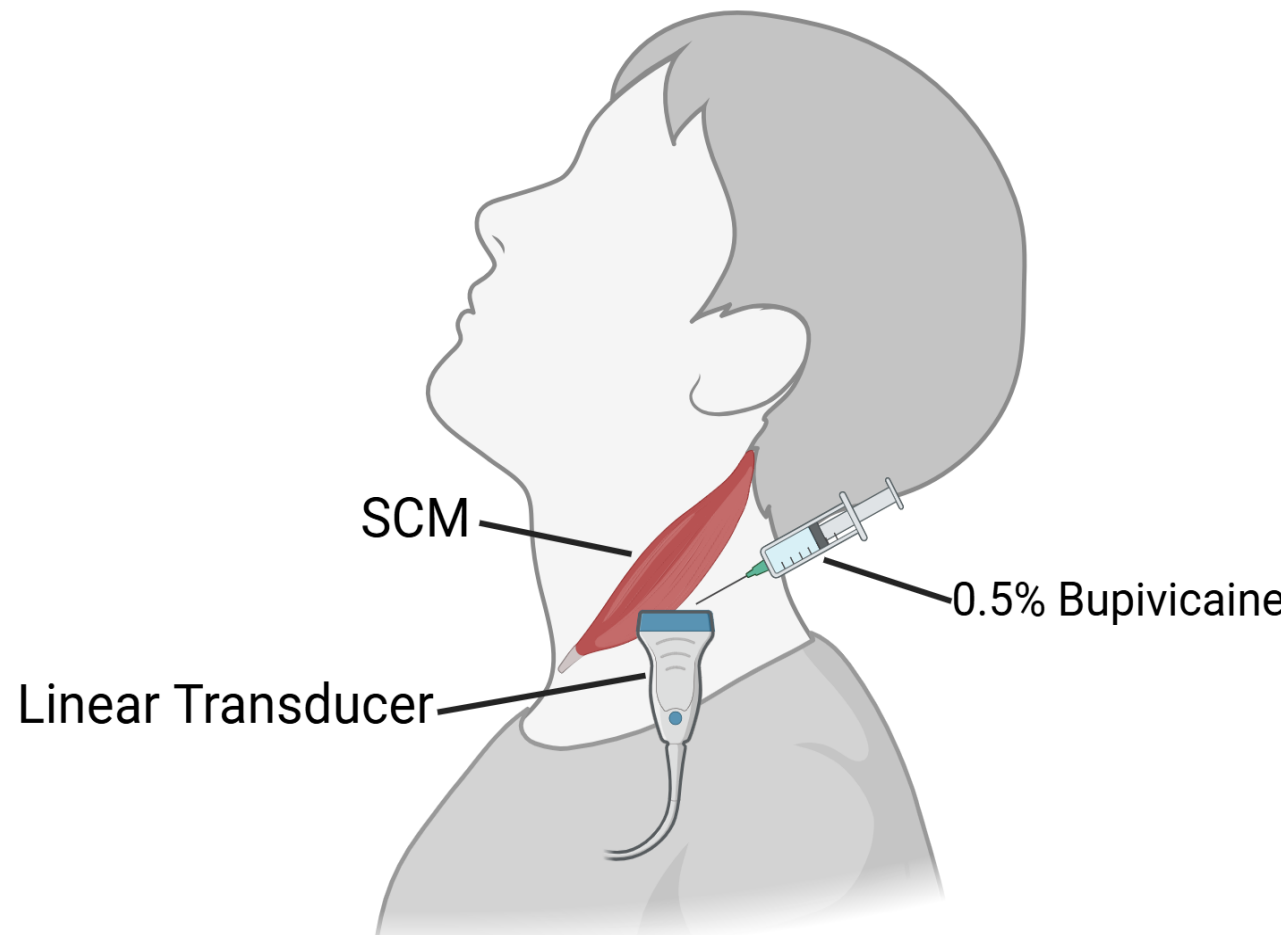
Role of Anterior Scalene Muscle Block in Predicting Outcomes in Rib-Sparing vs. First Rib Resection Techniques for Thoracic Outlet Syndrome

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Background

- Neurogenic Thoracic Outlet Syndrome** is a complex disorder caused by compression of the neural elements of the brachial plexus as they enter the upper extremity.
- Diagnostic tools
 - H/P
 - Imaging
 - MRI, MRN, US, CT
 - EMG
 - MABC
- Anterior Scalene Muscle Block (ASMB)**
 - Injection of the anterior scalene muscle with local anesthetic or botulinum toxin.

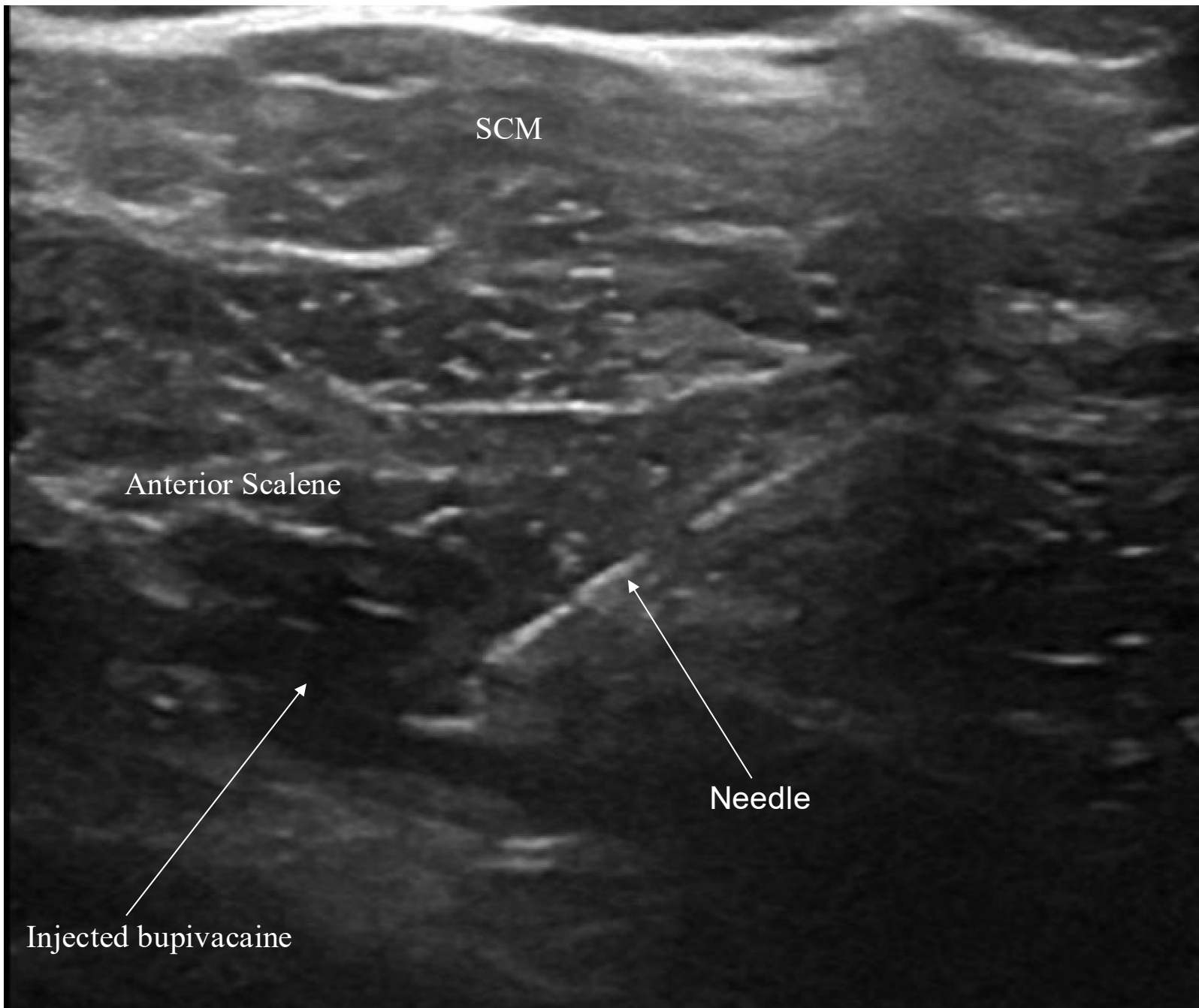


Anterior Scalene Muscle Block

An anterior scalene muscle block (ASMB) is an in-office procedure. It can be used both diagnostically (local anesthetic) and therapeutically (botulinum toxin). A therapeutic block can provide relief for a more prolonged time-period (a few weeks). A positive diagnostic block will provide patients with some symptom relief for at least a few hours. **Hypothesis:** Patients with a positive response to ASMB will have a good response to thoracic outlet decompression surgery.

Technique

A 22-gauge needle is used. The needle is inserted at the lateral border of the SCM at a 45-degree angle under ultrasound guidance. The internal jugular vein, clavicle, and SCM are useful landmarks to ensure accurate injection of 5 cc of 0.25% bupivacaine.



Complications

- Vascular injury
- Phrenic nerve neuropraxia/injury
- Pneumothorax
- Brachial plexus block

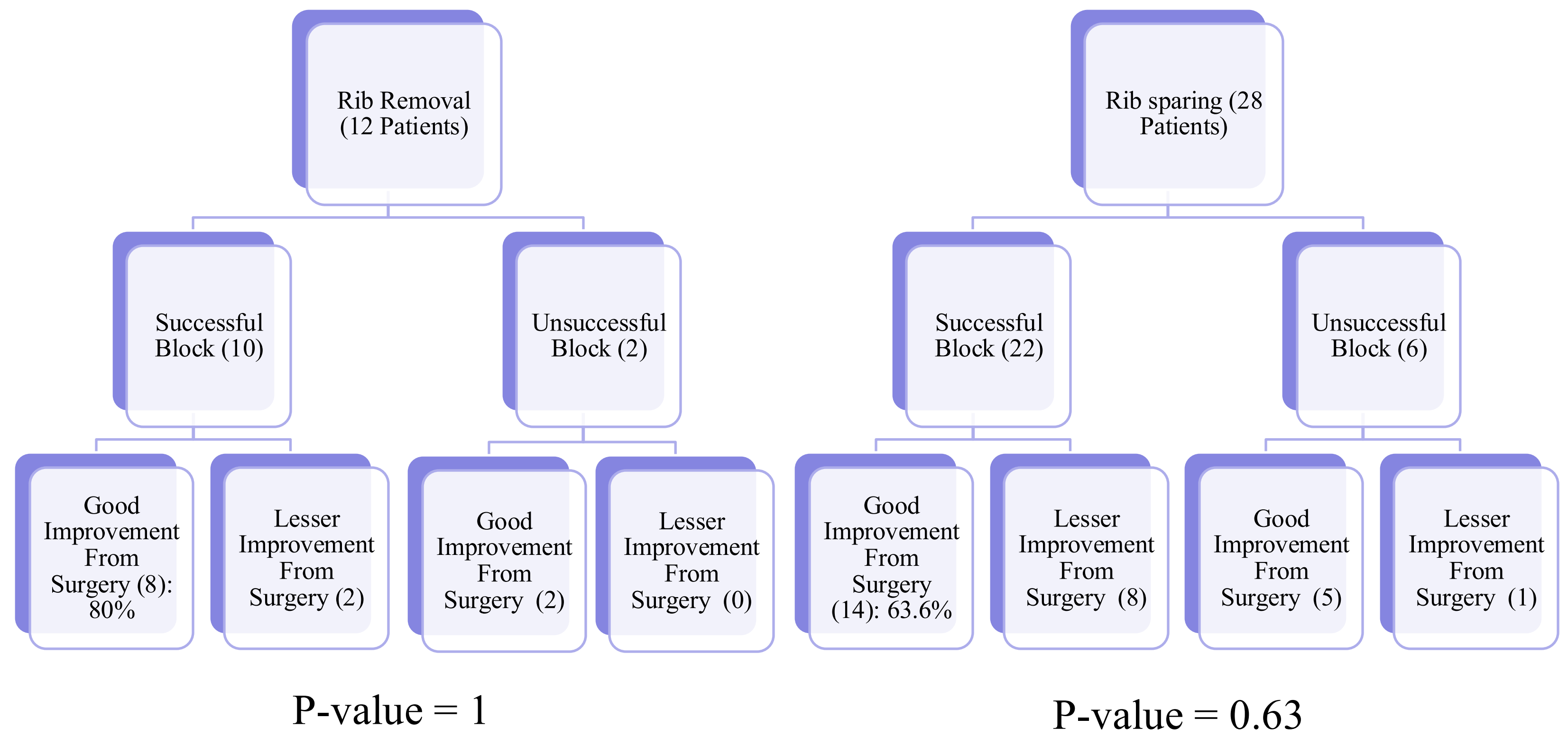
Outcomes

- 80% (32/40) of patients had a positive response to ASMB.
- Average age (SD): 41.4 years (13.1)

Table 1. Percentage of Positive Surgical Responses After ASMB

	Positive ASMB	Negative ASMB	Fisher p-value
Improvement in Pain After Surgery	46% (12/26)	100% (6/6)	0.0238*
Improvement in Sensory Deficits After Surgery	96% (25/26)	100% (6/6)	1
*denotes statistical significance			

Results Based on Surgical Technique



*Surgical Success was defined as at least partial resolution in either sensory disturbances, pain, or weakness in the affected extremity.

Limitations

This was a retrospective review of patient outcomes, so it was not possible to control for different patient and procedural variables. In addition, this was a single center study which limits its generalizability. Lastly, in addition to rib-sparing scalenectomy or first rib resection, patients had a variety of additional peripheral nerve decompression procedures performed (when indicated).

Future Directions

A future prospective study will be useful to elucidate the relationship between ASMB and response to surgical decompression. In addition, correlation of the various diagnostic modalities used for TOS will be useful in determining when each might be most useful.

Conclusions

There is currently no gold standard diagnostic tool for neurogenic thoracic outlet syndrome. Results from this study are mixed and greater patient numbers in a prospective study are needed.