

## Neurogenic Thoracic Outlet Syndrome: A Case Series

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### Introduction

Neurogenic thoracic outlet syndrome (NTOS) remains a controversial topic due to the variation in patient reported symptoms and discrepancy in surgical treatment. In the present study we sought to evaluate clinical outcomes for patients suffering from NTOS who underwent surgical intervention.

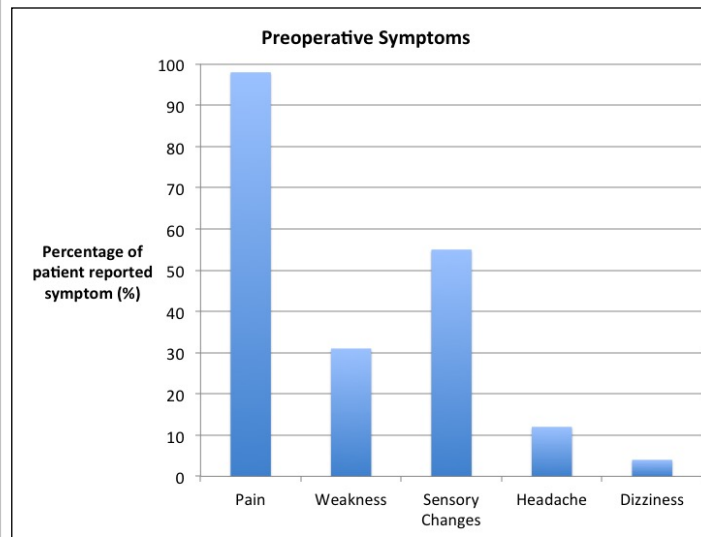
### Methods

A retrospective review of patients who underwent surgery for NTOS by Dr. Eric Zager at the University of Pennsylvania Health System between November 1999 and September 2015 was done. Patients with a postoperative diagnosis of NTOS were included in the study.

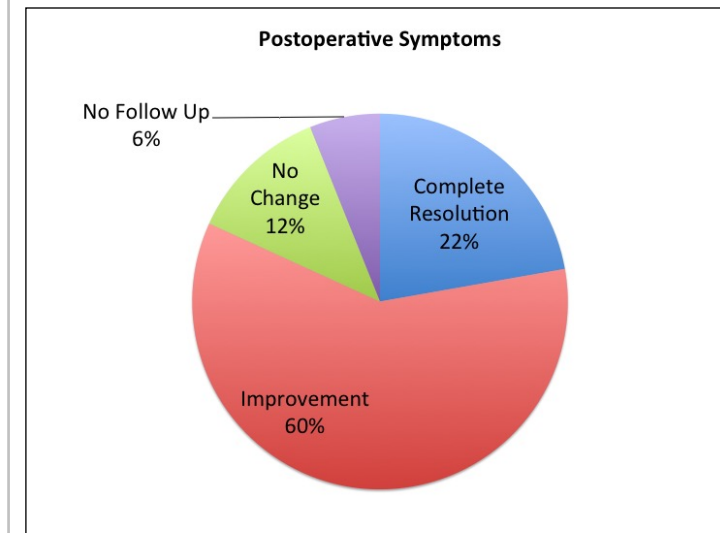
### Results

49 patients met inclusion criteria (mean age=37 years, female n=40, 82%). Anterior supraclavicular approach, with an anterior scalenectomy and neurolysis was performed in all cases. Resection of an elongated C7 transverse process and/or cervical rib was done in 6/49 (12%) cases.

During preoperative evaluation 48 (98%) patients complained of pain, 15 (31%) were found to have muscle weakness, 27 (55%) were found to have sensory changes, 6 (12%) patients complained of headache, and 2 (4%) complained of dizziness.



Average time to follow up was 11.4 months. Post-operatively 11 (22%) patients reported complete resolution of their presenting symptoms. 29 (59%) patients reported an improvement, while 6 (12%) reported no change in their presenting symptoms after surgery. No patients reported a worsening of symptoms post-op. 3 (6%) patients were lost to follow up after surgery. The most common complication from surgery was a unilateral phrenic nerve palsy occurring in 6 (12%) patients, the majority of which were clinically asymptomatic and/or self-resolving. One patient experienced a unilateral Horner's syndrome post-operatively.



### Conclusions

We found that 82% of patients reported either complete resolution or improvement of their presenting symptoms. This data demonstrates that surgery is a viable option for patients with NTOS who have failed conservative management. Future studies will work to reveal clinical predictors for patients who may fail from surgical intervention.