



## Original Article

# Cervical Rib Surgery: A Study of 20 Cases

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### Abstract

Cervical ribs give rise to vascular and neurogenic manifestation in the upper limb due to stretching and friction of neurovascular bundle in the base of the neck by numerous mechanisms that includes cervical ribs, anomalous ligament & hypertrophy of the scalenus anticus muscle. Controversy surrounds the diagnosis and management of thoracic outlet syndrome with or without cervical ribs.

This is a small study of 20 cases carried out from 1994 to 2003 at RMCH, and some private hospitals. Out of them, 15 patients (75%) were male and 5 patients (25%) were female. The age of the patients was between 15 to 48 years (mean age 33 years) Unilateral cervical ribs were present in 75% cases and the rest 25% had bilateral cervical ribs. Only 3 patients presented with gangrenous upper limb. One of the patient attended to orthopedic surgeon first and amputation was planned.

All the patient were treated through supra clavicular approach by excision of cervical ribs together with fibrous band. Only one patient did not respond to this initial surgery as symptoms persist and re-operation done by excision of first-rib and ultimately that patient become symptom free. In this study, authors explained their own experience of various way of presentation of cervical ribs, aetiology, different modalities of the treatment and their out come.

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### Introduction

Cervical ribs are rare condition occurring in less than 1% of the population. It gives rise to vascular or neurogenic manifestation in the upper limb. It causes stretching and friction of the lower trunk of the bronchial plexus and subclavian vessels produces a syndrome known as a thoracic outlet syndrome, which was first discovered by Gale and Vesalius in the second century. The first unsuccessful resection of Cervical rib in a patient with thoracic outlet syndrome was performed by

Coote in 1861.<sup>2</sup> In 1905 Murphy first made a successful resection of Cervical rib in the patient with thoracic outlet syndrome and he removed the first rib using supraclavicular approach for the first time.

In 1927, Adson Coffey emphasized the role of ligaments, soft tissues and scalenus muscle in producing thoracic outlet syndrome and made the first successful resection of the scalenus anticus muscle<sup>3</sup>.

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In 1966 David Ross introduces the trans-axillary resection of the first rib<sup>4</sup>. The aim of this paper to describe and share personal experiences of cervical rib surgery.

### Material and methods

This prospective study was done over 10 years from 1994 to 2003 at RMCH and some private hospitals. In this study, a total of 20 cervical ribs were included. Details history of the patients, through physical examination and relevant investigations were done.

### Results

20 Patients of thoracic outlet syndrome were brought under the scope of this present study.

Out of 20 Patients, 15 were male (75%) and 5 were female (25%). The age of the patients were 18 to 48 years (Mean age 33 years).

All the Patients presented with pain, paresthesia or numbness in the distribution of one or more trunk of the brachial plexus (Usually in the ulnar nerve distribution) and vascular insufficiency in the upper limb.

2 (two) patients, out of 20, were presented with gangrenous upper limb.

Only 25% cases were bilateral and remaining were unilateral.

One of the patients attended in orthopedic department where amputation was planned.

Plain X-ray neck both views were done in all cases and diagnosis was made by positive findings of cervical ribs (Fig-1).



Fig-1

All the Patients with thoracic outlet syndrome were treated by excision of the cervical ribs together with fibrous band by supraclavicular approaches. But only one case was treated by excision of 1st rib to relief symptoms.

This study showed that among the 20 cases, 19 patients were recovered well. Only one patient did not respond to initial surgery, re-exploration surgery was done whose first rib was excised and ultimately patients became symptoms free. In our study, there was no mortality.

### Discussion

In our study, it was shown that the mean age patients were 33<sup>1</sup>. Many of them first reported in different departments other than Neuro surgery, some of the patients came with the gangrenous limb as a late case, still recovered well after surgery<sup>5</sup>. We think that if all the patients would come at proper place at early stage then morbidity and mortality should be minimum and may recover by 100%.

### Conclusion

This limited study of thoracic outlet syndrome does not reflect the actual statistical Pattern of total problem of our country but it can be postulated from this study that thoracic outlet syndrome caused by cervical ribs & anomalous ligament is rare condition in our country.

Sound clinical judgment, early diagnosis, accurate patho physiological evaluation, firm decision and prompt action are potentially beneficial for the patients, his family and community as a whole.

It is advisable to undertake a selective surgical approach for thoracic outlet syndrome before development of complication and thus avoid high risk of gangrene.

Broad based prospective study with large population size should be done to find out the actual incidence of various presentations, etiology and modalities of treatment and their out come.

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