

Original article:

A study on complete absence of the suprascapular notch in indian dry scapulae and its clinical importance

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Abstract

Background: Suprascapular nerve arises from the superior trunk of brachial plexus at Erb's point. It passes through the suprascapular notch and spinoglenoid notch and gives motor branches to supraspinatus, infraspinatus and sensory branches to rotator cuff muscles and ligamentous structures of the shoulder and acromioclavicular joint. A reduction in the size of suprascapular notch or absent suprascapular foramen has been reported in patients of entrapment neuropathy. The aims and objectives of present study is to study on complete absence of the suprascapular notch in Indian dry scapulae and its clinical importance.

Materials and Methods: The present study was carried on 77 (34 right side and 43 left side) dry adult human scapulae of both sexes obtained from the osteology lab in the Department of Anatomy, Vijayanagar institute of medical sciences, Ballari, Karnataka, India. Superior border of scapulae were carefully observed. Scapulae with absent suprascapular notch were taken and studied. Scapulae with grossly deformed superior border were excluded from the study.

Results: In the present study out of 77 dry scapulae, 8 scapulae 10.38% (4 left sided-5.19% and 4 right sided- 5.19%) presented with absent suprascapular notch. **Conclusion:** An awareness of complete absence of suprascapular notch is important to the clinicians for correct diagnosis and treatment of suprascapular nerve entrapment syndrome.

Key words: Scapula, Suprascapular notch, absent, foramen, neuropathy

Introduction

The scapula (shoulder blade) is a large, flat, triangular bone lying on the posterolateral aspect of the chest wall, covering parts of the second to seventh ribs. The scapula forms the mobile base from which the free upper limb acts. Scapula presents superior border which is thinnest and shortest of three borders. At the junction of medial two third and lateral one third of superior border of scapula is marked by suprascapular notch. The notch is bridged by the superior transverse ligament which is attached laterally to the root of the coracoid process and

medially to the limit of the notch. The ligament is sometimes ossified. The foramen, thus completed, transmits the suprascapular nerve to the supraspinous fossa below the ligament, whereas the suprascapular vessels pass backwards above the ligament.¹ Suprascapular nerve arises from the superior trunk of brachial plexus at Erb's point. It gives motor branches to supraspinatus, infraspinatus and sensory branches to rotator cuff muscles and ligamentous structures of the shoulder and acromioclavicular joint.² Rengachary et al. classified suprascapular notch into six different types. In this classification

scapula with absence of notch is regarded as type I. Compression of suprascapular nerve against superior border of scapula can occur during overhead abduction of shoulder joint.³ A reduction in the size of suprascapular notch or absent suprascapular foramen has been reported in patients of entrapment neuropathy.⁴

The aims and objectives of present study is to study on complete absence of the suprascapular notch in Indian dry scapulae and its clinical importance.

Materials and methods

The present study was carried on 77 (34 right side and 43 left side) dry adult human scapulae of both

sexes obtained from the osteology lab in the Department of Anatomy, Vijayanagar institute of medical sciences, Ballari, Karnataka, India. Superior border of scapulae were carefully observed. Scapulae with absent suprascapular notch were taken and studied. Scapulae with grossly deformed superior border were excluded from the study.

Results and discussion

In the present study out of 77 dry scapulae, 8 scapulae 10.38% (4 left sided-5.19% and 4 right sided- 5.19%) presented with absent suprascapular notch. The incidence was equal on right and left side.



Fig 1



Fig 2



Fig 2

Fig: 1: Shows the absence of suprascapular notch (upper row 4 left sided scapulae and lower row four righted scapulae)

Fig: 2: 34 Right sided adult human dry scapulae. **Fig: 3:** 43 Left sided adult human dry scapulae.

Table 1: comparison of incidence of complete absence of suprascapular notch

Authors	Population	Incidence
Rengachary et al ³	American	8%
Natsis et al ⁵	Greek	8.3 %
Sinkeet et al ⁶	Kenyan	23.91%
Iqbal et al ⁷	Pakistan	18%
Polguy et al ⁸	Poland	6%
Ukti D ⁹	Indian(Gujarat)	16%
Md Jawed and Madhukar ¹⁰	Indian(Bihar)	15.46%
Rekha B S ¹¹	Indian (Karnataka)	Single case report
Present study	Indian (Karnataka)	10.38%

Complete absence of suprascapular notch has been described among Nigerians population¹². According to the hypothesis by Cumin et al. entrapment of suprascapular nerve is associated with V shaped suprascapular notch but there was no direct correlation between notch type and entrapment of suprascapular nerve clinically.¹³ The causes of suprascapular nerve entrapment neuropathy include

variations in the shape of the suprascapular notch, morphological variation of the suprascapular ligament (ossification, calcification, bifurcation, trifurcation and hypertrophy) and complete absence of suprascapular notch is also one of the predisposing factor.⁹ In case of absence of suprascapular notch compression of suprascapular nerve occurs on the superior border of scapula.³

Suprascapular nerve entrapment syndrome usually presents with diffuse and deep pain which is poorly localized on the posterolateral aspect of shoulder and aggravates on shoulder movements. On examination pain is elicited by palpation over the shoulder and wasting of supraspinatus and infraspinatus can be observed. X-ray, CT Scan, MRI, nerve conduction velocity (NCV), arthrography and electromyographic (EMG) studies are the investigations used for diagnosis of suprascapular nerve entrapment. The electrophysiological studies and MRI should always

be used when clinical findings are suggestive of suprascapular nerve entrapment.⁹

Conclusion

Knowledge of absence of suprascapular notch is important to the anatomists for academic purpose and to the orthopaedic surgeons in management of suprascapular nerve entrapment neuropathy or interventional procedure of the suprascapular notch and rotator cuff tears as well as injury to suprascapular nerve in arthroscopic shoulder procedures.

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