Original article

Study of variations in the shape of the suprascapular notch in Dried Human Scapula


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ABSTRACT

Aim:- The aim of the study was to determine the variation of the shape of suprascapular notch of scapula because the shape of the suprascapular notch may be a factor in nerve compression.

Method:- A total 80 dried human scapula were included in the study from Government Medical College Bhavnagar, they were grossly examined for variation of shape of suprascapular notch.

Result:- During examination three types of shape of suprascapular notch were found. 38(47.50%) scapulae had 'U' shaped, 28(35%) scapulae had 'J' shaped and 6(7.50%) scapulae had 'V' shaped. The absence of the notch was also noted in 5(6.25%) scapulae and notch is converted into a foramen by ossification of superior transverse scapular ligament were also found in 3(3.75%) scapulae. Conclusion:- This study may help to correlate suprascapular nerve entrapment with a specific type of shape of suprascapular notch.

1. Introduction

The Scapula is a flat triangular bone that lies on the posterior chest wall between the second and seventh rib. The suprascapular notch is depression on the lateral part of superior border of the scapula, running medial to coracoid process. This notch is converted into a foramen by the superior transverse scapular ligament (or bone in some cases) and serves as a passage for suprascapular nerve, which supplies motor branches to supraspinatus, infraspinatus and sensory branches to the rotator cuff muscles and ligamentous structures of the shoulder and acromio-clavicular joint.

The suprascapular notch is the main site of compression of suprascapular nerve, which may result in significant rotator cuff dysfunction [1]. This pathology was first described as suprascapular nerve entrapment syndrome by Kopell and Thompson. This disease is characterized by pain in the posterolateral region of the shoulder dull ache, atrophy of the infraspinatus and supraspinatus muscles and weakness of the arm's external rotation and abduction [2, 3]. Thus the shape of suprascapular notch is important for suprascapular nerve entrapment, especially for volley-ball players and base ball pitchers.

Previously suprascapular notches have been classified by many researchers based on complex geometric calculations, six different types of anatomical variations of the suprascapular notch, including complete absence have been reported Nigerian populations [4,5,6]. Complete ossification of the superior transverse scapular ligament is generally considered to be rare and has not been previously described in Nigerian [7]. In the diagnosis of Suprascapular nerve entrapment syndrome, variations in the anatomy of the superior transverse scapular ligament must be considered as possible etiologic factor. This study was conducted to see variations of suprascapular notch in dried human scapula on gross examination.

2. Materials And Methods

This study was conducted at Government Medical College Bhavnagar, a total of 80 dried human scapulae were grossly examined irrespective of age, gender, race and sidedness for the following observations -

a) Different shapes of suprascapular notch,

b) Absence of suprascapular notch and

c) Presence of suprascapular foramina instead of suprascapular notch.

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3. Result and Discussion:

In this study, three shapes of suprascapular Notches were observed – 'U', 'V' and 'J' shape.

Table 1 shows Numbers and Percentage of suprascapular notches of different shapes.

Absent suprascapular notch was noted in 5 (6.25%) scapulae. The suprascapular foramen instead of notch was noted in 3 (3.75%) scapulae. This may be due to complete ossification of superior transverse scapular ligament.

In the present study, 'U' shaped suprascapular notch is defined as notch having approximately parallel sides with a rounded base. Medial and lateral sides converging towards the narrow base is defined as 'V' shaped suprascapular notch. Results of this study shows 47.5% 'U' shaped, 35% 'J' shaped, 7.5% 'V' shaped suprascapular notch as compared to previous study, which shows 13.2% 'U' shaped, 22% 'J' shaped, 20% 'V' shaped suprascapular notch [8]. Another study showed 14% 'U' shaped and 68% 'V' shaped suprascapular notch [9]. No indentation was noted at the site of notch in our study, which was reported in past [8]. In the literature the incidence of complete ossification of superior transverse scapular ligament varied from 3.7 to 13.6% with relative of 7% [5], our study showed 3.75% suprascapular foramen, in this suprascapular notch is bridge by bone rather than ligament. Using this result / method the clinicians will be able to define easily and quickly the notch type on plain radiograph (AP view with angle of 15 to 30o caudally) and correlate suprascapular nerve entrapment with specific type.

Table 1: Percentage of scapula showing different shapes of Suprascapular notch

<table>
<thead>
<tr>
<th>Shape of suprascapular notch</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td>'U' shape</td>
<td>38 (47.50%)</td>
</tr>
<tr>
<td>'J' shape</td>
<td>28 (35%)</td>
</tr>
<tr>
<td>'V' shape</td>
<td>6 (7.50%)</td>
</tr>
</tbody>
</table>

Fig. 1: 'U' shaped suprascapular notch

Fig. 2: 'J' shaped suprascapular notch

Fig. 3: 'V' shaped suprascapular notch

Fig. 4: absent suprascapular notch
Fig. 5: suprascapular foramen

4. Conclusion:-

Knowledge of anatomical variations of suprascapular notch is better for understanding location and source of entrapment syndrome [8]. The absence of suprascapular notch [4] or reduction in the height of suprascapular foramen [9] may predispose to entrapment of suprascapular nerve.

5. References