ABSTRACT

Introduction: The suprascapular notch is present on the superior border of the scapula, just medial to the coracoid process. The suprascapular ligament bridges the edges of notch, which sometimes get ossified and convert suprascapular notch into foramen. A narrow notch or excess ossified ligament may have a greater chance of a nerve impingement in the suprascapular foramen.

Materials and methods: This study was conducted on the bones that were obtained from the bone bank of Department of Anatomy. A total of 118 (57 right, 61 left) human scapulae derived from adult (35 male and 17 female) skeletons were evaluated for the shape of suprascapular notch, presence of any ossification of the suprascapular ligament and classified according to Rengachary et al into I–VI types.

Results: On analysis of morphological variations of suprascapular notch, we found following types of scapulae: Type I -22.42 %, Type II -12.98 %, Type III -53.98 %, Type IV -0 %, Type V -7.08 %, Type VI -3.54 %. Out of all specimens, in three specimen suprascapular ligaments (3.54 %) were found to be completely ossified.

Conclusion: The knowledge of morphometric variations of suprascapular notch and ossification of suprascapular ligament is very important for clinicians. This knowledge is very important in sports medicine as well as for orthopaedic surgeons in management of cases of shoulder pain.

KEY WORDS: Suprascapular notch, Suprascapular nerve, Suprascapular ligament, Suprascapular foramen.

INTRODUCTION

The suprascapular nerve is the branch from the upper trunk of the brachial plexus at Erb point. It receives contributions from C5 and C6 nerve roots [1]. The nerve travels through the suprascapular notch to enter the supraspinatus fossa. The suprascapular nerve passes below the transverse scapular or suprascapular ligament whereas the suprascapular vein and artery travels above the ligament [2]. The suprascapular nerve supplies the supraspinatus and infraspinatus muscles, the coracohumeral and coracoacromial ligaments, subacromial bursa, and the acromioclavicular joint [3]. The variations of the morphology of the notch have been analysed in which different correlation has been found between notch type and
Observations and Results

In the present study out of 118 scapulae, 40 (10%) scapulae were found to have completely ossified superior transverse scapular ligaments. Representative photographs of various notch types in our study are shown in [Fig-1]. On analysis of morphological variations of suprascapular notch, we found: Type I -22.42 %, Type II -12.98 %, Type III -53.98 %, Type IV -0 %, Type V -7.08 %, Type VI -3.54 %. [Table 2]. Out of all specimens, in three specimen suprascapular ligaments (3.54 %) were found to be completely ossified [Figure 2]. These were identified in 1 female (left scapula) and 2 male (right scapulae) specimens. The diameters of the resultant foramina ranged from 1.7 to 4.5 mm (mean 2.6 mm). In our study no type VI the scapula was found.

Discussion

The most common relation at the suprascapular notch is that the artery travels superior to the suprascapular ligament while the nerve

Materials and Methods

This descriptive study was conducted on the bones that were obtained from the bone bank of Department of Anatomy, Maulana Azad Medical College, New Delhi, India. The bones showing morphological anomaly or broken ends or shaft were excluded from study. The scapulae were cleaned, dried and studied in proper daylight. A total of 118 (57 right, 61 left) human scapulae derived from adult (35 male and 17 female) skeletons were evaluated for the shape of suprascapular notch, presence of any ossification of the suprascapular ligament and classified according to Rengachary et al into I –VI types. When an ossified suprascapular ligament was identified, the diameter of the resultant foramen was measured with microcaliper. Statistical analysis was performed between sides and sexes using Statistical 16.0 for Windows with significance set at P < 0.05. For normalization of data, student’s t statistics were applied.
travels below it [7]. Common reasons for suprascapular nerve entrapment include ossification of suprascapular ligament direct trauma, fracture of the scapula, ganglion cysts, lipomas, tumours, occupational overuse, and stretch injuries. This is due to narrowing of anatomical space of the suprascapular notch [8].

Different authors has classified suprascapular notch on basis of morphological appearance as U and V. J on gross examination. Some authors has distinguished V notch on the basis of vertical and transverse diameter measurements [9-10].

Six different types of suprascapular notch anatomy were originally defined by Rengachary et al. The type I notch lacks a discrete notch. Type II is a wide V-shaped notch, whereas type III is a wide U-shaped notch. Type IV is a narrower V-shaped notch with partial ossification of suprascapular ligament and type V is a U-shaped notch with partial ossification of the suprascapular ligament. The type VI notch is defined as a completely ossified suprascapular ligament which converts suprascapular notch into foramen [12,13].

Compared to other painful conditions on the shoulder, suprascapular nerve entrapment is a rare syndrome causing severe shoulder pain and reduced mobility. It is easily cured by arthroscopic approach by addressing the suprascapular nerve entrapment at suprascapular notch [14-16].

Incidence of completely ossified suprascapular ligament in Indian population in different studies is shown in table 2.

Table 2: Incidence of completely ossified suprascapular ligament in Indian population in different studies.

<table>
<thead>
<tr>
<th>Sr no</th>
<th>Author</th>
<th>Population</th>
<th>Percentage of ossified suprascapular ligament</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kajava</td>
<td>Finnish (133)</td>
<td>1.50%</td>
</tr>
<tr>
<td>2</td>
<td>Sinkeet et al.</td>
<td>Kenyan (138)</td>
<td>4%</td>
</tr>
<tr>
<td>3</td>
<td>Wang HJ et al.</td>
<td>Chinese (295)</td>
<td>1.36%</td>
</tr>
<tr>
<td>4</td>
<td>DJ Gray</td>
<td>Brazilian (221)</td>
<td>30.76%</td>
</tr>
<tr>
<td>5</td>
<td>Rengachary et al.</td>
<td>American (211)</td>
<td>4%</td>
</tr>
<tr>
<td>6</td>
<td>Paolo Albino et al.</td>
<td>Italian (500)</td>
<td>3.60%</td>
</tr>
<tr>
<td>7</td>
<td>Usha Kannan et al.</td>
<td>Indian (400)</td>
<td>10%</td>
</tr>
<tr>
<td>8</td>
<td>Present study</td>
<td>Indian (118)</td>
<td>3.54%</td>
</tr>
</tbody>
</table>

CONCLUSION

The knowledge of morphometric variations of suprascapular notch and ossification of suprascapular ligament is very important for clinicians. This knowledge is very important in sports medicine as well as for orthopaedic surgeons in management of cases of shoulder pain. Radiologists can easily diagnosed such cases by using imaging modalities like MRI, CT and Ultrasound. Further histopathological studies on suprascapular nerve are needed to get more information on this matter.

Conflicts of Interests: None

REFERENCES


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