

Morphological Classification and Variations Insupra Scapular Notch of Human Scapula

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Abstract: Anatomical variations of the suprascapular notch were important as possible predisposing factors for compression of the suprascapular nerve in this region, especially for individuals who were involved in violent overhead activities. We utilized 200 (Left-100, Right -100) dried scapulae collected from the Departments of Anatomy, ESIC Medical College and Meenakshi Medical College, Chennai to study the morphological features of the supra scapular notch and bony prominence within the supra scapular notch. We observed 7 scapulas with bony prominence within the notch with an incidence of 3.5% out of 200 dried scapulae. We also observed some of the scapulae morphological features according to Rengachary supra scapular notch morphological classification. Our study gives basic knowledge to the neurovascular surgeons before planning a surgery in the supra scapular region.

Key words: Supra Scapular Notch • Morphology • Bony Bridge • Variation

INTRODUCTION

Supra scapular notch is the main site for supra scapular nerve entrapment which leads to Supra Scapular Nerve entrapment syndrome [1, 2]. Anatomy of the suprascapular region is important for shoulder surgery and especially for arthroscopic Supra scapular Nerve decompression [3, 4]. Many studies stated regarding the presence of a bony bridge that joins the two superior corners of the Supra Scapular Notch [5, 6]. This bony bridge is the outcome of the ossification of an accessory Superior Transverse Scapular Ligament band and reached to the conclusion that this variation could be a cause of unsatisfactory Supra scapular Nerve entrapment postoperative results [7]. This pathology was first described by Andre Thomas. Malesare approximately three to four times more likely to suffer from suprascapular nerve entrapment than females [8, 9].

MATERIALS AND METHODS

A total number of 200 (Left-100, Right -100) dried scapulae were utilized in the Departments of Anatomy, ESIC Medical College and Meenakshi Medical College, Chennai to study the morphological features of supra

scapular notch and presence of bony prominence within the Supra scapular notch, below the level of the Superior Transverse Scapular Ligament. We observed the morphology of the supra scapular notch of the dried scapulas as per the literature. Sex, age and history of the scapulas utilized for the present study were unknown.

RESULTS

To study morphological features of scapula in south Indian population we have collected 200 dried scapulas from the Departments of Anatomy, ESIC Medical College and Meenakshi Medical College, Chennai. We have observed bony prominence within the supra scapular notch in 7 scapulas out of 200 dried scapula bones. The bony bridge was thicker at its attachments and thinner at its middle points, resembling a ligament (Figure 2). In another scapula the bony bridge is thicker in its whole length. there are bony bridges thicker in their medial ends and thinner at their lateral ends in 5 dried scapulas, due to this type of attachment the supra scapular notch in these cases were almost diminished (Figure 1). The morphological classification of supra scapular notch mentioned in previous literatures was observed (Figure 4).



Fig. 1: Distribution of bony bridge in the supra scapular notch of the scapulas (Rengachary classification types)

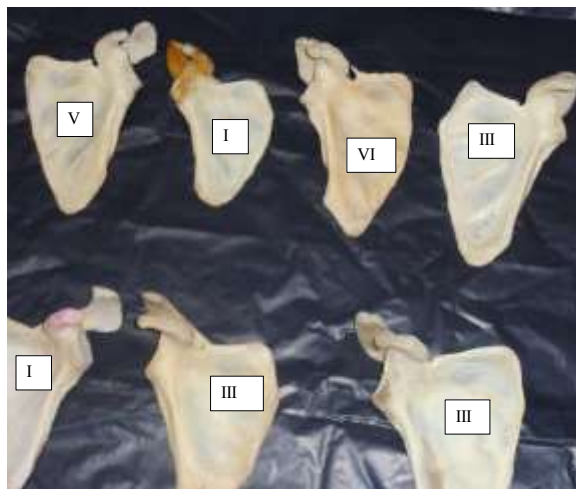


Fig. 4: Morphology of supra scapular notch of the scapulae (Rengachary classification types)



Fig. 2: Bony Bridge was thicker at its attachments and thinner at its middle points, resembling a ligament



Fig. 5: Accessory foramen beneath the supra scapular notch – anatomical variation



Fig. 3: Bony projection (Spike) over the supra scapular notch

In the present study we have found all the six types of morphological classification described by Rengachary [12]. The scapula spike like bony projection extending from superior border of the scapula to root of the coracoids process over the supra scapular notch (Figure 3). We observed one scapula with accessory foramen near the supra scapular notch (Figure 5). The incidence of bony prominence within the supra scapular notch was 3.5% out of 200 scapulas were observed in our study.

DISCUSSION

Many anatomical variants of the supra scapular notch have been reported in the literature, coexistence of the supra scapular notch and the supra scapular foramen.

Natsis *et al.* discovered this rare type of anatomical variants in three of 423 scapulae from the German general population (0.7 %) [10]. Sinkeet *et al.* found one such a case in 138 investigated Kenyan scapulae (0.72 %) [11]. Ticker *et al.* identified a trifold STSL with complete ossification of its middle band in one out of 79 cadaveric shoulders (1.3%) observed [7]. The bony prominence within supra scapular notch incidence in our study was 3.5% out of 200 dried scapulas. Rengachary's classification is still used today. He classified the SSN into 6 types. Type - I was without a discrete notch. Type - II was a wide, blunt V-shaped notch, with its maximum width along the superior border of the scapula. Type - III was a symmetrical U-shaped notch with nearly parallel lateral margins. Type- IV had a very small V-shaped notch. Type - V had a U-shaped notch and partial ossification of the medial part of the STSL and type VI had a bony foramen with a completely ossified Superior Transverse Scapular Ligament [12]. In our study we observed type -VI classification in 7 dried scapula bones. The incidence of completely ossified Superior Transverse Scapular Ligament is 3.5%. This incidence is higher compared to previously stated literatures. Literatures stated that the Supra Scapular Nerve may pass either above or beneath an accessory band of the Superior Transverse Scapular Ligament, or alternatively may give branches in advance. In this case one branch is located above and the other beneath this band [5, 7]. This may also occur in a Supra Scapular Nerve having a bony bridge below the level of the Superior Transverse Scapular Ligament [10]. In individuals having this variation, if the Supra Scapular Nerve or one of its branches lies superior to the bony bridge, there is a high risk of nerve injury against the superior band of the Superior Transverse Scapular Ligament [13, 14].

CONCLUSION

The morphological features of the supra scapular notch of scapula and bony prominence within the supra scapular notch are clinically important in neurovascular injuries. Our anatomical study helps the clinicians before planning a surgery.

ACKNOWLEDGEMENT

Authors acknowledge the great help received from Krupakar during this work. The authors are also grateful to authors, editors and publishers of all those articles, journals and books from where the literature for this article has been reviewed and discussed.

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