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MORPHOLOGY OF SUPRA-SCAPULAR NOTCH AND ITS CLINICAL IMPORTANCE

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Abstract

Objectives: The suprascapular notch is placed at the upper border of the scapula. The anatomical variant of the notch is taken into consideration as one of the reasons of suprascapular nerve entrapment. In the existing study, we attempted to assess the morphology of the suprascapular notch of Indian human dry scapulae that is important to recognize and deal with specific reasons of suprascapular nerve entrapment, which might be beneficial to keep away from induced nerve lesion at some stage in open arthroscopic surgical procedures and assist in designing implants for the shoulder joint.

Methods: This is an observational study, with a complete of one hundred fifty human dry scapulae being observed, tested and studied in detail. The kind of suprascapular notch become cited as according to the outline given with the aid of using Rengachary et al.

Results: In the present study, on the basis of anatomical variations five types of suprascapular notches had been observed: type I, (9.21%); type II (21.%); type III (31.57%); type IV (17.10%); and type V (21%). type III notch become greater prevalent.

Conclusion: The knowledge of suprascapular notch could be very useful withinside the prognosis and control of instances with shoulder ache because of suprascapular nerve entrapment and additionally whilst administering suprascapular nerve blocks for surgical procedures related to the shoulder region.

Keywords: Scapula, suprascapular notch, suprascapular nerve entrapment.

INTRODUCTION The suprascapular notch is positioned at the upper border of the scapula on the anterolateral to the root of coracoid process (1). The suprascapular notch is converted into the foramen by the presence of a transverse ligament , also called as suprascapular ligament .The suprascapular nerve passes successively via the suprascapular notch underneath the supra-scapular ligament after which via the spinoglenoid notch. In 1959, Kopell and Thompson (2) pronounced that compression of the Suprascapular nerve brought on suprascapular nerve entrapment. The supra-scapular ligament once in a while receives ossified and converts right into a bony foramen, via which the Suprascapular nerve travels. The smaller the scale of the notch, the extra the probabilities of nerve entrapment and damage. The morphometry of Suprascapular notch is critical due to the

fact it's miles a important landmark of Suprascapular nerve all through numerous surgical interventions; most of the time it's the primary site of Suprascapular nerve entrapment.
In present research, notches are categorized primarily based totally at the description of Rengachary et al (3), for the reason that it's far a simple, reproducible and goal technique. A wide variety of versions arise within side the form of Suprascapular notch from a discrete notch to "J" form, "V" form, and "U" form. Classification of Suprascapular nerve has been performed via way of means of numerous authors in extraordinary populations form of the notch. Ticker et al (4) and Bayramolu et al (5) changed the type of Rengachary and include two types ,U-shaped suprascapular notch and V-shaped suprascapular notches, and the notch with ossification of the STSL. Natsis et al (6) and Michael Polguj et al (7) accepted a technique of classifying Suprascapular notch morphology via way of means of the usage of unique geometrical parameters.
The principal goal of present study is to assess the different types of Suprascapular notch . This could be very useful in prognosis and control of SN entrapment, that's of surgical significance in keeping off induced Suprascapular nerve accidents even as administering Suprascapular nerve blocks for surgical interventions related to the shoulder region.

MATERIAL AND METHODS

150 dried human scapulae were collected from department of Anatomy, BRD Medical College, Gorakhpur UP, after acquiring the permission of institutional Ethical Committee. The different types of suprascapular notch was noted and also recorded according to description given by Rengachary's technique (Figure 1).

RESULTS

In present study, hundred and fifty dry scapula on the premise of anatomical dissimilarity of supra-scapular notch is classed into 5 groups:-

A. Type I- V Shaped notch
B. Type II-U formed (deep) notch
C. Type III- U formed (shallow) notch
D. Type IV- J formed notch
E. Type V -Complete absence notch

Figure 1 -Types of suprascapular notch based on Rengachary classification:

(I)V Formed notch (II)U formed (deep) notch (III)- U formed (shallow) notch


(IV)- J shaped notch (V)-Complete absence notch

In the existing observe, a complete of a hundred and fifty scapulae had been analyzed, Among the numerous varieties of suprascapular notch, type III became the maximum prevalent (31.57%), type I (9.21%) type II (21.%), ,and type IV (17.10%) and type V (21%) (Table1). Based on morphological appearances, U deep shaped (31.57%), notches had been normally observed ,U shallow shaped (21.%) and J formed (17.10%) notch, respectively.

Table 1 **Anatomical variations of supra-scapular notch**

TYPES	**SHAPES**	**PRESENT STUDY**
Type - I	V shaped	9.21%
Type - II	U deep shaped	31.57%
Type - III	U shallow shaped	21%
Type - IV	J shaped	17.10%
Type - V	Complete absence	21%

DISCUSSION

Suprascapular nerve entrapment is an obtained neuropathy secondary to nerve compression withinside the bony suprascapular notch greater than spinoglenoid notch (8). The suprascapular nerve can be additionally injured for the duration of numerous surgical processes which includes blind drilling for the duration of arthroscopic Bankart surgery, labrum restore withinside the rotatory cuff tear of shoulder joint and decompression of suprascapular entrapment because of proximity of the nerve to the operative field (9).

In the present works, we categorized suprascapular notches in accordance with Rengachary system. We observed that type III Suprascapular notch became the most prevalent (32%), which became according with the research of Rengachary et al (3), Sinkeet et al (10), Natsis et al (11), and Muralidhar et al (12), observed through type I (25.5%), type II (22.5%), class VI (10%), type IV (5.5%) and type V (4.5%).

The most intensity of type III and type II notches is extra than the opposite forms of notches, even as that of type I notch is the least. Thus, we ought to finish that type III notch had a extra transverse diameter and intensity, even as type I had the least intensity and diameters, making the notch very narrow and hence, predisposing to Suprascapular nerve injuries.

The length and form of Suprascapular notch performs an critical component in predisposition of Suprascapular nerve entrapment, assuming that the narrow notch affords greater possibilities of nerve entrapment than the broader notch. A V-formed notch might be much more likely related to nerve entrapment (8).

According to Sinkeet et al (10), Suprascapular nerve entrapment neuropathy is related to Suprascapular notch morphology and found out 3 morphological variations (U, V and J). In the

current study, we observed that, amongst all notches, 31.57% have been Deep U formed, 21% Shallow U formed , 17.10% J formed, and 9.21% V formed, which became according with the research of Ticker et al (4) and Sinkeet et al (10) (Table 2).

Table 2 Comparison of different shapes of Supra-Scapular Notch studied by different authors

Authors	**Year**	**Shapes of supra-scapular notch**				
		U deep	**U shallow**	**V**	**J**	**Absence notch**
Rangachary *et* al	1979	48%	31%	3%	-	
Nastis *et* al	2007	40%	24%	13%	-	
Sinkeet *et* al	2010	29%	21%	5%	-	22.2%
Iqbal *et* al	2010-2011	13.2%	-	20%	22%	
Soni *et* al	2012	58%	-	7%	27%	2%
Vasuda *et* al	2013	34.78%	6.08%	-	19.13%	6.08%
Nagraj *et* al	2014	26.92%		1.92%	43.26%	23%
Present study	2015	31.57%	21%	9.21%	17.10%	21%

CONCLUSION

The current study provide importance of morpholometric knowledge of suprascapular notch which is essential for clinicians making proper diagnosis by specialist in general surgery as surgical interventions using either open- or endoscopic techniques, It is a helpful approach in designing implants for shoulder joint by orthopedics and in sports medicine.

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