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MORPHOLOGICAL STUDY OF SUPRASCAPULAR NOTCH OF SCAPULA IN NORTH INDIAN POPULATION

Anatomy

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ABSTRACT

Introduction: Scapula is flat triangular bone lies on the posterolateral aspect of chest wall. Suprascapular notch (SSN) is present on superior border of scapula. Morphometric variation of notch has been identified. Compression of suprascapular nerve most commonly observed at SSN and it is affected by shape of the SSN.

Material and Methods: The study was conducted on 76 scapulae in the Department of Anatomy, Rajendra Institute of Medical Sciences, Ranchi. The scapulae were observed carefully for different shapes of suprascapular notch and the presence of partial or complete bony bridge within suprascapular notch

Observation: In present study symmetrical U shape (47.36%) is most common followed by no notch in 26.31% scapulae, J shaped notch in (17.10%) cases and V shaped notch in (9.21%) cases.

Conclusion: The knowledge of variations in shape of suprascapular notch and ossification of superior transverse scapular ligament (STSL) is very important for neurosurgeon, radiologist and orthopaedician to understand the cause of suprascapular nerve entrapment syndrome.

KEYWORDS

Suprascapular notch, Suprascapular foramen, Suprascapular nerve entrapment syndrome

INTRODUCTION

The scapula is a large, flat, triangular bone which lies on the posterolateral aspect of the chest wall, covering parts of the second to seventh ribs. It has costal and dorsal surfaces, superior, lateral and medial borders, inferior, superior and lateral angles, and three processes, the spine, its continuation the acromion and the coracoid process.

The superior border, thin and sharp, is the shortest. At its anterolateral end it is separated from the root of the coracoid process by the 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, whereas the suprascapular vessels pass backwards above the ligament [1].The Suprascapular nerve, branch from upper trunk of brachial plexus passes through the Suprascapular notch of scapula to enter the supraspinous fossa and supply Suprascapular muscle also supply glenoacromial and acromioclavicular joint .It then wrap around the spinoglenoid notch of scapular spine under the spinoglenoid ligament to enter the infraspinatous fossa,where it supply infraspinatous muscle[2]. The calcification of superior transverse scapular ligament (STSL) may compress the Suprascapular nerve as it passes through the scapular notch under the superior transverse scapular ligament [3]. Kopell and Thompson[4] reported that compression of suprascapular nerve cause Suprascapular nerve entrapment syndrome.

Various authors have identified that morphological variation of suprascapular notch and ossification of STSL is cause of suprascapular nerve entrapment syndrome[5,6,7,8]. So knowledge of morphology of suprascapular notch is important to clinician because narrow SSN increased the risk of suprascapular entrapment neuropathy.

Objective:

To identify the different shape of suprascapular notch and to find completely ossified superior transverse scapular ligament.

MATERIAL & METHODs

The study was conducted in Department of Anatomy, Rajendra Institute of Medical Sciences, Ranchi. We have studied 76 human dried scapulae .The sample was randomly selected. The age and sex of scapulae were not known. The scapulae were observed carefully for different shapes of suprascapular notch and the presence of partial or complete bony bridge within suprascapular notch.

Observation

In the present study different shapes of SSN were documented in Table 1.In our study among different types symmetrical U(47.36%) is most common followed by no notch in 26.31% scapulae, J shaped notch(17.10%) and V shaped notch in(9.21%)cases . No scapulae were found with ossification of superior transverse scapular ligament.

Table 1: Shows the incidence of different shapes of suprascapular notch

Shape of the notch	Right		Left		Total	
	No.	%	No.	%	No.	%
U Shape	20	26.31	16	21.05	36	47.36
V Shape	4	5.26	3	3.74	7	9.21
J shape	7	9.21	6	7.89	13	17.10
No notch	8	10.52	12	15.78	20	26.31
Ossification of STSL	--	--	--	--	--	---

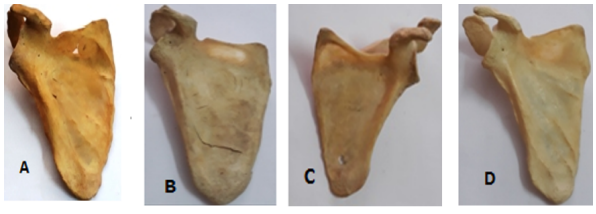

Figure 1. Scapulae showing different shape of SSN.
A) U shape
B) J shape
c) without notch
D) V shape notch.

DISCUSSION

There were wide ranges of variations were noted in the shape of suprascapular notch by various authors. The result of our study compared with those of previous studies is shown in Table 2.

Table 2: Different shape of suprascapular notch observed by different authors

Sl. No.	Author	Shape of Suprascapular notch (%)					Partial foramen (%)	Complete foramen (%)
		U	V	J	illdefined	No notch		
1.	Present study	47.36	9.21	17.10	--	26.31	--	--
2.	Philip SE et al[9] (2017)	38	44	--	--	9	6	3
3.	Usha Kannan etal[10](2014)	52	14	--	--	20	4%	10%

4.	Dushyant et al[11](2014)	45	23.54	--	12.28	1.36	--	--
5.	Muralidhar et al [12](2013)	59.61	8.65	--	--	21.15	5.76	1.92
6.	Soni et al[13] (2012)	58	7	27	--	2	11	3
7.	Iqbal et al[14](2010)	13.2	20	22	26.8	18	--	--
8.	Rengachary et al[15] (1979)	48	31	--	--	21.5	5.76	1.92

The most common notch observed in the present study was U shaped (47.36%) which was in accordance with the studies of Usha Kannan et al[10] ,Dushyant et al [11] and Rengachary et al[15]. Philip SE[9] in their study reported V shape was the most common type of SSN.The incidence of absence of suprascapular notch in the present study was 26.31% which were similar to study done by Usha Kannan et al [10], Muralidhar et al[12] and Rangachary et al[15].In our study there were no ossification of STSL so neither partial nor complete foramen were observed which were accordance to finding of Dushyant et al[11] and Iqbal et al[14] on the contrary Usha Kannan et al[10]in their study found partial foramen were present in 4% cases and complete foramen in 10 % cases .

Rengachary et al[15] in his study of 211 cadaveric adult scapulae had classified 6 basic type of suprascapular notch
Type 1: absence of notch
Type 2: V shaped notch
Type 3: U shaped notch
Type 4: small V shape notch
Type 5: U shape notch with partial ossification of STSL
Type 6: complete ossification of STSL

In the present study type 1, 2, 3 shape SSN had been found. Type 4, 5, 6 were not present in our study instead J shaped were observed in 17.10% scapulae.

Joe De Beer[16] in his study observed that the shape of the notch and calcified STSL has been shown to be associated with increased risk of suprascapular nerve entrapment resulting in weakness and wasting of supraspinatous & infraspintous muscle. Dunkelgrun et al[17] in their study observed that U shapes notches had a larger area than V shaped notches, leading to the assumption that V shaped notch is more likely to be connected with nerve entrapment .

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