

Study of Anatomical Variations in the Shape of Suprascapular Notch of Scapula

¹. Dr. Shobha Kumari, ². Dr. Arun Prasad Singh ³. Dr. Umesh Bharti

¹. Assistant Professor, Department of Anatomy, Patna Medical College, Patna, BIHAR.

². Head of the Department, Department of Anatomy, Patna Medical College, Patna, BIHAR.

³. Senior Resident, Department of Paediatrics, Nalanda Medical College Hospital, Patna, BIHAR

Corresponding Author- Dr. Shobha Kumari

Abstract: The Suprascapular notch is usually located medial to the root of the coracoid process of the Scapula. This study is a simple method to classify the shape of the suprascapular notch on the basis of gross examination. In this study, we found some conditions in which notch is converted into foramina which is vulnerable to suprascapular nerve entrapment syndrome. So we have attempted to classify the different shapes of suprascapular notch and mentioned its clinical importance.

Keywords: Suprascapular notch, Suprascapular foramen, suprascapular nerve entrapment syndrome.

Date of Submission: 08-06-2019

Date of acceptance: 25-06-2019

I. Introduction

Scapula is large triangular flat bone forming shoulder girdle and known as shoulder blade. It acts as fulcrum and responsible for all movements occurring at shoulder joint. It lies on the posterolateral aspect of thorax and extends from second to seventh rib. It has three borders; superior border is smallest of the three. The Suprascapular notch is situated at the lateral end of superior border of the Scapula, just medial to base of the coracoid process. This notch is bridged by the superior transverse scapular ligament and is converted into a foramen. The Suprascapular nerve, a branch of upper trunk of brachial plexus, passes through the suprascapular foramen and supplies supraspinatus, descends through spinoglenoid notch along with the suprascapular vessels and enters the Infraspinous fossa and then it supplies Infraspinatus muscle and also gives a branch to shoulder joint. In some conditions superior transverse scapular ligament gets ossified and converts the notch into complete foramen. Suprascapular nerve entrapment is common in this condition. This suprascapular nerve entrapment syndrome was first described by Kopell and Thompson. This disease is characterized by pain in posterolateral aspects of shoulder (dull ache), atrophy of supraspinatus and Infraspinatus muscle and weakness of arm's external rotation and abduction. These conditions are seen in some athletes. Hence, the study of variations in the shape of suprascapular notch becomes important.

Objective: To study the variations in shape of suprascapular notch on gross examination.

II. Material and Methods

To study variations in shape and size of suprascapular notch 58 scapulae were collected from NMCH Patna, PMCH Patna and AIIMS Patna. Then study was conducted in the department of Anatomy, Patna Medical College, Patna. Damaged and broken scapulae were excluded. The Scapulae were examined for different shapes of notches, absence of notch and presence of foramina in place of notch, numbers were noted and tabulated.

III. Result

In this study total 58 scapulae were analysed. We found 24 scapulae with U shaped suprascapular notch, 3 with V shaped, 10 with J shaped, 11 with absent suprascapular notch. In 6 scapulae only indentation was present in place of notch. In 4 scapulae transverse suprascapular ligament was ossified and notch was converted into foramen which appears like tunnel. This condition may be vulnerable to suprascapular nerve entrapment syndrome.

Table 1. Showing the different varieties of suprascapular notch, their number and percentage. N= 58

Shape of notch	Number of scapulae	Percentage (%)
U shape	24	41.3
V shape	3	5.1
J shape	10	17.2
Indentation	6	10.3

Absent	11	18.9
Ossified suprascapular ligament	4	6.8



a. J-shaped



b. U-shaped (shallow)



c. U-shaped (deep)



d. V-shaped



e. Indentation



f. Absent



g. Ossified Transverse Suprascapular Ligament.

IV. Discussion

Shape of the suprascapular notch was described and classified by various authors in the past. They are U, V, J-shaped notch, absent notch, indentation and foramen. The results of the present study was compared with those of previous studies and tabulated as below.

Table 2 showing comparison of percentage of distribution of suprascapular notch of present study to that of previous studies

Shape	Previous studies (%)						Present study
	Iqbal et al 2010	Sinkeet et al 2010	Polguy et al 2011	Soni et al 2012	Vasudha et al 2013	S.Nagaraj et al 2014	
J shape	22	-	-	27	19.13	43.26	17.2
Symmetrical	-	29	2.3	-	34.7	-	-
U shape	13.2	21(shallow)	24.4(deep)	58	6.08(shallow) 6.08(deep)	26.92	41.3
V shape	20	5.18	-	7	-	1.92	5.1
Indentation	33.5	-	-	3	7.82	2.88	10.3
Absent	22.5	2.12	-	2	6.08	23	18.9
Ossified SSL	-	-	-	14	6	2.88	6.8
Wide notch	-	-	57.7	-	6.95	-	-
Hockey stick	-	22	-	-	5.21	-	-

V. Conclusion

The study of variations of suprascapular notch and presence of suprascapular foramen by ossification of suprascapular ligament is important to understand the suprascapular nerve entrapment syndrome. This study is useful for Anatomists, arthopedicians, radiologists and neurosurgeons for better diagnosis and management of the entrapment syndrome and also for nerve decompression by surgeons by endoscopic techniques.

References

- [1]. R.M.H Mc Minn, Last's Anatomy., 9th ed. UK edition: Churchill Livingstone, 2009. P.68.
- [2]. Kopell HP, Thompson WAL (1959) Pain and the frozen shoulder. Surg Gynecol Obstet 109:92-96.
- [3]. Cummins CA, Messer TM, Nuber GW (2000) Suprascapular Nerve Entrapment. J Bone Joint Surg 82:415-424.
- [4]. Bayramoglu A, Demiryurek D, Tuccar E, Erbil M, Aldur MM, Tetik O, Doral MN (2003) variations in Anatomy at the suprascapular notch possibly causing suprascapular nerve entrapment: An Anatomical study. Knee Surg Sport Trauma Arthrosc 11:393-398.
- [5]. Rengachary SS, Burr D, Lucas S, Hassanein KM, Mohn MP, Matzke H (1979) Suprascapular entrapment neuropathy: a clinical, anatomical, and comparative study. Part 2: anatomical study. Neurosurg
- [6]. Natsis K, Totlis T, Tsikaras P, Appell HJ, Skandalakis K (2007) Proposal for classification of the suprascapular notch: a study on 423 dried scapulas. Clin Anat, 20: 135–139.
- [7]. Rengachary SS, Neff JP, Singer PA, Brackett CF (1979) Suprascapular entrapment neuropathy: a clinical, anatomical, and comparative study. Part 1: clinical study. Neurosurgery, 5: 441–446.
- [8]. Alon M, Weiss S, Fishel B, Dekel S (1988) Bilateral suprascapular nerve entrapment syndrome due to an anomalous transverse scapular ligament. Clin Orthop Relat Res, 234: 31–33.
- [9]. Cohen SB, Dines DM, Moorman CT III (1997) Familial calcification of the superior transverse scapular ligament causing neuropathy. Clin Orthop Relat Res, 334: 131–135.
- [10]. Ticker JB, Djurasovic M, Strauch RJ, April EW, Pollock RG, Flatow EL, Bigliani LU (1998) The incidence of ganglion cysts and other variation in anatomy along the course of the suprascapular nerve. J Shoulder Elbow Surg, 7:472-478
- [11]. Dr Girish V. Patil, Dr Shshirkumar, Dr Apoorva D, Dr Thejeswari, Mr Sushanth N.K. - Study of Morphological Variations of Suprascapular Notch in Human Dry Scapulae of South Indians. - published at: "International Journal of Scientific and Research Publications (IJSRP), Volume 4, Issue 9, September 2014 Edition".72–478ry, 5: 447–451

Dr.Shobha Kumari. "Study of Anatomical Variations in the Shape of Suprascapular Notch of Scapula." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 6, 2019, pp 38-40.