International Journal of Medicine Research
ISSN: 2455-7404
www.medicinesjournal.com
Volume 3; Issue 2; April 2018; Page No. 35-36

Anatomical variations in the shape of suprascapular notch and its clinical importance

Dr. Shruti Tomar[1], Dr. Anjali Prasad[2*], Dr. Manish Patil[3]

[1] Assistant Professor, Department of Anatomy, Index Medical College, Indore, Madhya Pradesh, India
[2] Associate Professor, Department of Anatomy, Index Medical College, Indore, Madhya Pradesh, India
[3] Professor and Head, Department Anatomy, RD Gardi Medical College Ujjain, Madhya Pradesh, India

Abstract
The scapula (shoulder blade) is a triangular flat bone that lies on the posterolateral aspect of the thorax, overlying the 2nd-7th ribs. Suprascapular notch (SSN) is present towards the medial end of superior border of scapula. The present study is a simple method to classify the shapes of the suprascapular notch on the basis of gross examination. Methods: 100 dried scapulae were examined for variations of suprascapular notch. Results: Three types of suprascapular notches are described. 12 had u shaped 19 had v shaped and 22 had J shaped. Absence of notch was also noted. Conclusion: This study will help to correlate suprascapular nerve entrapment with a specific type of suprascapular notch.

Keywords: anatomical variations, scapula, suprascapular notch

Introduction

The scapula (shoulder blade) is a triangular flat bone that lies on the posterolateral aspect of the thorax, overlying the 2nd-7th ribs. The scapula has medial, lateral, and superior borders and superior, lateral, and inferior angles. The superior border is the thinnest and shortest of the three borders, it is marked near the junction of its medial two thirds and lateral third by the suprascapular notch, which is located where the superior border joins the base of the coracoid process [1]. Suprascapular notch (SSN) is present towards the medial end of superior border of scapula. The morphometric variations of the SSN have been identified. The SSN is the most important point along the course of the suprascapular nerve (SN) because this region is the main site of injury and compression of the SN [2-3]. This was first described by Andre Thomas in 1936 [4]. Suprascapular nerve entrapment is characterised by chronic, poorly localised pain in the posterior or/and lateral region of the shoulder, which may radiate down the arm or up into the neck, weakness of abduction and increased external rotation of the arm, with atrophy of the supra- and infraspinatus muscles [2, 3, 5-8]. Males are approximately three to four times more likely to suffer from suprascapular nerve entrapment than females [2, 5-8].

The shape and size of the suprascapular notch is the most important factor in the aetiopathology of supracapular nerve entrapment [9-10]. This notch is converted into a foramen by the superior transverse scapular ligament and serves as a passage for the suprascapular nerve [11]. Six different types of anatomical variations of the suprascapular notch have been reported in Nigerian population [12]. Complete absence of the suprascapular notch has also been seen in this population [13]. Italian scapulae had foramina in 6.1% but no suprascapular foramina were found in 87 Indian scapulae [10]. Therefore, knowledge of the morphology of the suprascapular region, especially SSN shape and STSL variations, is particularly important in various techniques associated with arthroscopic SN decompression [14-16]. In our opinion this study is the most comprehensive description of suprascapular notch morphology. The objective to this study was to see variations in shape of suprascapular notch on gross examination.

Method and Material

100 dried human scapulae were collected from different medical colleges in Indore and study was conducted at Index medical college. The scapulae were examined for different shapes of notches. Absence of notch was also noted.

Results

22 had J shaped foramina (Figure 1a) and lateral blade was horizontal and 12 had U shaped notch (Figure 1c). 19 had **V** shaped notch. Absence of notch was noted in 15 out of 100 scapulae (Figure 1b). There was indentation at site of suprascapular notch in 32 scapulae (Figure 1d). The percentages of different shapes are shown in (Table 1).

Discussion

In past suprascapuar notches has been classified by researchers. In this study two types' u and v are in accordance with this classification. This system classifies the suprascapular notch into two distinct types, namely the U-shaped suprascapular notch, defined as having approximately parallel sides with a rounded base, and a V-shaped suprascapular notch, defined as having medial and lateral sides which converge toward a narrow base[14]. Absence of notch in 15 out of 100 scapulae was alarming. Suprascapular nerve entrapment is more likely to be associated with a narrow V-shaped notch, no direct correlation between notch type and suprascapular nerve entrapment has been shown clinically. A reduction in the height of the suprascapular foramen may predispose to entrapment of the suprascapular nerve substantially narrows the suprascapular foramen, it should be considered as a possible etiologic factor in suprascapular

nerve entrapment. The suprascapular notch is frequently bridged by bone rather than a ligament, converting it into foramen in some animals but incidence is much less in humans. It was found in some studies that almost six variations of notches are present[10]. In this study three shapes of notches are present. Using this method, the clinician will be able to define easily and quickly the notch type on a plain radiograph, and perhaps is able to correlate suprascapular nerve entrapment with a specific type.

Table 1: Shapes of suprascapular notch.

Shapes	Percentages (%)
U	12
V	19
J	22

Fig 1: Scapulae showing different shape of notches. a) J shape; b) without notch; c) U shape and d) indentation at site of notch

Conclusion

This simple method classifies scapular notches into three types. In conclusion, knowing the anatomical variations in detail is better for understanding of location and source of the entrapment syndrome.

References

1. Moore KL, Dalley AF, Agur AM. The scapula. In: Moore KL, Dalley AF, Agur AM, eds. Clinical Oriented Anatomy. 6th ed. Philadelphia: Lippincott Williams & Wilkins, 2010, 88-92.
2. Zehetgruber H, Noske H, Lang T, Wurnig C. Suprascapular nerve entrapment. A meta-analysis. Int Orthop. 2002; 26(6):339-343. doi: 10.1007/s00264-002-0392-y. [PMC free article] [PubMed] [Cross Ref]
3. Gosk J, Urban M, Rutkowski R. Entrapment of the suprascapular nerve: anatomy, etiology, diagnosis, treatment. Ortop Traumatol Rehabil [PubMed]. 2007; 9:68-74
4. Pecina M. Who really first described and explained the suprascapular nerve entrapment syndrome. J Bone Joint Surg Am PubMed. 2001; 83(8):1273-1274.
5. Boykin RE, Friedman DJ, Zimmer ZR, Oaklander AL, Higgins LD, Warner JJ. Suprascapular neuropathy in a shoulder referral practice. J Shoulder Elbow Surg. 2011; 20(6):983-988. doi: 10.1016/j.jse.2010.10.039.[PubMed] [Cross Ref]
6. Vastamaki M, Goransson H. Suprascapular nerve entrapment. Clin Orth Rel Res PubMed. 1993; 297:135-143
7. Inokuchi W, Ogawa K, Horiuchi Y. Magnetic resonance imaging of suprascapular nerve palsy. J Shoulder Elbow Surg. 1998; 7(3):223-227. doi:10.1016/S1058-2746(98)90049-0. [PubMed] [Cross Ref]
8. Antoniadis G, Richter HP, Rath S, Braun V, Moese G. Suprascapular nerve entrapment: experience with 28 cases. J Neurosurg. 1996; 85(6):1020-1025. doi: 10.3171/jns.1996.85.6.1020. [PubMed] [Cross Ref]
9. Dunkelgrun M, Iesaka K, Park SS, Kummer FJ, Zuckkerman JD. Interobserver reliability and intraobserver reproducibility in suprascapular notch typing. Bull Hosp Joint Dis. 2003; 61:118-122. [PubMed]
10. Natsis K, Totlis T, Tsikaras P, Appell HJ, Skandalakis P, Koebke J. Proposal for classification of the suprascapular notch: a study on 423 dried scapulas. Clin Anat. 2007; 20:135-139. doi:10.1002/ca.20318.[PubMed] [Cross Ref]
11. Williams PL, Bannister LH, Bery MM, Collins P, Dyson M, Dussek JE. MWJ Gray s Anatomy. 38th ed. London: Churchill-Livingstone, 2004.
12. Bayramolu A, Demiryürek D, Tüccar E, Erbil M, Aldur MM, Tetik O, Doral MN. Variations in anatomy at the suprascapular notch possibly causing suprascapular nerve entrapment: An anatomical study. Knee Surg Sports Traumatol Arthroscopy. 2003; 11:393-8.
13. Ofusori DA, Udera Okwuonu CU, Adesanya OA. Complete absence of the suprascapular notch in a Nigerian scapula: A possible cause of suprascapular nerve entrapment. International Journal of Shoulder Surgery. 2008; 85-6.
14. Barwood SA, Burkhart SS, Lo IK. Arthroscopic suprascapular nerve release at the suprascapular notch in a cadaveric model: an anatomic approach. Arthroscopy. 2007; 23:221-225. doi:10.1016/j.arthro.2006.11.011.[PubMed] [Cross Ref]
15. Bhatia DN, de Beer JF, van Rooyen KS, du Toit DF. Arthroscopic suprascapular nerve decompression at the suprascapular notch. Arthroscopy. 2006; 22:1009-1013. doi:10.1016/j.arthro.2006.05.012. [PubMed][Cross Ref]
16. Lafosse L, Tomasi A, Corbett S, Baier G, Willems K, Gobezie R. Arthroscopic release of suprascapular nerve entrapment at the suprascapular notch: technique and preliminary results. Arthroscopy. 2007; 23:34-42. doi:10.1016/j.arthro.2006.10.003. [PubMed] [Cross Ref]