



A MORPHOLOGICAL STUDY OF SUPRASCAPULAR NOTCH IN HUMAN DRY SCAPULAE IN POPULATION OF RAJASTHAN

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ABSTRACT

The suprascapular notch is a notch in the superior border of the scapula, just medial to the base of the coracoid process. This notch is changed into a foramen by the superior transverse scapular ligament, and delivers for the passage of the suprascapular nerve. The shape of the suprascapular notch is one of the important predisposing factor for the suprascapular nerve entrapment. So, the knowledge about different shapes of suprascapular notch is important for clinicians in understanding the source of the entrapment syndrome. The present study was done by observing 112 human dried scapulae. The aim of this study is to document the incidence of morphological variations in shape of suprascapular notch in dry scapulae in the population of Rajasthan.

Methods: A total of 112 dry scapulae of both sides are analyzed to see the variation in the shape of suprascapular notch on superior border of scapula.

Results: In this study we mentioned five kinds of shapes of suprascapular notches. In the present study of 112 dried scapulae, we found that 42 (37.5%) scapulae with U shaped suprascapular notch, 21 (18.75%) J shaped suprascapular notch, 33 (29.4%) V shaped suprascapular notch, there were 7 (6%) scapulae with indentation at the place of suprascapular notch while 3 (2.6%) scapulae showed absence of notch. We found 6 (5.3%) scapulae with ossification of superior transverse scapular ligament thus converting suprascapular notch into foramen.

Conclusion: The knowledge about the different shapes of suprascapular notch and its involvement in suprascapular nerve entrapment neuropathy helps the clinicians in early diagnosis and planning about the most suitable surgical intervention.

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

INTRODUCTION

Scapula also known as the shoulder blade is the fulcrum and basis of all the motions of the Humerus. It is a triangular bone present on posterolateral aspect of thoracic wall, against the second to seventh ribs. The superior margin of the scapula is thin and sharp. It is interrupted by the scapular notch, which lies near the base of the coracoid process. This is bridged by the superior transverse scapular ligament, thus converting it into a foramen, serves as the passage for the suprascapular nerve; branch from superior trunk of brachial plexus but not its corresponding Artery. It gives motor branches to the supraspinatus & infraspinatus muscles & sensory branches to rotator cuff muscles, ligamentous structures around the shoulder & acromioclavicular joints while the suprascapular vessels goes above this ligament. Sometimes the ligament is ossified [1]. The different variations in the shape of suprascapular notch along with partial and complete ossification of suprascapular notch leads to nerve compression during movements of shoulder joint. The most common site of compression of suprascapular nerve are at the suprascapular notch or at the spinoglenoid notch in nerve entrapment syndrome. This syndrome is characterized by vague pain on the posterolateral aspect of the shoulder joint and atrophy of supraspinatus & infraspinatus muscles. Kopell and Thompson previously describe this syndrome

in 1959^[2]. It is characterized by atrophy of the infra- and supraspinatus muscles and weakness of the arm's external rotation and abduction^[3]. This condition is more commonly seen in some athletes like volleyball players and baseball pitchers^[4]. Hence, the study of variations in the shape of suprascapular notch becomes important.

According to Rengachary et al. 1979, there are total six different types of scapular notch^[5]

- Type I (8%): Notch is absent. The superior border makes a wide depression from the medial angle to the coracoid process.
- Type II (31%): Notch is blunted V-shape.
- Type III (48%): Notch is U-shaped with nearly parallel margins.
- Type IV (3%): Notch is V shaped and very small. A shallow notch is formed for the suprascapular nerve near to the notch.
- Type V (6%): Notch is minimal and U-shaped with a partially ossified ligament.
- Type VI (4%): Notch is a foramen as the ligament is completely ossified.

AIMS AND OBJECTIVES

The aim of this study is to document the incidence of morphological variations in shape of suprascapular notch in dry scapulae among population of Rajasthan, because some particular type of such differences are a predisposing factor for suprascapular nerve entrapment syndrome.

MATERIAL AND METHOD

The present study has been carried out on 112 dried human scapulae of unknown sex & age, which are obtained from Department of Anatomy of Mahatma Gandhi Medical College and Hospital, Jaipur. Each scapula is observed carefully for different shapes of suprascapular notches on superior border of scapula, its absence and ossification of the suprascapular ligament. In this study we mentioned five kinds of shapes of suprascapular notches.

Exclusion criteria; Scapula having marked deformities and damaged superior border.

RESULT

In the present study of 112 dried scapulae, we found that 42 (37.5%) scapulae with U shaped suprascapular notch, 21 (18.75%) J shaped suprascapular notch, 33 (29.4%) V shaped suprascapular notch, there were 7 (6%) scapulae with space at the place of suprascapular notch while 3 (2.6%) scapulae reveals absence of notch. We found 6 (5.3%) scapulae with ossification of superior transverse scapular ligament thus converting suprascapular notch into foramen.



V shaped notch



U shaped notch



Notch converted into foramen



Absence of notch



Indented



J shaped

Table 1: Showing the different kinds of suprascapular notch – their number and percentage

N- 112

SHAPE OF THE NOTCH	NUMBER	PERCENTAGE (%)
U SHAPE	42	37.5
J SHAPE	21	18.75
V SHAPE	33	29.4
INDENTATION	7	6
ABSENT	3	2.6
OSSIFIED SUPRASCAPULAR LIGAMENT	6	5.3

DISCUSSION

The shape of the suprascapular notch was studied and classified by many authors in the previous studies. Rangachary et al 5 conducted a study on 211 American scapulae in 1979 and classified suprascapular notch into six different types. They have shown that a small notch has more chance of nerve impingement than a large one. Dunkelgrun et al found in his study that V shaped notches have lesser area than U shaped notches. Cummins et al also found that V shaped suprascapular notch was commonly associated with suprascapular nerve entrapment.

The results of the present study compared with those of previous studies are tabulated as below:

TABLE 2 Previous studies (%)

SHAPE	Iqbal et al 2010	Sinkeet et al 2010	Polguj et al 2011	Soni et al 2012	Present study
J shape	22	-	-	27	18.75
symmetrical	-	29	2.3	-	-
U shape	13.2	21	24.4	58	37.5
V shape	20	5.18	-	7	29.4
Indentation	33.5	-	-	3	6
Absent	22.5	2.12	-	2	2.6
Ossified SSL	-	-	-	14	5.3
Wide notch	-	-	57.7	-	-
Honey stick	-	22	-	-	-

CONCLUSION

The investigation of varieties of suprascapular notch and ossification of suprascapular ligament is essential to understand suprascapular nerve entrapment syndrome.

Hence, our study endeavored to characterize the different kind of the suprascapular notch.

This examination is valuable for anatomists, orthopaedicians, radiologists and neurosurgeons for a superior finding and management of entrapment syndrome.

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