

# Anatomical variations in shape of suprascapular notch of scapula

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## Abstract

**Objective:** The present study is a simple method to classify the shapes of the suprascapular notch on the basis of gross examination. **Methods:** 250 dried scapulae were examined for variations of suprascapular notch. **Results:** Three types of suprascapular notches are described. 55 had u shaped 45 had v shaped and 55 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.

## 1 Introduction

The scapula (shoulder blade) is a triangular flat bone that lies on the posterolateral aspect of the thorax, overlying the 2<sup>nd</sup> to 7<sup>th</sup> ribs. The convex posterior surface of the scapula is unevenly divided by the spine of the scapula into a small supraspinous fossa and a much larger infraspinous fossa. The concave costal surface of the scapula has a large subscapular fossa. The triangular body (blade) of the scapula is thin and translucent superior and inferior to the scapular spine (MOORE and DALLEY, 1999).

The suprascapular notch is situated in the lateral part of the superior border of the scapula, just adjacent to the base of the coracoids process. This notch is converted into a foramen by the superior transverse scapular ligament and serves as a passage for the suprascapular nerve (WILLIAMS, BANNISTER, BERY et al., 2004). Six different types of anatomical variations of the suprascapular notch have been reported in Nigerian population (BAYRAMOLU, DEMIRYÜREK, TÜCCAR et al., 2003). Complete absence of the suprascapular notch has also been seen in this population (OFUSORI, UDERA, OKWUONU et al., 2008). Italian scapulae had foramina in 6.1% but no suprascapular foramina were found in 87 Indian scapulae (NATSIS, TOTLIS, SIKARAS et al., 2007).

In Pakistan so far anatomical variations of scapula have not been studied. Methods used in past required complex geometric calculations in addition to the measurements and were time consuming study. Keeping this in view this study was conducted to see variation of suprascapular notch in human scapula on gross examination.

### 1.1 Objective

To see variations in shape of suprascapular notch on gross examination.

## 2 Material and methods

250 scapulae were collected from different medical colleges in Rawalpindi and study was conducted at Islamic International medical college. The scapulae were examined for different shapes of notches. Absence of notch was also noted.

## 3 Results

55 had J shaped foramina (Figure 1a) and lateral blade was horizontal and 33 had u shaped notch (Figure 1c). 50 had v shaped notch. Absence of notch was noted in 45 out of 200 scapulae (Figure 1b). There was indentation at site of suprascapular notch in 67 scapulae (Figure 1d). The percentages of different shapes are shown in (Table 1).

## 4 Discussion

In past classification of suprascapular notches has been done by researchers<sup>5</sup>. 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 (NATSIS, TOTLIS, SIKARAS et al., 2007). Absence of notch in 45 out of 200 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 (ALON, WEISS, FISCHER et al., 1998). 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. Suprascapular nerve entrapment is an acquired neuropathy secondary to compression of the nerve in the bony suprascapular notch (RENGACHARY, NEFF, SINGER et al., 1979). 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 (OSUAGWU, INOCEMI and SHOKUNBI, 2005). It was found in some studies that almost six variations of notches are present (NATSIS, TOTLIS, SIKARAS et al., 2007). In this study three shapes of notches are present. The slight indentation at site of notch has also not been reported in past. 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	13.2
V	20
J	22



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

## 5 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.

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