

Unusual case of absence of suprascapular notch and foramen

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SUMMARY

Identification of anatomical variations is essential to understand and perfectly manage the correlated clinical disorders. One of such disorders is shoulder pain that might result from entrapment of suprascapular nerve at the narrow supracondylar foramen. In this article, we report a rare case of absence of such foramen. With absence of the foramen, there is an increasing potentiality of nerve entrapment beneath the superior scapular transverse ligament. Therefore, investigation of such anatomical variation is suggested for proper management of cases of shoulder pain and dysfunction.

Key words: Anatomical variation – Scapula – Shoulder pain – Suprascapular nerve entrapment

INTRODUCTION

Study of the anatomical variations is essential to understand and clarify related disorders in medical and surgical practice (Hegazy, 2019). One of such variations is the absence of suprascapular notch admitting suprascapular nerve. Absence of the notch is unusual condition. Incidence of suprascapular absence is about 8% in dry bony specimens (Natsis et al., 2007).

The suprascapular notch might form an important orthopedic landmark in surgical operations to identify the suprascapular nerve (Biglani et al., 1990). The notch is bridged by a superior trans-

verse scapular ligament separating suprascapular nerve and suprascapular vein from suprascapular artery that passes above it in most of cases (Polguy et al., 2015). The notch is situated along the upper border at the inner aspect of root of the coracoid process (Snell, 2011). Rengachary et al. (1979) described six types of suprascapular notch according to its shape; wide notch along the superior border of scapula, wide V-shaped, U-shaped with symmetrical lateral borders, very small V-shaped, U-shaped with medial ossification of overlying suprascapular ligament, and a last type of complete ossification of the ligament transforming the notch into foramen. Such foramen caused by ossification of the ligament is a rare finding occurring in about 2-3% of scapulae (Cirpan et al., 2016). The smaller sized foramen is the greater chance for suprascapular nerve entrapment (Rengachary et al., 1979).

The shape of the notch differs widely. In Egyptian population, it is most commonly a V- or U-shaped (Gadallah and Hamoud, 2019). In some cases, the notch is roofed by a bony bridge instead of ligament converting it into a foramen within bone of the upper end of the scapula (Jadhav et al., 2012). In this article, we report an unusual case of absence of suprascapular notch or foramen.

CASE REPORT

During investigation of the dry bones in the Anatomy Department, Faculty of Medicine, Zagazig University, we found a scapula showing no notch at its superior border. The superior border was straight and nearly horizontal or slightly sloping

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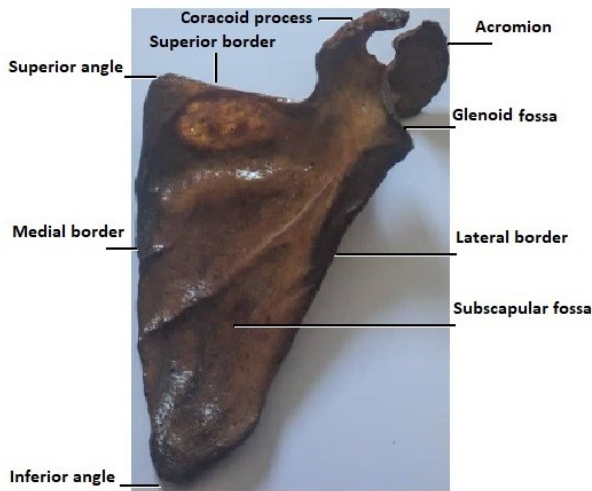


Fig 1. Anterior view of the scapula with upper border with no notch or foramen. The border is sloping slightly downwards from medial to lateral.

from superomedial angle down to the root of the coracoid process. It was the shortest border of the scapula, measuring 6 cm. The medial border extending in-between the superior and inferior angles was the longest measuring 14 cm; while the lateral border measured from the inferior angle to the lower end of glenoid fossa was 12.5 cm (Figs. 1, 2). Measurement of borders was done using a sliding caliper.

The bone was determined as a left scapula; the glenoid cavity was directed upwards and laterally and its spine posteriorly. No suprascapular foramen was detected. Also, no other abnormalities of scapula were noticed (Figs. 1-3).

COMMENTS

Shoulder pain has many causes. One of these causes could be suprascapular neuropathy that might be overlooked due to its rarity (Romeo et al., 1999). However, the incidence of suprascapular neuropathy has been increased in the last decade, in particular for athletes, to reach 12% up to 33% (Shah et al., 2011). Detection of the anatomical variations at the superior border of the scapula is essential to detect the correlated clinical disorders. This border is related to the suprascapular nerve and vessels. The nerve is a large branch arising from the upper trunk of the brachial plexus. It supplies motor innervation to the supraspinatus and infraspinatus muscles, as well as articular branches to shoulder and acromioclavicular joints. The supraspinatus is functioning in imitation of abduction, and assists in stabilization of the head of the humerus during abduction produced by the deltoid muscle. On the other hand, the infraspinatus muscle produces lateral rotation of the humerus, and also assists in stabilization of the shoulder joint. Affection of the nerve along its course at the superior border of scapula might result in difficulty in

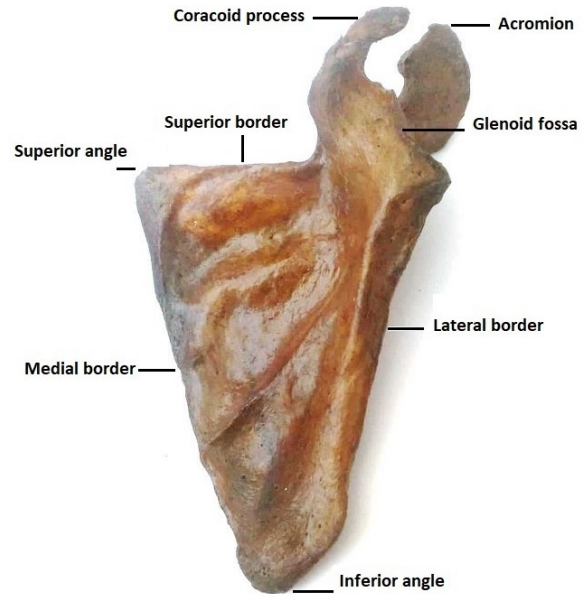


Fig 2. Photograph of anterior view of the scapula with upper border appearing nearly straight on slight lateral rotation of scapula.

stability and abduction of glenohumeral (shoulder) joint (Snell, 2011; Standing, 2016).

Wide dimensions of the suprascapular notch (or foramen) give less chance for possibility of nerve compression in this area. The compression increases with narrow notch or its absence. In case of absence of the notch the nerve passes directly over the sharp border of the scapula beneath the suprascapular ligament that also called superior transverse scapular ligament (Pawar and Pawar, 2015).

Dimensions of borders in the current left scapula differ from that recorded in another case report of a similar scapula that without a suprascapular notch (Pawar and Pawar, 2015). They reported a medial border (11.5 cm) shorter than the lateral

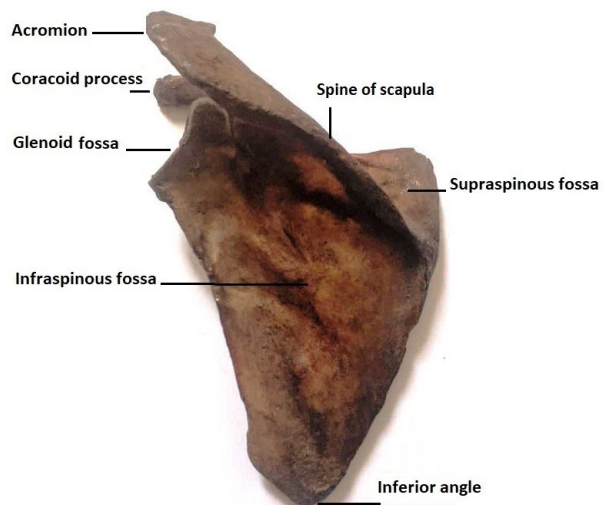


Fig 2. Posterior view of the scapula showing no abnormalities.

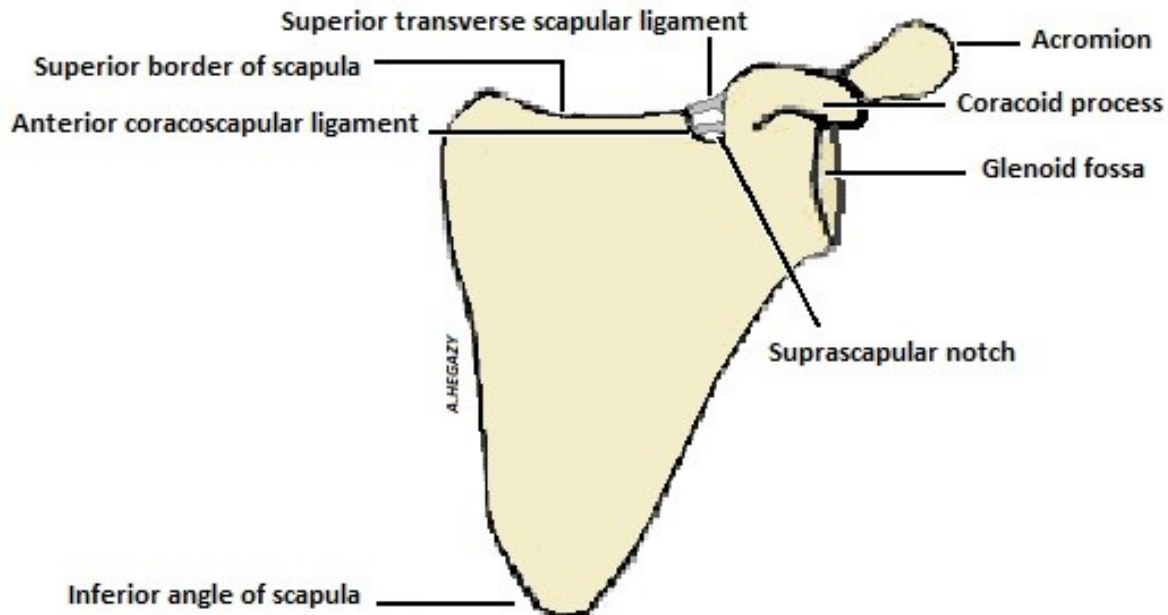


Fig 4. Diagram of anterior view of the scapula showing suprascapular notch with superior transverse scapular and anterior coracoscapular ligaments.

one (12 cm). However, the medial (vertebral) border has been recorded to be the longest one in the current case. This is consistent with findings reported by Standing (2016) in scapulae with presence of suprascapular notch. This might denote that variations in diameters of borders are not correlated with the location of the notch. On the other hand, Covançev et al. (2016) reported two instead of one suprascapular foramen associated with narrowing and subsequent increased potentiality of occurrence of nerve entrapment syndrome. Sometimes, the suprascapular artery passes with the nerve through the foramen; therefore, one must be cautious to not injure it during procedure of nerve decompression (Elzinga et al., 2016).

In rare cases, there might be co-existence of a suprascapular notch with a foramen below it. This could be attributed to ossification of another independent fibrous band called anterior coracoscapular ligament (Podgorski et al., 2014). Such ligament is noticed in about 50% of cases, and runs on the anterior aspect of the suprascapular notch to pass below superior transverse scapular ligament (Fig. 4) (Polguy et al., 2013). Presence of anterior coracoscapular ligament is an additional factor in the narrowing of the suprascapular notch by about 25% of its diameter, with subsequent increased risk of suprascapular nerve entrapment (Podgorski et al., 2014).

Conclusion

In investigating shoulder pain and dysfunction, the rare abnormalities of the superior border of the scapula and the suprascapular foramen might be

mindful as potential causes.

Ethical statement

Ethical approval of this study was obtained from the ethical committee of the Faculty of Medicine, Zagazig University, Egypt.

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