

Case Report

Complete Ossification of Superior Transverse Scapular Ligament and Its Clinical Significance - A Case Report

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ABSTRACT

The superior transverse scapular ligament (STSL) is a fibrous band that connects the two borders of suprascapular notch on the Scapula and converts it into a foramen. The suprascapular nerve passes through the foremen while the vessels above it.

The documented variations of the superior transverse scapular ligament includes calcification, partial or complete ossification and multiple bands in which case, the suprascapular nerve is at the risk of entrapment.

Discussed below, is one such case of a completely ossified suprascapular ligament detected in a bone specimen, throwing light on its anatomical aspects and clinical implications.

Keywords: scapula, suprascapular notch, Superior transverse scapular ligament, Ossification, Suprascapular nerve entrapment.

INTRODUCTION

The scapula or the shoulder blade is a flat triangular bone present on the posterolateral thoracic wall. Among the three borders of the scapula, the superior border is the thinnest and shortest. This border has a deficient portion near the base of coracoids process which is known as suprascapular notch.

A foramen is formed after bridging of this notch by a strong fibrous band called suprascapular ligament or transverse scapular ligament. The suprascapular nerve - a branch from superior trunk of brachial plexus, passes through this foramen and supplies the supraspinatus and infraspinatus muscles while the suprascapular vessels goes backward above this ligament. [1]

The suprascapular notch and the overlying ligament constitute a narrow

foramen with inflexible and often sharp edges through which the suprascapular nerve must pass. The suprascapular nerve is fixed in the osteofibrous foramen of the notch and ligament and by its distal muscular and joint connections. [2]

This predisposes the nerve for compression or injury to the suprascapular nerve, which can result in suprascapular nerve entrapment syndrome, first described in 1936 by Andee Thomas.

The basic clinical manifestations of this neuropathy include deep, dull and diffuse pain of the posterior and lateral aspects of the shoulder, weakened abduction and rotation of upper extremity in the glenohumeral joint and progressive atrophy of supra and infraspinatus muscles.

The present study aims to report the morphology of an ossified superior

transverse scapular ligament in a bone specimen and to discuss the clinical implications.

CASE REPORT

During routine undergraduate osteology demonstration in the Department of Anatomy, Rajarajeswari Medical College and Hospital, Bengaluru, the author found a left scapula of unknown sex with completely ossified superior transverse scapular ligament.

The bone specimen was studied in detail and was photographed. The vertical diameter, transverse diameter and thickness of ossified transverse scapular ligament were measured using sliding Vernier callipers.



Fig 1: Costal Surface of the left scapula showing completely ossified suprascapular ligament (arrow), also note, the blade of the scapula being broken along the medial border and inferior angle.



Fig2: Completely ossified suprascapular ligament (arrow) with suprascapular foramen (encircled)

Observations

The left scapula observed in the present case was thick at its borders and at lateral and superior angles, but was thinned out in rest of the places. It was broken along the lower part of the medial border and at inferior angle.

The costal surface was concave with prominent ridges.

A completely ossified superior transverse scapular ligament stretched across the length of suprascapular notch converting it into a foramen (Fig-1) and (Fig-2)

The superior maximum length of the ligament was 0.8cm and inferior maximum length was 0.6 cm.

The foramen was elliptical in shape. The maximum vertical height was 0.4 cm and transverse diameter was 0.7 cm. The thickness of the ligament at its medial end was 0.5cm and at the lateral end was 0.7 cm.

The Scapula appeared normal in all other parameters.

DISCUSSION

The suprascapular nerve is a branch from the upper trunk of brachial plexus; it provides branches to the supraspinatus and infraspinatus muscles and also carries afferent fibres from glenohumeral joint.

The two most described location of injury are the suprascapular fossa and the spinoglenoid notch. The nerve contact with the suprascapular ligament is accentuated with depression, retraction or hyper abduction of the shoulder. This resulting 'sling effect' may result in traction injury to the nerve.

The compression of the nerve by ossified transverse scapular ligament can cause entrapment syndrome. The most important factor that explains the tendency of this small ligament to ossify is the great amount of mechanical load which it bears.

Polguy et al identified ossified ligaments in 5.42. / Cases it was observed more often on right side than the left unlike in our case. It is found more often in men than women. [3]

In 1959, Kopell & Thompson described that the main site of entrapment of suprascapular nerve is at suprascapular notch.

According to Callahan et al, suprascapular nerve entrapment is an acquired neuropathy which is secondary to compression of the nerve in the bony suprascapular notch more than in spinoglenoid notch.

Complete ossification of STSL was very rare in some population such as in American native 2.1 to 2.9%, Eskimos-0.3%. A familial case of calcification of STSL was described by Cohen et al in father and son and both were suffering from entrapment neuropathy of suprascapular nerve suggesting that the ossification of STSL may have a genetic basis. [4]

Osuagwu et al (2005) also reported a case of complete ossification of STSL in a Nigerian male adult. Rengachary et al (1979) have reported six different types of anatomical variations in suprascapular notch. [5]

Patients with suprascapular nerve compression may present with a history of symptoms provoked by dominant upper extremity movement because the incidence of entrapment of the suprascapular ligament is largely increased with strenuous overhead motion.

Treatment for compression of suprascapular nerve begins with physical therapy aimed at strengthening the rotator cuff musculature. If conservative treatment fails, surgical decompression of suprascapular ligament is recommended. [6]

The ossification of STSL has been reported to be 18% for the partial and 5% for the complete type. Past studies have reported a 3.7% to 4% incidence of partial ossification of STSL. It is thus evident, that the extreme rarity of complete ossification of STSL as seen in this case may be clinically and academically relevant.

CONCLUSION

Involvement of Suprascapular nerve by an ossified STSL may give rise to

various clinical symptoms and progressive muscle weakness and atrophy if the condition is not diagnosed and treated early. [7]

The anatomical and radiological knowledge of ossification of STSL may be helpful for clinicians, radiologists and surgeons dealing with suprascapular nerve entrapment conditions. Considering the higher incidence of ossified STSL, further detailed study using the cadaveric dissection, radiology, MRI and dry bones may highlight this concept which may pave way for further research on the ossification of STSL. [8]

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