

OSSIFICATION OF SUPRASCAPULAR LIGAMENT – A CASE REPORT

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ABSTRACT

The superior transverse scapular ligament (STSL) bridges the suprascapular notch, converting it into a suprascapular foramen through which the suprascapular nerves and the vessels travel. Often this ligament is found ossified to produce compression of the suprascapular nerves. This entrapment of the suprascapular nerve may cause dull pain in the shoulder region and also result in wasting of the supraspinatus and infraspinatus muscles. The present case reports the anomalous ossified STSL detected in a bone specimen.

KEYWORDS : Scapula; Ligament; Ossification; Entrapment**INTRODUCTION**

The suprascapular notch is the location where the suprascapular nerve (C4, 5, 6) navigates through the upper border of scapula underneath the superior transverse scapular ligament (STaSL). Anterior coracoscapular ligament has recently been reported and found to be located in the suprascapular notch under the STSL as per Avery et al [1]. Variable forms of these ligaments have been reported: calcified, partially to completely ossified and anomalous bands as per Ticker et al [2]. Ossified STSL is one of the risk factors of suprascapular nerve entrapment as mentioned by Polguy et al [3] as the patients of this neuropathy present with deep and dull aching diffuse pain around the posterolateral aspect of the shoulder and weakened abduction and rotation at the shoulder joint with progressive atrophy of the supraspinatus and infraspinatus muscles which was reported by Gosk et al [4].

Case Report

This anatomic variation was found during routine bone demonstration for MBBS students.. The bone specimen was studied in detail and was photographed. The vertical and transverse diameter, the length, the width and thickness of ossified transverse scapular ligament were measured using digital Vernier caliper.

Observations

The right 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. The costal surface was concave with prominent ridges. A nearly completely ossified superior transverse scapular ligament stretched across the length of suprascapular notch converting it into a foramen.

**Fig 1- Scapula showing Ossified Suprascapular Ligament**

The morphology of the ossified superior transverse scapular ligament was categorized under fan-shaped ossified superior transverse scapular ligament according to the classification first established by Polguy et al [3]. The maximum length of the ligament was 7mm. The ossified superior transverse scapular ligament formed the superior border of the foramen. The maximum width was 4.3 mm of the foramen. The foramen was ellipsoid in shape with the superior apex laterally and the inferior medially. Any osteological deformities were not noticed.

DISCUSSION

The scapula is a bone of the upper limb. During the fifth week of intrauterine life, mesenchyme migrates along central axis of the limb bud and its concentration results in the formation of primitive bone. In the 6th week, chondrification ensues followed by ossification of hyaline cartilage models leads to bone formation by endochondral ossification. The suprascapular notch which is formed normally houses the suprascapular nerve and the suprascapular artery passes above the superior transverse scapular ligament. The suprascapular nerve gives motor supply to the supraspinatus and the infraspinatus muscle. The irritation of this nerve will cause deep and poorly localized pain and often when the patient visits the hospital, muscle atrophy may have already been established [5]. The entrapment of the suprascapular nerve at the suprascapular notch was first described by Kopell and Thompson [6]. According to these authors, the movement of abduction or horizontal adduction of the shoulder resulted in compression of the nerve against the STSL. Research studies have also defined it as a 'sling effect' because there is kinking of the suprascapular nerve against the STSL [7]. The presence of an ossified STSL may also pose a challenge during decompression of the suprascapular notch if the condition is not fully appreciated [2]. The ossification of the STSL may also alter the attachment of the omohyoid muscle, which has its attachment close to it. The lateral border of the scapula had a projection and it may have distorted the attachment of the omohyoid muscle, thereby altering its actions. For an early and accurate diagnosis, a thorough anatomical knowledge of the course of the nerve and its possible sites of entrapment is required. The suprascapular nerve is commonly susceptible to compression mainly at two major sites i.e. at the level of the suprascapular notch and at the base of the scapular spine [8]. The suprascapular nerve passes through the suprascapular foramen and there is a

possibility that the nerve may be compressed by the STSL, especially if it is ossified. The research reports have defined the shape of the suprascapular notch or the ossification of the STSL to predispose to suprascapular nerve entrapment. Research reports have described a 'U' shaped suprascapular notch in 77% and a 'V' shaped notch in 23% of individuals, respectively [2]. In the present bone specimen, we noted a foramen, which had the STSL almost fully ossified. The ossification of the STSL has been reported to be 18% for the partial and 5% for the complete type [2]. The nerve conduction velocity and electromyographic studies may help in proper diagnosis [9]. Investigations like CT, MRI scans may help at arriving at a correct diagnosis. Interestingly, even atrophy of muscles has been found in MRI scans, therefore MRI scans may be beneficial for correct diagnosis [10]. A rehabilitation programme with gradual strengthening of the involved muscles is always advised.

Table 1 – Previous reports on suprascapular bony foramen.

S. No	AUTHOR	REGION	SHAPE	Max length (mm)	Max. Width (mm)
1.	Das et al [11]	India		12	8
2.	Polguy et al [3]	Poland	Fan-shaped	7.15	8.75
3.	Jangde et al [12]	India		5	8
4.	Mangala et al [13]	India	Ellipsoid	0.4	0.7
5.	Passey et al	North India	Ellipsoid	6.12	3.67

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. The anatomical and radiological knowledge of ossification of STSL may be helpful for clinicians, radiologists and surgeons dealing with suprascapular nerve entrapment conditions.

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