

The Ossified Bifid Superior Transverse Scapular Ligament Causing a Double Suprascapular Foramen: A Case Report

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ABSTRACT

Ossified bifid superior transverse scapular ligament causing a double suprascapular foramen is a very rare finding. This ossified ligament reduces the suprascapular space by half of its original size. It is one of the precipitating factors of suprascapular nerve entrapment. Here we describe a double suprascapular foramen in a dry left scapula of Indian origin. There were two bony bars bridging the suprascapular notch thereby making two foramina. The bony bars were 'V' shaped with its apex attached to the lateral side of the suprascapular notch. The upper foramen was large and triangular whereas the lower foramen was small and oval. Considering the shape of the foramen and the 'V' shaped attachment of the bony bars, we conclude it to be due to the ossification of bifid superior transverse scapular ligament. A double suprascapular foramen should always be kept in mind while diagnosing and treating suprascapular nerve entrapment. Knowledge about the double suprascapular foramen would be useful to orthopaedic surgeons who perform decompression for suprascapular nerve entrapment through arthroscopy and open procedures.

Keywords: Scapula, Suprascapular notch, Suprascapular nerve entrapment

CASE REPORT

Here we describe a case of double suprascapular foramen formed by the ossification of bifid superior transverse scapular ligament (STSL). During an osteological study of scapula done in the Department of Anatomy, All India Institute of Medical Sciences, Raipur in 2014, we found a left sided scapula with double suprascapular foramen. The measurements of the ossified ligaments and the foramen were done using a digital vernier caliper (Mitutoyo Company, Tokyo, Japan). The length of the suprascapular notch was 11.68mm and the breadth was 7.92mm. There were two bony bars bridging the suprascapular notch [Table/Fig-1,2]. The superior bony bar was 11.06 mm long. The width of the superior bar was 3.47mm in the medial end, 2.11mm in the middle and 2.49mm in the lateral end. The inferior bony bar was 6.02mm in length. The width of the inferior bar was 3.81mm in the medial end, 3.59mm in the middle, 3.89mm in the lateral end. The superior foramen was triangular in shape with a length of 3.27mm and breadth of 5.78mm. The inferior foramen was oval shaped with a length of 2.99mm and a breadth of 1.34mm. The two bony bars had a common attachment on the lateral border and were attached one below the other on the medial border of the suprascapular notch.



[Table/Fig-1]: A left sided scapula with a double suprascapular foramen – anterior view **[Table/Fig-2]:** A left sided scapula with a double suprascapular foramen – superior view

DISCUSSION

The suprascapular notch is bridged by the STSL on the superior border of the scapula. The suprascapular nerve goes below the ligament in the notch and the suprascapular vessels pass above the ligament [1]. This notch is a common site for suprascapular nerve entrapment. Suprascapular neuropathy may be diagnosed by the following features; pain in the shoulder, weakness in external rotation of shoulder and abduction of shoulder. Suprascapular neuropathy accounts for 0.4-2% of shoulder pain in general population [2]. A suprascapular foramen is formed by the ossification of the superior transverse scapular ligament, a potential factor for suprascapular nerve entrapment. The frequency of single ossified STSL is 4.08% in Asia [2]. The STSL can have many variations. It can be single, bifid or trifid [3].

A double suprascapular foramen has been reported not very often. In 1942, Hrdlika reported this variation in a Caucasian male [4]. While studying the suprascapular notch in Chinese population, Wang et al., found a double suprascapular foramen [5]. Polguy et al., found a case of double suprascapular foramen while analyzing 610 CT scans of the shoulder in Polish population [6]. Vyas KK et al., reported a scapula with double suprascapular foramen among 300 scapulae studied [7]. Fatima et al., described a double suprascapular foramen in a right sided scapula [8].

Polguy et al., hypothesized four possible mechanisms for the formation of double suprascapular foramen [6]. The first among the four mechanisms is where the double suprascapular foramen results due to ossification of single STSL and anterior coracoscapular ligament (ACSL). The second possible mechanism is the ossification of bifid STSL. The incidence of bifid superior transverse scapular ligament is reported as 3.1% [2] and 3.5% [9]. In recent studies it is postulated that double suprascapular foramen increases the possibility of suprascapular neuropathy [10]. Polguy et al., demonstrated three bifid superior transverse scapular ligaments in 96 dissected shoulders. He reported 2 types of bifid STSL, one in the frontal plane and the other in the transverse plane. STSL and bifid STSL have been described in skeletal studies. But ossified bifid STSL is such a rare finding that it has seldom been reported. Suprascapular nerve entrapment is more common in the first type

as the area of the foramen is reduced by half compared to the bifid suprascapular foramen in the transverse plane [2].

The third mechanism is the partial calcification of a trifid STSL. The ossification of superior and inferior bands of the trifid STSL with the middle band absorbed causes a double suprascapular foramen. Ticker et al., has demonstrated one case of trifid superior transverse scapular ligament which was not ossified [3]. The fourth and the least possible mechanism is the ossification of bifid anterior coracoscapular ligament [2]. Considering the attachment of the bony bars and the shape of the foramina, the double suprascapular foramen occurred due to the ossification of the bifid superior transverse scapular ligament in the frontal plane [2].

CONCLUSION

In the present case report, ossification of the bifid STSL resulted in double suprascapular foramen. Inferior margin of the lower bony bar can irritate the suprascapular nerve causing the suprascapular neuropathy. Awareness of the possible variations in the ligaments of suprascapular notch will be useful to arthroscopic surgeons in performing suprascapular nerve decompression.

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