

## Anomalous Relation of Suprascapular Nerve and Vessels with the Suprascapular Ligament.



### Medical Science

**KEYWORDS :** Transverse Scapular Ligament, Topographic anatomy.

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### ABSTRACT

*Aim of the study: Aim of present study is to describe the relation of suprascapular nerve & vessels with the suprascapular ligament (Transverse Scapular Ligament) and to present the abnormalities if any. Materials and Method: The study was conducted in Anatomy Department, B. J. Medical College, Civil Hospital, Ahmedabad, Gujarat. 60 Upper limbs were dissected (30 cadavers bilaterally) and relation of the suprascapular nerve & vessels with the suprascapular ligament was observed. Result: Result of present study showed that out of 60 upper limbs, 57 had normal relation of suprascapular nerve and vessels with the suprascapular ligament (the suprascapular nerve passing below the suprascapular ligament and suprascapular vessels passing above the suprascapular ligament) and 3 had abnormal relation showing that suprascapular nerve and vessels both were passing below the suprascapular ligament. Conclusion: Awareness about details and topographic anatomy of suprascapular nerve and vessels may serve as a useful guide for both radiologist and vascular surgeons. It may help to prevent diagnostic errors and to avoid complications during any surgery over the scapular region. This type of abnormal course of suprascapular vessels can lead to compression of vessel by the suprascapular ligament*

### Introduction:

The suprascapular artery usually arises from the thyrocervical trunk of the subclavian artery, although it may arise from the third part of the subclavian artery.

It first descends laterally across scalenus anterior and the phrenic nerve, posterior to the internal jugular vein and sternocleidomastoid, then crosses anterior to the subclavian artery and brachial plexus, posterior and parallel with the clavicle and subclavius and the inferior belly of omohyoid, to reach the superior border of the scapula. On reaching the superior border of the scapula, it passes above the suprascapular ligament and supplies the supraspinatus muscle [7].

While the suprascapular nerve (C5 & C6) is the branch of the upper trunk of the brachial plexus. After arising the nerve passes backward above the clavicle and disappears beneath the anterior border of trapezius.

On reaching the superior border of the scapula, it passes below the suprascapular ligament and supplies the supraspinatus muscle [1].

Then suprascapular nerve and suprascapular vessels wind round the spino-glenoid notch below the spino-glenoid ligament and supply the infraspinatus muscle [8].

The suprascapular vein drains blood from infraspinatus and supraspinatus muscle and run along with suprascapular artery and drains in to external jugular vein.

### Aims of study:

- Aim of present study is to describe the relation of suprascapular nerve & vessels with the suprascapular ligament (Transverse Scapular Ligament) and to present the abnormal relation.
- To correlate the knowledge of relation of suprascapular nerve & vessels with the suprascapular ligament with its clinical aspects.

### Materials and Methods:

The study was conducted in Anatomy Department at B. J.

Medical College, Civil Hospital, Ahmedabad, Gujarat. Thirty cadavers of both Sexes (26 males and 4 females) were dissected. The pectoral region, axilla and the brachial plexus were dissected out carefully on both the sides.

The origin of the suprascapular nerve from upper trunk of the brachial plexus and suprascapular artery from the thyrocervical trunk of the subclavian artery were traced. Then vessels and nerves were traced up to the upper border of the scapula and relation of suprascapular nerve and vessels with the suprascapular ligament was observed.

### Results (table-1):

Present study revealed that out of 60 upper limbs, 57 had normal relation of suprascapular nerve and vessels with the suprascapular ligament bilaterally {the suprascapular nerve passing below the suprascapular ligament and suprascapular vessels passing above the suprascapular ligament}.

One cadaver had abnormal relation on both sides {both suprascapular nerve and suprascapular vessels passing below the suprascapular ligament}

One cadaver had abnormal relation on left sides {both suprascapular nerve and suprascapular vessels passing below the suprascapular ligament}.



**Fig 1:** showing that the suprascapular nerve and vessels both were passing below the suprascapular ligament

(right side)



**Fig 2:** showing that the suprascapular nerve and vessels both were passing below the suprascapular ligament (left side)

**Table 1:** Showing results of present study

Relation	No. of cases	Percentage
Suprascapular nerve passing below the suprascapular ligament and suprascapular vessels passing above the suprascapular ligament	57	95%
Both suprascapular nerve and suprascapular vessels passing below the suprascapular ligament	3	5%
Total	60	100%

**Discussion:**

Variant relation of the suprascapular vessels and nerve with the suprascapular ligament has been described earlier by numerous authors.

In 1905, Bean RB et al. Studied the subclavian artery in man and they revealed That suprascapular vessels and nerve both passing below suprascapular ligament in 3% of the cases [3].

In 1941, Reed WT et al. studied the origins of transverse cervical and of transverse scapular arteries in American Whites and Negroes. They found abnormal relation of transverse cervical and of transverse scapular artery with transverse scapular ligament in 2.5% of the cases [5].

In 2003, Smyth MD et al. studied Anomalous course of the suprascapular artery through the suprascapular notch, and found abnormal relation in 4% of the cases [6].

In 2007, Tubbs RS et al. revealed “An unusual variation of the transverse cervical and suprascapular arteries was reported earlier in an adult male cadaver. The transverse cervical artery was arising independently from the first part of the subclavian artery and passing deep to the scalenus anterior muscle. Simultaneously, the ipsilateral suprascapular artery was arising from the third segment of the subclavian artery and passing below the suprascapular ligament with the suprascapular nerve” [8].

In 2012, Polguy M et al revealed that “The double suprascapular foramen with unique anatomical variation has been reported earlier in which Suprascapular nerve was passing through inferior suprascapular foramen & suprascapular vessels were passing through superior suprascapular foramen” [4].

The present study revealed both the suprascapular vessels and nerve passing below the suprascapular ligament in one cadaver on both sides and in one cadaver on left side.

**Table -2:** comparison of present study with previous studies

Year	Name of scientist	Abnormal relation (percentage)
1905	Bean RB et al	3%
1941	Reed WT et al	2.5%
2003	Smyth MD et al	4%
2007	Tubbs RS et al	-
2014	Present study	5%

**Conclusion:**

Unusual relation of the suprascapular vessels and nerve with suprascapular ligament has been implicated as the causative factor for suprascapular neuropathy causing compression of the suprascapular nerve beneath the suprascapular ligament. Suprascapular nerve injuries have become increasingly recognized as a cause of shoulder pain and dysfunction.

The above mentioned abnormality can lead to compression of suprascapular vessels by the suprascapular ligament.

Awareness about details and topographic anatomy of suprascapular nerve and vessels would help in the management of diseases of vascular origin in the cervical and scapular regions for both radiologists and vascular surgeons. It may help to prevent diagnostic errors, interventional procedures and avoid complications during any surgery over the cervical and scapular regions.

**REFERENCE**

[1] A. K. Dutta. Essential Of Human Anatomy(Superior and Inferior Extremities). 4th Ed., Current Books International, Kolkata. May2009; 44-52. | [2] B.D.Chaurasia. Human Anatomy(Upper Limb and Thorax). 5th Ed.,CBS Publishers & Distributors Pvt Ltd, New Delhi. 2009; 14,55. | [3] Bean RB. A complete study of the subclavian artery in man. Am J Anat. 1905; 4: 303. | [4] Polguy M, Podgórski M. The double suprascapular foramen: unique anatomical variation and the new hypothesis of its formation. Skeletal Radiol. 2012 Dec;41(12):1631-6. | [5] Reed WT, Trotter M. The origins of transverse cervical and of transverse scapular arteries in American Whites and Negroes. Am J Phys Anthropol. 1941; 28: 239-247. | [6] Smyth MD. Anomalous course of the suprascapular artery through the suprascapular notch. Med Sci Monit. 2003 Mar;9(3):BR116-9. | [7] Susan Standring 2008. Gray's Anatomy: The Anatomical Basis of Clinical Practice,40th Edition; ChurchillLivingstone,Elsevier Health Sciences UK. | [8] Tubbs RS. Retrosplenic course of the transverse cervical artery with the suprascapular artery travelling through the suprascapular notch. PMID 2007 Feb;66(1):80-2. | [9] Vishram Singh. Anatomy of Upper Limb & Thorax. Elsevier publication, New Delhi. 2010; 19,60. |