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Posterior Shoulder Pain and Arthroscopic Decompression of the Suprascapular Nerve at the Spinoglenoid Notch

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Suprascapular nerve compression is a disease entity not easily recognized or well understood by many surgeons. Posterior shoulder pain, muscle weakness, and muscle atrophy can result from compression of the nerve at either the transverse scapular ligament or the spinoglenoid ligament in many young adults. Compression at the spinoglenoid ligament, although thought to be rare, is often the result of repetitive overhead activities in either athletes or laborers and results in weakness and atrophy of the infraspinatus muscle. More recently, compression at this site occurs in patients with a massive rotator cuff tear. While this diagnosis is complex and other diagnoses must be considered and ruled out, early intervention is important to successfully manage this patient and return them to their desired activities to avoid permanent muscle atrophy. This paper will discuss the detailed physical examination, adjunct diagnostic procedures, and appropriate arthroscopic surgical treatment of this disease entity to provide the expected outcome with great satisfaction.
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KEYWORDS posterior shoulder pain, suprascapular nerve, spinoglenoid notch, arthroscopic decompression, weakness, atrophy

Suprascapular nerve entrapment in the clinical setting has been a diagnosis to consider when presented with posterior shoulder pain.[1] Although posterior shoulder pain is often mistaken as rotator cuff or cervical disc disease, many authors, including ourselves, have looked at compression of the suprascapular nerve as a possible disease entity to consider in the diagnosis of posterior shoulder pain. Suprascapular nerve compression not only contributes to pain in the posterior shoulder girdle but also contributes to weakness and possible subtle or significant muscle wasting in the supraspinatus and infraspinatus fossas. A prolonged course of symptoms, whether ignored by the patient or a misdiagnosis, can contribute to a prolonged disease course and reversal of symptoms and function. Two possible sites of compression of the suprascapular nerve include the transverse scapular ligament and the spinoglenoid notch[2-5] (Fig. 1). An improved understanding of the disease as well as advanced arthroscopic techniques will hopefully improve expected outcomes and patient satisfaction in this population. This article focuses on compression of the suprascapular nerve at the spinoglenoid ligament. The readers are referred to our other article in this edition, "Posterior Shoulder Pain and Arthroscopic Decompression of the Suprascapular Nerve at the Transverse Scapular Ligament" for the etiology and treatment of suprascapular nerve compression at the transverse scapular ligament.

Anatomy of the Suprascapular Nerve

The suprascapular nerve has been classically thought to arise from the upper trunk of the brachial plexus (C5-C6) at Erb's point; however, in 25% of individuals, the C4 nerve root also contributes to the nerve's innervation[6,7] (Fig. 2). As the nerve approaches the suprascapular notch, the artery and the nerve diverge.[8] At this point, the suprascapular nerve travels under the transverse scapular ligament as it enters the suprascapular notch. The suprascapular artery traverses over the transverse scapular ligament; however, in rare instances, the artery travels with the nerve.[9] As the nerve then travels laterally along the supraspinatus fossa, it approaches the posterior glenoid rim,

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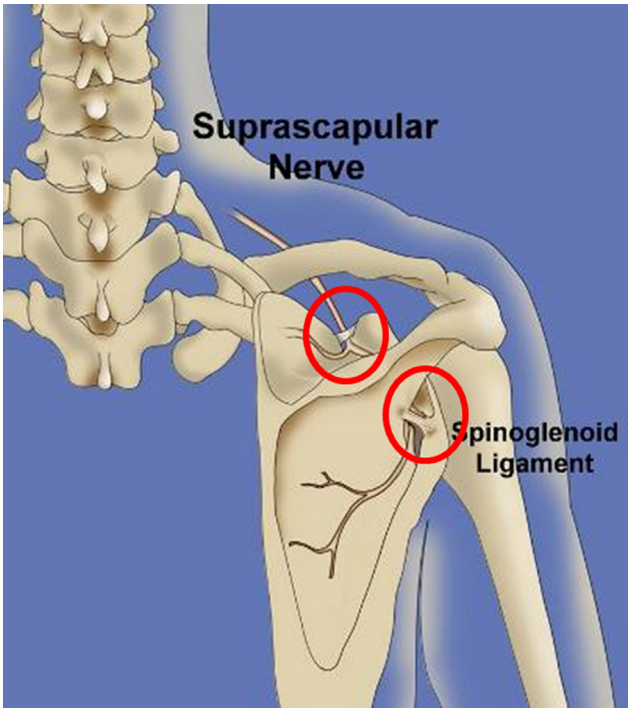

Figure 1 Right shoulder posterior view artwork demonstrating the 2 compression sites of the suprascapular nerve. (Copyright: K. Plancher.)

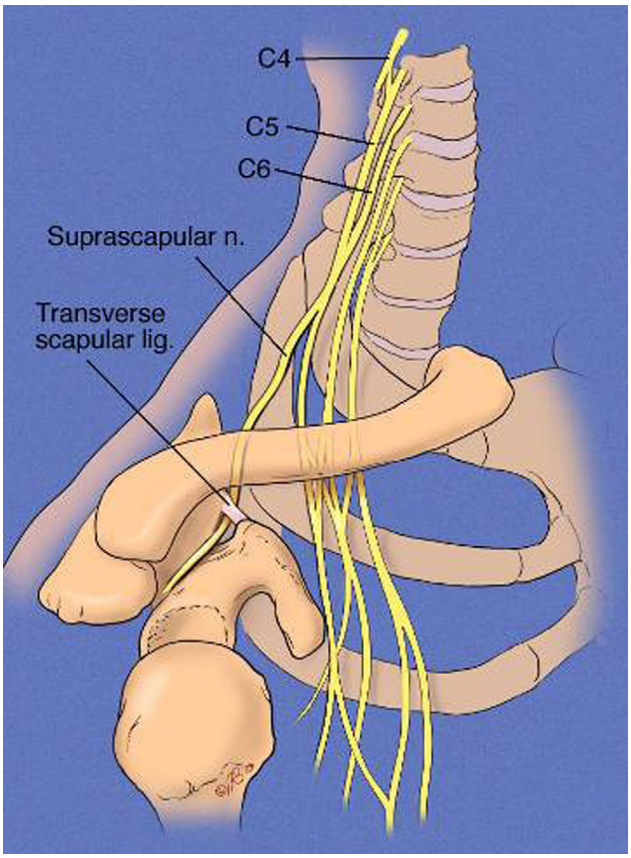

Figure 2 Right shoulder anterior view artwork of the suprascapular nerve arising from the upper trunk of the brachial plexus. (Copyright: K. Plancher.)

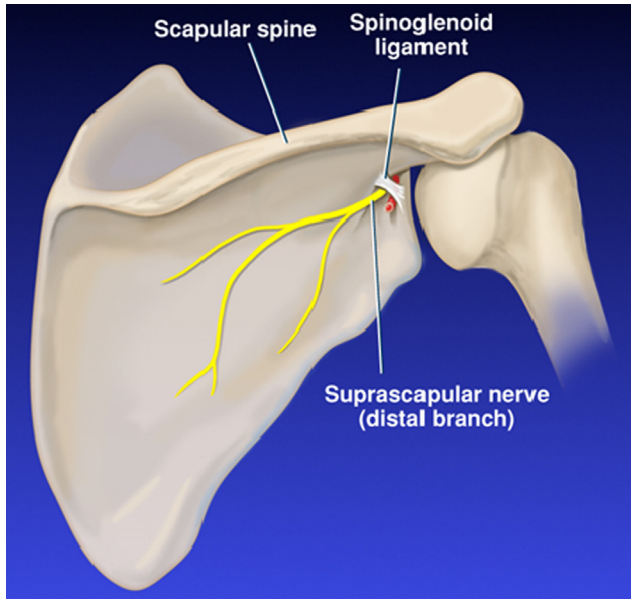

Figure 3 The suprascapular nerve descending into the infraspinatus fossa passing under the spinoglenoid ligament. (Copyright: K. Plancher.)

around the scapular spine, and descends into the infraspinatus fossa and passes under the spinoglenoid ligament (inferior transverse scapular ligament)[10] (Fig. 3). The suprascapular nerve then gives rise to 2-4 branches in the infraspinatus muscle belly.

Some authors have described 2 types of ligaments: type I, which is a thin indistinct band of tissue, and type II, which is a well-formed ligament. We performed a cadaveric study and found that the spinoglenoid ligament was present in 100% of specimens.[3] We also found that it has attachments to the glenohumeral joint, which contributes to compression of the suprascapular nerve at the spinoglenoid ligament on internal rotation of the shoulder. The nerve itself is approximately 2.5 cm away from the glenoid rim and located approximately

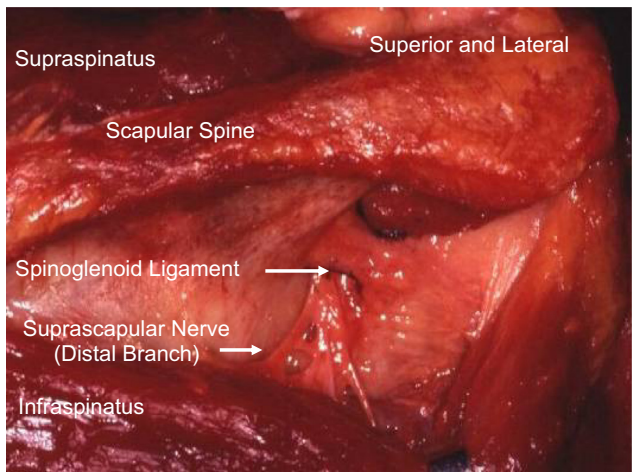

Figure 4 The spinoglenoid ligament, quadrangular in shape, demonstrated in the posterior view of a right shoulder dissection. Note the distal branch of the suprascapular nerve compressed. (Copyright: K. Plancher.)