

# Suprascapular Nerve Entrapment

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It is important to be aware of neuropathy involving the suprascapular nerve. While direct trauma to the suprascapular nerve is the usual cause (direct blow to the base of the neck or posterior shoulder, shoulder dislocation or fracture), the problem may result from overuse injuries such as repetitive tennis serving or spiking of a volley ball, excessive horizontal adduction, weight lifting, backpacking or for no apparent reason. The patient may present with only a vague posterior or posterolateral shoulder pain, or diffuse pain with weakness.

The suprascapular nerve is a motor nerve originating from C5 and C6 nerve roots or upper trunk of the brachial plexus. It passes through the suprascapular notch which is covered by the transverse scapular ligament into the supraspinous fossa where it supplies the supraspinatus muscle. The nerve continues around the lateral border of the spine of the scapular to also supply the infraspinatus. Depending upon where the compression occurs (suprascapular notch or spinoglenoid notch) either both or individual muscles may be involved. It is noteworthy (see below) that after it leaves the suprascapular notch it also passes the subacromial bursa and gives off sensory fibers to the capsular and ligamentous structures of the shoulder and acromioclavicular joint.

Inspection of the shoulder may show atrophy of either or both the infraspinatus and supraspinatus muscle. Atrophy of the infraspinatus is easier to detect because the supraspinatus is covered by the trapezius muscle.

Functional examination will show weakness and usually no pain on resisted isometric testing of shoulder lateral rotation and/or abduction. Passive shoulder horizontal adduction which may tense the nerves may be painful. Black and Lombardo state that there may be a "painful arc" between 90 and 160 degrees and a positive impingement sign.<sup>1</sup> This may be due to the sensory supply within the subacromial space. Since the supraspinatus and infraspinatus are dynamic shoulder stabilizers, their weakness and fatigue may result in occult shoulder instability with associated tendinitis and/or bursitis. Diagnosis can usually be confirmed by EMG and nerve conduction studies. A condition that might appear with similar findings is a chronic grade II brachial plexus injury. Vegso and Torg<sup>2</sup> state that the brachial plexus may be stretched when the head and cervical spine are forced laterally away from the involved side due to an athletic or work injury. Initially there may be paralysis, weakness, numbness, and burning sensations in the hand, but later on there may be only weakness of abduction and external rotation as in suprascapular injury. Electromyography and the initial symptoms should help differentiate the two.

Treatment of the suprascapular injury is directed at rehabilitation (strengthening and flexibility) of the supraspinatus, infraspinatus, and scapular rotators. During the rehabilitation phase, movements such as cross-body adduction, forward flexion, and external rotation which creates tension on the suprascapular nerve should be carefully monitored.<sup>1</sup> Spinal adjustments will help in improving

homeostasis to the area. Black and Lombardo<sup>1</sup> state that while improvement may occur in one to two months, it may take six months to a year for full return of function. Repeat EMGs will show reinnervation of the involved muscles. At times, surgical decompression may be necessary. Before sending an athlete back to full activity, it is essential to achieve maximum strength of the involved muscles since the infraspinatus supplies 90 percent of the external rotation power of the shoulder and the supraspinatus is important in creating compression stabilization of the humeral head in the glenoid cavity during elevation.

### *References*

1. Black, K.P.; Lombardo, J.A. "Suprascapular Nerve Injuries with Isolated Paralysis of the Infraspinatus." *Amer J of Sports Med*, 1990; 18(3):225-228.
2. Vegso, J.J.; Torg, E.; Torg, J.S. "Rehabilitation of Cervical Spine Brachial Plexus and Peripheral Nerve Injuries. *Clin in Sports Med*, 1987; 6(1):135-158.

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