



Suprascapular Nerve Partial Section by the Transverse Scapular Ligament: One Case

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Summary: We present a case of suprascapular nerve idiopathic total palsy lasting for 2 years, with intraoperative finding of suprascapular nerve partial section by the superior transverse scapular ligament. This highlights the importance of early surgical management with an open procedure for suprascapular neuropathy of unknown etiology. (*Plast Reconstr Surg Glob Open* 2015;3:e444; doi: 10.1097/GOX.0000000000000416; Published online 6 July 2015.)

Suprascapular neuropathy is a relatively unusual cause of shoulder pain and weakness and is frequently overlooked during physical examination, causing a delay in the diagnostic and therapeutic plan. The most frequent etiology is nerve compression from a ganglion cyst of the glenohumeral joint compressing the suprascapular nerve at the suprascapular or spinoglenoid notch, but other causes have been identified, such as nerve entrapment by suprascapular vessels, overuse injuries, direct nerve trauma or anatomical variations of the suprascapular notch, and rare cases of nerve tumor.

We present a case of a 56-year-old woman with a partial section of the suprascapular nerve by the superior transverse scapular ligament.

CASE PRESENTATION

A 56-year-old white woman was referred to an upper limb orthopedic surgeon by her general physician with a history of right shoulder weakness over the previous 2 years, with an increase during

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the last 2 months, and with no traumatic incident noted. This study conforms to the Declaration of Helsinki.

The patient complained about progressive loss of mobility of her right shoulder, caused by a combination of intermittent burning pain and weakness sensation and relieved by resting. The patient also noticed that she had a loss of back shoulder tone and complained of an unattractive bony appearance of the back shoulder.

Physical examination revealed an atrophy of both infraspinous and supraspinous fossae, muscle strength scores of 2 out of 5 on lateral elevation and external rotation, complete passive circumduction but limitations on active mobilization with 130° on lateral elevation, compensated by the deltoid and trapezius muscles, and 10° on external rotation.

Electromyographic studies showed no sign of complete denervation of either the supraspinatus muscle or the infraspinatus muscle, with no fibrillation potential.

Magnetic resonance imaging of the shoulder showed early signs of diffuse fatty infiltration. Neither rotator cuff tear nor ganglion cyst or other causes of suprascapular nerve compression were identified.

TREATMENT

The decision was made to perform a suprascapular nerve neurolysis by an open procedure, as the

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arthroscopic procedure seemed to be not appropriate in this case where no obvious cause was identified, and total nerve exploration, clinical and electrical, seemed to be needed. A back suprascapular approach was performed. The supraspinatus muscle was reflected to reach the distal part of the suprascapular nerve up to the suprascapular notch. We observed a clear strangulation of the suprascapular nerve by the superior transverse scapular ligament into the suprascapular foramen; there was even a partial section of the nerve, with several fascicles cut and retracted, combined with a neuroma aspect on the proximal part before the suprascapular foramen (Fig. 1). The suprascapular artery was identified above the suprascapular foramen.

The suprascapular nerve was released with a complete removal of the superior transverse scapular ligament. The proximal and distal parts of the injured fascicles were resected, and a direct suture was performed under microscope, protected by biological glue.

The suture was protected by a shoulder sling for 3 weeks, and physiotherapy was started after 21 days of rest to enhance the lateral elevation and external rotation of the shoulder.

A clinical examination at the 3-month follow-up appointment showed evidence of reinnervation.

Active motion of the shoulder was rated 4 out of 5 on both abduction and external rotation, with 1 kg (for 2 kg on the left shoulder) and 2.5 kg (for 4 kg on the left side), respectively. Since the surgery, immediate end of neuropathic shoulder pain was also reported by the patient.

DISCUSSION

To our knowledge, this is the first reported case of suprascapular nerve partial section by the superior transverse scapular ligament on its path through the suprascapular foramen.

Although suprascapular neuropathy is relatively uncommon, the most frequent etiology is mass compression, usually due to a ganglion cyst or other soft-tissue tumors.¹⁻³ Other causes may include injuries of the nerve due to trauma⁴ (sports activities, iatrogenic etiologies related to surgical procedures in the nerve area, or improper intraoperative mobilization under general anesthesia⁵) and anatomical variation,^{6,7} such as a narrow suprascapular notch or a suprascapular vessel passing through the suprascapular foramen and compressing the suprascapular nerve.

Our case highlights 2 important points. First, the delay between the diagnosis of a suprascapular neuropathy and the neurolysis of the suprascapular nerve should be as short as possible from when there

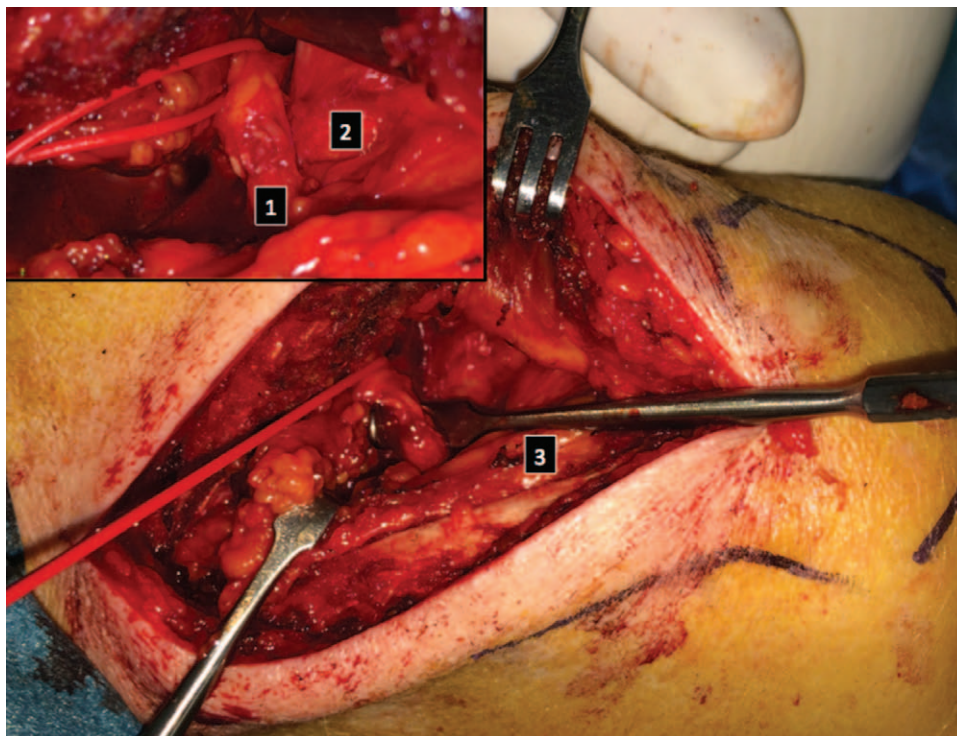


Fig. 1. Intraoperative view of the suprascapular nerve partial section (1) into the suprascapular notch (2) after resection of the superior transverse scapular ligament. This view also shows evidence of the fatty infiltration of the supraspinatus muscle (3).

are clinical, electrical, or radiological gravity signs, such as muscle atrophy, denervation potential, and fatty infiltration^{1,8}; indeed, waiting has no justification,² as the nerve injury only worsens on the Sunderland classification until the fifth degree, with a transection of the nerve by an ischemic attempt of the epineurium, as we established intraoperatively.

Second, although the arthroscopic approach could be useful for certain well-identified indications, such as ganglion cyst coming from the glenohumeral joint,³ it is not the approach we would recommend if there is no obvious cause shown by magnetic resonance imaging or precise lesion level indicated by the electromyography.

We would recommend performing an open procedure starting with a back supraspinal approach⁴ to first control the distal part of the suprascapular nerve, which could be supplemented with an anterior approach if needed to explore the proximal part of the nerve, up to the superior trunk. This provides the opportunity to assure a complete intraoperative evaluation of the nerve, by clinical and electrical evaluations. In our case, it also provided the opportunity to carry out a microsurgery resection and direct suture of the sectioned part, which would not have been possible with an arthroscopic approach, even after conversion to open procedure due to soft-tissue infiltration.

CONCLUSIONS

Our presently reported case exhibits the most severe grade of suprascapular nerve entrapment into the suprascapular notch, with fifth-grade Sunderland lesions. This case highlights the importance of early surgical management of suprascapular neuropathy with clinical and/or electrical gravity signs and also a number of benefits of an open procedure in case of unknown etiology, such as global control of

the nerve, and a possibility to proceed to microsurgery if needed.

PATIENT CONSENT

Written informed consent was obtained from the patient for publication of the article and the accompanying image. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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