An anterior approach for decompression of the suprascapular nerve

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In an effort to increase the beneficial results from decompressive surgery for suprascapular nerve entrapment, an anterior approach has been developed which minimizes manipulation of the suprascapular nerve and maximizes visualization while the decompression is being carried out. The technique and results in three patients are described.

Key Words • suprascapular nerve • nerve entrapment • anterior approach • surgical approach

SUPRASCAPULAR nerve entrapment is an interesting lesion on both anatomical and clinical grounds. Although diagnosed infrequently, it is a cause of shoulder dysfunction for which appropriate surgery can be curative. The most common technique is a posterior approach through the supraspinatus muscle, 2.5-7.9.14 although several other surgical approaches have been described 1.3.5-8. Since 1984, we have been using an anterior approach with apparent advantages in terms of safety, ease, and patient tolerance. In this report we detail the anterior technique as it applies to the clinical management of this lesion.

Operative Technique

Under general endotracheal anesthesia, the patient is positioned supine with shoulders elevated. The head is turned acutely to the side opposite the lesion. The neck and shoulder on the involved side is prepared for surgery and draped. A curvilinear incision, beginning at the anterior border one-third of the way up the sterno-cleidomastoid muscle is carried inferiorly to parallel the clavicle (Fig. 1 left). The incision is extended posteriorly at the junction of the middle and lateral thirds of the clavicle in a epaulet fashion (Fig. 1 right). This posterior limb of the incision overlies the leading margin of the lateral aspect of the trapezius muscle and is carried to the vicinity of the scapular spine.

The skin incision is deepened through the platysma, and the omohyoid muscle is identified. The posterior belly of this muscle is elevated, exposing the upper trunk of the brachial plexus and the origin of the suprascapular nerve (Fig. 2). The nerve is dissected along its course in the anterior cervical triangle. The first several centimeters of the clavicular attachment of the trapezius muscle is incised to afford increased lateral exposure (Fig. 3). The nerve is traced posteriorly beneath the transverse scapular ligament, which is then incised. Bipolar stimulation may be used to assess nerve function intraoperatively. Meticulous hemostasis is obtained and the wound is closed in layers.

Summary of Cases

Case Material

Between 1984 and 1986, three patients carrying a diagnosis of suprascapular neuropathy underwent anterior exploration and decompression by a single surgeon (B.M.O.). All three were male, aged 22, 31, and 45 years. The duration of symptoms ranged from 10 months to 1 year. Chief complaints were of shoulder weakness primarily in abduction and external rotation with associated dull pain. All had noted some shoulder atrophy prior to presentation. One patient was a weight-lifter, and the other two related their symptom onset to heavy lifting episodes. One patient had bilateral symptoms. Initial examination showed marked atrophy of the supra- and infraspinatus muscles, with -2.3/4 weakness. There were no associated sensory or reflex abnormalities. Electromyography (EMG) and nerve conduction studies were performed on all three patients with results consistent with neuropathy of the suprascapular nerve.
**Operative Results**

Two patients underwent unilateral decompression and one patient, with bilateral findings, underwent release in a staged manner. The mean period of hospitalization was 3.5 days. All patients reported improvement in pain while still in the hospital. Improved strength on muscle testing was apparent in the early postoperative period. There were no postoperative complications. One patient returned 3 years later with new...
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Fig. 3. Artist's drawing showing the completed exposure of the suprascapular notch and transverse scapular ligament.

upper-extremity complaints in a distribution not correlating with the suprascapular nerve. Findings associated with C-5 were present on EMG; myelography was negative.

Discussion

Suprascapular nerve palsy is rarely diagnosed as a cause of shoulder dysfunction. The nerve itself is long with a complex anatomical course, providing the potential for trauma and entrapment. The most common site of pathology is the suprascapular notch, where the nerve runs beneath the suprascapular ligament. Trauma can be directed to this location in several ways. The activity classically implicated is repeated adduction of the arm causing traction against the suprascapular ligament. Neuromas, neurofibromas, and ganglion cysts in the notch as well as in the spinoglenoid region have also been reported as the source of symptoms.

The history commonly develops over a period of months and includes a dull, poorly localized shoulder pain, weakness in external rotation and abduction, and atrophy of the supra- and infraspinatus muscles. Differentiation of this lesion from other musculoskeletal conditions such as rotator cuff problems can be difficult. Orthopedic evaluation and electrophysiological studies are important elements in the workup. Denervation potentials and prolonged axonal conduction time in the supra- and infraspinatus muscles, without peripheral nerve involvement, provide strong support for the diagnosis.

The anterior approach described was developed in response to perceived limitations in the standard posterior operation. Extensive dissection in the dense supraspinatus muscle is required. The nerve itself is first identified at the base of a deep muscle incision where limited exposure puts it at risk while the exposure and retraction may cause disruption of the nerve at the myoneural junction.

The approach described permits proximal identification of the nerve and generous exposure throughout its course. The risk of nerve injury is minimized. Since muscle splitting is not required, postoperative pain and immobility are reduced. A satisfactory decompression was obtained in all cases, followed by resolution of symptoms. We recommend this approach in well-defined cases of suprascapular nerve entrapment where decompression is indicated.
References


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