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REVIEW ARTICLES

Clinical outcomes of suprascapular nerve decompression: a systematic review

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Background: Suprascapular neuropathy is an uncommon clinical diagnosis. Although there have been a number of case series reporting on this pathologic process, to date there has been no systematic review of these studies. This study aimed to synthesize the literature on suprascapular neuropathy with regard to clinical outcomes. The secondary objective was to detail the diagnosis and treatment of suprascapular neuropathy and any associated complications.

Methods: A systematic review was performed to identify studies that reported the results or clinical outcomes of suprascapular nerve decompression. The searches were performed using MEDLINE through PubMed and Cochrane Database of Systematic Reviews.

Results: Twenty-one studies comprising 275 patients and 276 shoulders met inclusion criteria. The mean age was 41.9 years, and mean follow-up was 32.5 months. The most common symptom was deep, posterior shoulder pain (97.8%), with a mean duration of symptoms before decompression of 19.0 months; 94% of patients underwent electrodiagnostic testing before decompression, and 85% of patients had results consistent with suprascapular neuropathy. The most common outcome reported was the visual analog scale score, followed by the Constant-Murley score. The mean postoperative Constant-Murley score obtained was 89% of ideal maximum. Ninety-two percent of athletes were able to return to sport. Only 2 (0.74%) complications were reported in the included studies.

Conclusions: Surgical decompression in the setting of suprascapular neuropathy leads to satisfactory outcomes as evidenced by the patient-reported outcomes and return to sport rate. Furthermore, the rate of complications appears to be low.

Level of evidence: Level IV; Systematic Review

Keywords: Suprascapular neuropathy; shoulder pain; decompression; spinoglenoid notch; suprascapular notch; outcomes

Suprascapular neuropathy has become an increasingly recognized pathologic process and cause of shoulder pain and weakness during the past few decades. The clinical entity was first described by Thompson and Kopell in 1959.[23] Since then,

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the diagnosis and treatment of suprascapular neuropathy have evolved. Aiello et al[2] first identified 2 different points of compression, 1 at the suprascapular notch and the other at the spinoglenoid notch. Historically, suprascapular neuropathy was a diagnosis of exclusion. However, advanced imaging and electrodiagnostic testing have allowed clinicians to further understand and diagnose suprascapular neuropathy.

Although our understanding of suprascapular neuropathy has grown, it is unclear how patients do clinically after suprascapular nerve decompression. Only recently have studies reported patient outcomes after suprascapular nerve decompression at the suprascapular and spinoglenoid notches. These 2 anatomic sites of compression are separate clinical entities. Compression at the suprascapular notch generally leads to weakness of both the supraspinatus and infraspinatus. The suprascapular ligament is often the offending agent and must be released. In contrast, compression at the spinoglenoid notch leads to isolated infraspinatus weakness, and it is often caused by a cyst with an associated labral lesion. In these cases, the cyst or the labral lesion is generally addressed to alleviate the compression.

Furthermore, in athletic populations, return to sport has not been well defined after suprascapular nerve decompression. In addition, earlier studies described open techniques to release the suprascapular nerve, but with the advancement of arthroscopic techniques, recent studies have published the results of arthroscopic decompression. The type and rate of complications with either open or arthroscopic techniques have not been well studied.

This is the first systematic review on compressive suprascapular neuropathy in the literature. The primary objective of this systematic review was to report on the outcomes of suprascapular nerve decompression at the suprascapular or spinoglenoid notch. The secondary objective was to report on the presentation of symptoms, mechanism, and diagnosis of suprascapular neuropathy and complications associated with decompression.

Methods

The systematic review was performed following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.

Eligibility criteria

Studies were included if they reported the results of suprascapular nerve decompression at either the suprascapular notch or spinoglenoid notch. Results must have included 1 of the following: patient-reported clinical outcomes, objective strength testing, electrodiagnostic testing preoperatively and postoperatively, or return to sport rate. The following types of studies were excluded: case reports (<3 patients); reviews, editorials, or technique papers; studies that involved concomitant brachial plexopathy or fractures; and studies published in a language other than English.

Data sources

MEDLINE, through PubMed, and Cochrane Database of Systematic Reviews (CDSR) were searched for relevant publications. These online databases were searched in September 2016.

Searches

The search algorithm used for PubMed was suprascapular OR spinoglenoid OR (shoulder and "entrapment neuropathy") OR (shoulder and "ganglion cyst") OR (shoulder and "transverse scapular ligament"). For the CDSR, the search term used was "suprascapular neuropathy."

Study selection

The titles and abstracts were reviewed to determine the relevance of the study. After nonrelevant papers were excluded, the full text of studies was reviewed for inclusion. In addition, references were reviewed within these studies to identify any additional studies for inclusion. The study selections were performed independently by 2 investigators (A.M.M. and A.K.). These same authors extracted relevant data from the studies. Discrepancies between selected studies were few and settled by consensus.

Results

The CDSR reported no systematic reviews on suprascapular neuropathy. The PubMed database search produced a total of 1176 publications. After exclusion of nonrelevant titles, 165 abstracts were reviewed. From these abstracts, 105 full-text articles were obtained. After exclusion criteria were applied, 21 publications were identified for inclusion in the systematic review. One study was level II, 2 studies were level III, and the rest were level IV studies. No additional studies were included after evaluation of references from the full-text articles (Fig. 1).

Of the 21 studies, 11 involved decompression of the suprascapular nerve at the spinoglenoid notch only and 5 at the suprascapular notch only, and 5 involved a combination of decompression at the suprascapular and spinoglenoid notches. Fifteen studies employed arthroscopic techniques for decompression, whereas 6 studies employed open techniques for decompression. Table I summarizes each of the included studies.

Patient demographics

The 21 studies meeting criteria for the systematic review included 276 shoulders from 275 patients. Of the studies (18) that provided gender demographics, there were 197 men and 61 women. Mean patient age data were available for 214 shoulders and showed a mean age of 41.9 years (range, 14-85 years). Follow-up data were available for 228 shoulders, with a mean reported follow-up of 32.5 months (range, 6-108 months).