

# Suprascapular neuropathy in a young male handball player: case report

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## Abstract

**Background:** Suprascapular neuropathy is an uncommon but a very disabling condition. If not diagnosed early, it can lead to irreversible changes. Their prevalence is higher among males and active population, mainly in overhead athletes.

**Methods:** A 22-year-old male, who is a handball player, reported right shoulder pain, fatigue, and discomfort after one month holding a backpack during hiking in his vacations. He did not remember any trauma to the right shoulder. Clinically, he had a normal active and passive range of motion but the moderate weakness of the right shoulder external rotator muscles. At inspection, he had marked atrophy of supraspinatus and infraspinatus muscles. MRI demonstrated a superior labrum from anterior to the posterior lesion with large multiloculated Paralabral cyst and electromyography was consistent with compression of the suprascapular nerve.

**Results:** The patient was submitted to arthroscopic labral repair and decompression of the suprascapular nerve. Six months after surgery he has no pain and limitation and is recovering strength

**Conclusions:** Paralabral cysts are described in the literature as causing compression on spinoglenoid notch and thus coursing with infraspinatus atrophy. This case demonstrates an unusual presentation with both supra and infraspinatus muscles atrophy. Early recognition of these injuries is crucial because complication and morbidity rates are high with delayed diagnosis, mainly in the athlete population.

**Keywords:** suprascapular neuropathy, SLAP lesion, paralabral cyst, overhead athletes lesions, supraspinatus muscle atrophy, infraspinatus muscle atrophy.

## Introduction

Suprascapular neuropathy is a cause of disabling shoulder pain and weakness mainly among young active people with repetitive overhead motions [1]. As a rare condition (1-2% of the diagnosis of shoulder pain) is frequently misdiagnosed [2]. An important causal relationship effect has been described between these two lesions [3]. Paralabral cysts associated with a superior labrum from anterior to posterior (SLAP) lesion are uncommon, and the natural history of these cysts is unknown, but they generally persist and will enlarge, becoming clinically relevant when they cause nerve compression [4]. The Spinoglenoid notch is the local usually referred to where suprascapular nerve compression occurs coursing with weakness and atrophy of the infraspinatus muscle [1-3].

The goal of this paper was to report an unusual case of suprascapular neuropathy caused by a large paralabral cyst coursing with supraspinatus and infraspinatus muscle atrophy in a young male handball player and to highlight the importance of early suspicion of this type of injuries in the athlete populations, providing the right treatment and avoiding possible complications.

## Materials and Methods

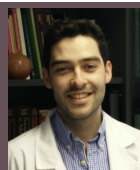
A 22-year-old male handball player presented with progressive right back shoulder pain, fatigue and weakness leading to a limitation in performing routine activities, particularly lifting heavy objects with his right upper limb. The pain began 2 months before, on his vacations, after a month hiking and holding a heavy backpack in his shoulders. Since then, he experienced an increasing and progressive

inability to perform his tasks, with persistent pain and weakness aggravated with overhead activity. No traumatic event was recorded, even during the season. He underwent physiotherapy without significant improvement of his condition. On physical examination, marked atrophy of the supraspinatus and infraspinatus muscles was found (Figure 1). The passive range of motion was normal, but he had significant weakness in abduction (85°) and in external rotation (15°). The suprascapular nerve stretch test described by Lafosse was positive. The Visual Analog Scale (VAS) score 6 and the Constant-Murley score was 42. There was no sensory loss and the remaining neurological examination was normal. Right shoulder X-Rays were normal. Magnetic resonance imaging (MRI) revealed a type 2 SLAP lesion with a large multiloculated paralabral cyst, which extended into the intramuscular planes of the supraspinatus muscle and into the suprascapular and spinoglenoid notches, indenting neural bundle in the

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**Figure 1:** Pre-operative clinical picture, showing supraspinatus and infraspinatus atrophy (right shoulder).

notch. Diffuse atrophic changes in supraspinatus and infraspinatus suggestive of denervation were also revealed (Figure 2a, 2b, and 2c). Electromyography was consistent with compression of the suprascapular nerve.

## Results

The patient was submitted to arthroscopic decompression of suprascapular nerve and SLAP repair using 2 anchors: one anterior to the insertion of the bicep's tendon and the other posterior. There were no intraoperative complications. The patient started a rehabilitation program in the immediate postoperative period. Six months after surgery, the patient has no pain and his weakness and atrophy of the supraspinatus and infraspinatus muscles are improving. Electromyography is normal. He has no limitation on his daily military activities. At 6 months, the VAS score improved to 1 and the Constant-Murley score improved to 92

## Discussion

Paralabral cysts in the spinoglenoid notch are frequently associated with labral tears. Formation of the cyst in the spinoglenoid notch can result in suprascapular nerve impairment, secondary to a mass effect, with resulting infraspinatus weakness. These paralabral cysts of the shoulder have been associated with SLAP lesions and if these SLAP lesions are not addressed, a high



**Figure 2:** MRI of the right shoulder (a- axial view, b – coronal view, c – sagittal view) showing paralabral cyst extending into the intramuscular planes of supraspinatus muscle

recurrence rate of the cysts has been suggested [5]. Patients who sustain traumatic injuries to the shoulder girdle and those who undergo repetitive overhead motions are most at risk for SLAP lesions [1]. SLAP lesions are not negligible in overhead athletes even when there is no history of a reported fall or trauma. Furthermore, several authors have suggested that even if the MRI does not reveal any lesion, a labral lesion should be suspected and actively searched during surgery [1, 3].

An association between paralabral cysts and suprascapular nerve compression at the spinoglenoid notch, causing only infraspinatus muscle atrophy is found in the literature [1]. However, in this case, as the cyst enlarged, it extended into the intramuscular planes of supraspinatus muscle and into the suprascapular notch, causing atrophy of both supraspinatus and infraspinatus muscles. When an overhead athlete presents insidiously deep shoulder pain, without a history of trauma or fall, it must be remembered that these patients can have SLAP or labral lesions that were asymptomatic until that time. We hypothesize that our patient had already an asymptomatic labral lesion before the hiking, that become symptomatic as the cyst enlarged during the month using the backpack.

While a high index of suspicion is needed, with a good physical examination it is possible to observe supraspinatus and infraspinatus atrophy (Figure 1) when compared to the other shoulder. Furthermore, these patients will have pain and weakness on external rotation and in the first degrees of abduction, while a passive range of motion is, generally, normal. In all these patients, electromyography and MRI should be performed, because they usually confirm the diagnosis.

The treatment of symptomatic cysts has varied from observation, to open excision, to

arthroscopic decompression with or without labral repair. Recently authors have suggested that these patients can be treated with an isolated SLAP repair because a large percentage of these cysts resolve postoperatively and patients typically have high satisfaction rates after repair alone [1, 3]. However, there is still controversy regarding the optimal management of these patients. For these patients, a faster return to daily life and sports activities is very important and we believe patients can recover faster with the repair and decompression, as it provides immediate release of the compression of the suprascapular nerve [5]. Nowadays, conservative treatment is not an option because the marked muscle atrophy can lead to irreversible changes. The arthroscopic technique requires a high degree of expertise due to neurovascular structures because both suprascapular nerve and artery must be protected.

## Conclusion

In conclusion, suprascapular neuropathy caused by paralabral cysts can occur at the suprascapular notch and it should be considered in the differential diagnosis of shoulder pain, especially when other common causes of pain were excluded, and weakness is present. The diagnosis is based on a careful history showing weakness and atrophy of both supraspinatus and infraspinatus muscles and a thorough clinical, radiological and electromyography examination.

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