

Subcoracoid Impingement: Diagnosis and Ultrasound-guided Injection in Throwing Athletes

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ABSTRACT

Subcoracoid impingement is a rare condition, therefore, its diagnosis poses a challenge to the orthopedic surgeon. It manifests with dull pain in the subcoracoid region and pain on palpation in the coracoid process as a result of impingement of the subscapularis muscle between the coracoid process and the lesser tubercle of the humerus. The objective of this technical note is to describe an alternative diagnosis and ultrasound-guided injection for throwing athletes with subcoracoid impingement.

Keywords: Coracoid process; athletes; conservative treatment.

Level of Evidence: IV

Pinzamiento subcoracoideo: diagnóstico e inyección guiada por ecografía en atletas lanzadores

RESUMEN

El pinzamiento subcoracoideo es un cuadro poco frecuente y, por lo tanto, su diagnóstico plantea un reto al cirujano ortopédico. Se manifiesta con un dolor sordo en la región subcoracoidea y dolor a la palpación en el proceso coracoideo, como resultado del pinzamiento del músculo subescapular entre el proceso coracoideo y el troquíen del húmero. El objetivo de esta nota técnica es describir una alternativa diagnóstica y la inyección guiada por ecografía para atletas lanzadores con pinzamiento subcoracoideo.

Palabras clave: Proceso coracoideo; atletas; tratamiento conservador.

Nivel de Evidencia: IV

INTRODUCTION

Subcoracoid impingement is a rare condition that manifests in an isolated and nonspecific manner, making its diagnosis a challenge for the orthopedic surgeon. It is considered a cause of anterior shoulder pain as a result of subscapularis muscle impingement between the coracoid process and the lesser tubercle of the humerus.^{1,2} In addition, it has been linked to anterosuperior rotator cuff injuries.²

It is found in those who undertake repetitive shoulder movements, such as overhead or combined internal and external rotation, as seen in numerous sports.³ In throwing athletes, subcoracoid impingement can be multifactorial, among the most frequent causes are abnormal shoulder biomechanics during throwing, hypermobility of the glenohumeral joint, muscle weakness or imbalances, and a prominent coracoid arch. Biomechanically, coracohumeral space pressure increases in the abduction-external rotation position rather than in internal rotation; this movement is considered an antecedent in throwing athletes.⁴ Clinically, it is characterized by a dull ache in the subcoracoid region and, on palpation, in the coracoid process.²

Ultrasound is a useful imaging study for the diagnosis and treatment of patients with subcoracoid impingement.⁵ Treatment should be conservative, with activity adjustments, rotator cuff and scapula stabilizing musculature strengthening, and ultrasound-guided injections that can be useful for proper compliance with rehabilitation in throwing athletes, though arthroscopic surgery is another option with good results.^{6,7}

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The objective of this technical note is to describe a diagnostic alternative and ultrasound-guided injection for subcoracoid impingement in throwing athletes.

CLINICAL CASE

The patient is a 17-year-old male, right-handed, throwing athlete. He began with pain in the anterior side of the shoulder in the abduction-external rotation position, as well as difficulty performing overhead motions and pain upon palpation in the coracoid region.

Procedure

The procedure was performed with the patient's informed consent.

After asepsis and with the patient seated, an ultrasound probe was placed in the plane of the longitudinal axis of the subscapularis muscle. In a previous ultrasound, the medial and anterior coracoid space had been located, and two injections were administered (2 cc of levobupivacaine plus 2 cc of triamcinolone acetonide for each injection).

The needle was introduced at a 45° angle from lateral to medial, in the plane of the ultrasound probe, and placed in the coracohumeral space, avoiding the subscapularis muscle, and the therapeutic substance was administered. The injection was then administered directly through the anterior coracoid process under ultrasound guidance with the needle in the perpendicular plane, avoiding lateral and medial inclinations (Video). A physical examination was performed after the injection and improvement of the clinical condition was observed.

DISCUSSION

In a patient with shoulder pain, subcoracoid impingement can be diagnosed by physical examination.^{8,9} However, additional studies (ultrasound) may be indicated to corroborate the diagnosis and even to treat the condition.⁵ When subcoracoid impingement is suspected, Masala et al. recommend plain radiographs followed by magnetic resonance imaging of the shoulder.¹⁰ This study allows better visualization of the coracoid morphology, measurement of the coracohumeral distance, the coracoglenoid and coracohumeral angles, and the height of the lesser tubercle of the humerus, key points for the diagnosis of this entity.¹¹⁻¹³

The administration of ultrasound-guided injections as a non-surgical treatment for patients with subcoracoid impingement is considered a successful alternative for pain in throwing athletes. Escamilla et al. suggest, as a first line of therapy, to apply ultrasound-guided infiltrations together with a rehabilitation program.¹⁴

CONCLUSION

Ultrasound-guided injection is a therapeutic alternative that achieves good outcomes in throwing athletes with subcoracoid impingement, and allows them to reintegrate, immediately, without pain, to their throwing activities.

Conflict of interest: The authors declare no conflicts of interest.

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