

The conservative rehabilitation program in shoulder impingement syndrome

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ABSTRACT

The article presents impingement syndrome anatomically, biomechanically, clinico-functional and paraclinical (radiological).

There are two different forms of the impingement syndrome (primary and secondary), considering epidemiological clinical and functional differences, and three stages of evolution (by Neer).

Conservative recovery treatment is highly effective in both forms of syndrome and includes humeral head stabilizing exercises, scapular stabilizing exercises, scapular taping in secondary form of the syndrome.

The kinetotherapy program may be associated with anti-inflammatory medication, corticoid injection in the subacromial space, cryotherapy and ultrasound.

The failure of the conservative treatment after 6 month require surgical intervention by subacromial decompression, but only in primary forms of the impingement syndrome.

Key words: primary and secondary impingement syndrome, rotator cuff interval, kinetotherapy, physiotherapy

The term “impingement syndrome” represents a clinical entity in which the rotator cuff is pathologically compressed against the anterior structures of the coracoacromial arch (between the acromion and the coracoacromial ligament) (FIGURE 1).

The progression of this syndrome is defined by a narrowing of the subacromion outlet by spur formation in the coracoacromial ligament and on the undersurface of the acromion (FIGURE 2).

All these factors result in an increase pressure on the rotator cuff, which can lead to subsequent tearing of the rotator cuff.

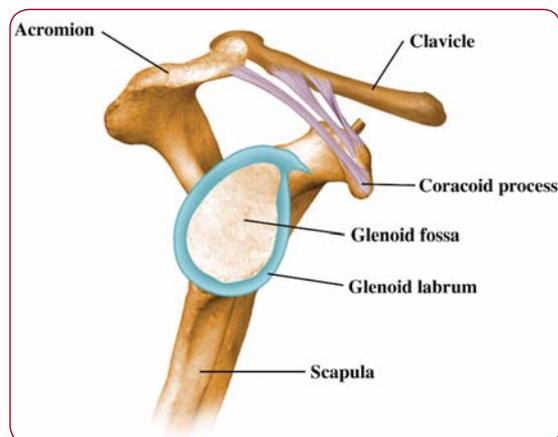


FIGURE 1

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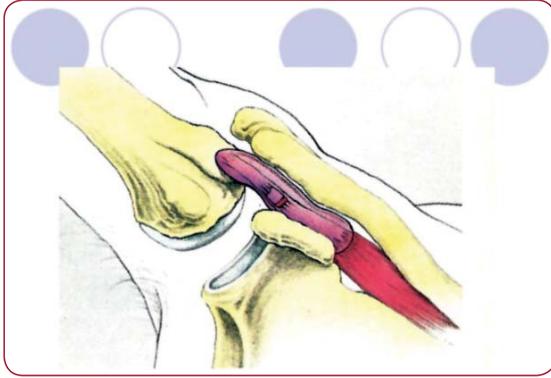


FIGURE 2

Clinically, patients often complain of shoulder pain, weakness, and possible paresthesias of the arm, so that the causes of these symptoms can be misinterpreted as a cervical spine pathology (cervical spondylosis, cervical neuralgia).

There are three stages of the impingement syndrome (by Neer):

STAGE 1 – EDEMA AND INFLAMMATION

Typical age: younger than 25 years

The lesion is reversible.

Physical signs: tenderness to palpation over the greater tuberosity of the humerus and along the anterior ridge or acromion, painful abduction between 60-120 degrees, positive impingement signs, restricted shoulder ROM.

STAGE 2 – FIBROSIS AND TENDINITIS

Typical age: 25-40 years

Not reversible lesion.

Physical signs: stage 1 signs plus crepitus in the subacromial space, limitation of active and passive ROM.

STAGE 3: BONE SPURS AND TENDON RUPTURES

Typical age: older than 40 years

Not reversible lesion

Physical signs: stage one and two signs plus the following – pronounced limitation of ROM, atrophy of the infraspinatus, weakness of shoulder abduction and external rotation, biceps tendon involvement, tenderness of the acromio-clavicular joint.

When impingement syndrome is diagnosed it is necessary to differentiate primary from secondary impingement. □

PRIMARY IMPINGEMENT

Primary subacromial impingement is the result of an abnormal mechanical relationships between the rotator cuff and the coracoclavicular arch. Other primary factors that can lead to narrowing of the subacromial outlet are represented by: congenital anomaly of the acromioclavicular joint, congenital coracoids anomaly, nonunion of the acromion fracture, rotator cuff calcific deposits, degenerative acromion spurs.

Patients are usually older than 40 years, and complain of anterior shoulder pain, shoulder weakness and difficulty performing abduction and external rotation. They also present limitation of shoulder mobility secondary to pain.

An impingement test may be performed by injecting 10 ml of 1% xylocaina into the subacromial space (FIGURE 3).

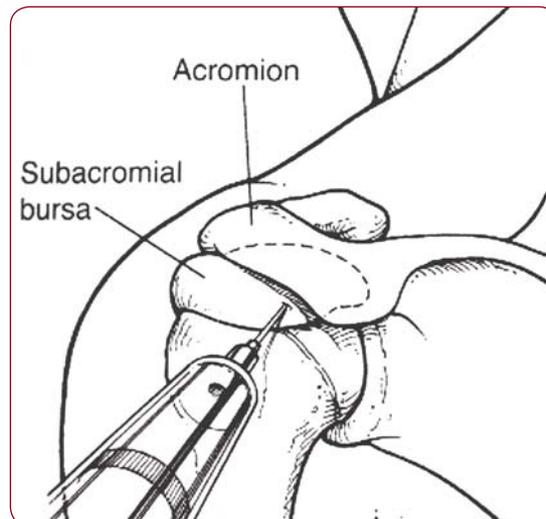


FIGURE 3

If the pain decreases and the rotator cuff function improves, rotator cuff pathology is

suspected as the cause of pain (rotator cuff tendinitis, rotator cuff tear, impingement).

Shoulder radiologic evaluation may support the diagnosis of primary impingement by demonstrating a type III acromion (hooked acromial spur). □

SECONDARY IMPINGEMENT

Secondary impingement is the result of an “relative narrowing” of the subacromial space, often results from glenohumeral or scapulothoracic joint instability.

Loss of the stabilizing function of the rotator cuff muscle also leads to abnormal superior translation of the humeral head and mechanical impingement of the rotator cuff on the coracoacromial arch (1).

In patients who have scapular instability, impingement results from improper positioning of the scapula with regard to the humerus (2).

Patients with secondary impingement are usually younger and often participate in overhead sporting activities with arm in abduction and external rotation. (baseball, swimming, volleyball, tennis), (3), moment in which the pain may occur (4).

In patients with secondary impingement, treatment of underlying problem should result in resolution of the secondary impingement symptoms. Often the secondary impingement is incorrectly treated as a primary impingement, with subacromial decompression which can worsen the symptoms because the shoulder is rendered even more unstable.

The conservative recovery treatment of the impingement syndrome.

The conservative treatment is very efficient, including anti-inflammatory medications combined with a rehabilitation program.

In general, the comprehensive rehabilitation protocols for primary, secondary impingement and postoperative after subacromial decompression (operative treatment) (5).

The initial goals of the rehabilitative process are to obtain pain relief and regain motion. Along with anti-inflammatory medications, subacromial corticosteroid injections may help to control the discomfort in the acute stages of the inflammatory process. Physiotherapy is represented by ultrasound combined with cryotherapy.

Improving comfort will allow more successful advances in motion and strengthening. Because the rotator cuff tendon is intact, ROM

exercises can be both passive and active. Initially, these exercises are done with the arm below 90 degrees of abduction to avoid impingement of the rotator cuff. As symptoms improve, ROM is increased.

The strengthening program begins with closed chain exercises, and open chain exercises are initiated after advancing the closed chain exercises without aggravating shoulder discomfort. These exercises help restore the ability of the rotator cuff to dynamically depress and stabilize the humeral head, thereby resulting in a gradual relative increase in the subacromial space (6).

Scapular stabilizing exercises are important for patients with primary or secondary impingement. The scapula forms the base from which the rotator cuff muscle originate. Reciprocal motion is required between the glenohumeral and scapulothoracic joint articulations for proper cuff function and correct positioning of the coracoacromial arch.

Abnormal scapular movement can be treated with a scapular taping program as part of the exercise regimen. Scapular taping can improve the biomechanics of the scapulohumeral and scapulothoracic joints and thus help relieve the patient's symptoms (FIGURE 4) (7).

Nonoperative treatment is considered unsuccessful if no improvement occurred after 6 months of proper conservative management and surgical intervention is indicated. But after 6 months of appropriate conservative treatment, most patients have achieved maximal improvement from the nonoperative treatment program. □



FIGURE 4

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