World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

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Chronic shoulder pain due to scapular dyskinesia with supraspinatus tendinopathy: what is the cause and what is the consequence? Clinical case with literature review

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World Journal of Advanced Research and Reviews, 2025, 27(03), 093-096

Publication history: Received on 25 July 2025; revised on 29 August 2025; accepted on 02 September 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.27.3.3120

Abstract

The presentation of chronic shoulder pain without a prior history of acute trauma is a common reason for consultation in clinical practice, especially amoung young, active adults. While rotator cuff tendinopathies and subacromial impingement syndromes are often emphasized, scapular dyskinesia remains an underappreciated potential cause, frequently overlooked due to incomplete clinical examination or limited knowledge of its presentation. This alteration in scapulothoracic kinematics ultimately disrupts the functional harmony of the shoulder and places abnormal loads on tendons tissus.

Through an illustrative clinical case report and literature review, we hypothesize a bidirectional relationship between scapular dyskinesia and rotator cuff tendinopathy. The patient is a 33-year-old woman with chronic right shoulder pain persisting since adolescence. Clinical and paraclinical examinations revealed chronic supraspinatus tendinopathy and right scapular dyskinesia with moderate neurogenic involvement of to the dorsal scapular nerve. This case illustrates the implications of dyskinesia on scapulohumeral biomechanics, acting both as an etiology and contributor to the development of shoulder tendinopathies.

The literature provides datathat that support the premise of one condiiton potentially aggravating the other. It also advocates early early rehabilitation aimed at restoring scapula control in order to prevent more permanent tendon damage.

Keywords: Shoulder Pain; Scapular Dyskinesia; Rotator Cuff; Case Report

1. Introduction

Shoulder pain is a common reason for outpatient consultations, particularly among the active population. Rotator cuff pathology and subacromial impingement are often put forward as the cause of this condition. However, one cause is often overlooked either because of lack of knowledge or failure to consider it during a clinical eamination: scapular dyskinesia. It encompasses multiple dysfunctions involving abnormalities in the static position or kinematics of the scapula: static abnormal position, prominence of the medial border during dynamic motion, prominence of the lateral border when raising the arm, early elevation when raising the arm, or rapid rotation when lowering the arm. Furthermore it is worth mentioning that the association of these two pathologies has been frequently reported, suggesting a possible direct or indirect relationship between common underlying pathophysiological mechanisms

The objective of our work is to demonstrate the relationship between these two pathologies through a clinical case study and a review of the literature.

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2. Medical observation

We report a clinical case of a 33-year-old female patient who was treated in our department for pain in her right shoulder. This pain began when she was 18 years old, and the etiological assessment indicated dyskinesia with rotator cuff tendinopathy.

The patient is a right-handed 33-year-old woman who is married with two children. She reported pain in the right shoulder and right scapular region starting at age 18. The patient stated that the pain was purely mechanical in natur : she experienced pain during movement or exertion that subsided with rest, allowing her to continue normal activities. Over time, and particularly over the last 2 years, the pain worsened, developing both mechanical and inflammatory components that have significantly impaired her quality of life.

The patient detailed some significant functional consequences, stating that she experienced pain during simple household activities, struggled with writing and reported greater muscle fatigue in her right upper limb. The patient was distressed by the persistence of her symptoms, and sought the advice of several specialists to assist her with the management of her right shoulder pain. The specialists prescribed various symptomatic treatments over time including analgesics and non-steroidal anti-inflammatories (NSAIDs) and the patient also received several local corticosteroid injections into the right shoulder. Although she experienced some symptomatic relief, no major improvement was noted.

At the same time, she was sent for a gastroenterology examination that showed the presence of gallstones. A cholecystectomy was subsequently performed in 2024, on the assumption that her symptoms were visceral, likely hepatic colic radiating to the right scapular region. However, despite the above treatments and surgery, no pain relief.

In April 2025, the patient presented to the Physical Medicine and Rehabilitation (PMR) Department. The clinical examination demonstrated a lowering of the right shoulder, without limitation of joint range of motion. Conflict maneuvers were negative, while the Jobe Test (supraspinatus tendon test) was positive indicating tendinopathy of this muscle. The cervical spine examination demonstrated preserved mobility, but there was an obvious level of discomfort. It also demonstrated significant muscle contractures, especially in the posterior cervical muscles, trapezius muscles, and sternocleidomastoid muscles, indicating chronic muscle tension. Neurologically, the examination showed normal osteotendinous reflexes with preserved sensitivity, ruling out a motor or sensory neurological deficit. Another important finding during the clinical examination was dyskinesia of the right scapula. The patient also reported pain even at rest, particularly while sitting. Interestingly, this pain was alleviated by corrective postural maneuvers, reinforcing the hypothesis of a scapulothoracic kinematic disturbance. In light of the positive tendon tests suggesting damage to the supraspinatus muscle, a shoulder ultrasound was performed, confirming chronic tendinopathy of the right supraspinatus, further consolidating the diagnosis of tendon pathology.

Finally, because of the persistent scapular dyskinesia and the chronic nature of the pain, an electroneuromyogram (ENMG) was requested to assess possible peripheral nerve injury. The evaluation showed mild damage to the right dorsal scapular nerve. Fasciculations (involuntary muscle contractions) of the right rhomboid muscle were noted during recording, supporting the presence of moderate but existing neurogenic damage to the nerve.

3. Discussion

The normative kinematics of the scapula during arm elevation include upward rotation, posterior tilt, and external rotation. Normative kinematics are necessary for optimal function of the glenohumeral and acromioclavicular joints, proper activation of scapular and rotator cuff muscles, and for reducing subacromial impingement and tendon compression (1, 2) .

Scapular dyskinesia refers to incorrect positioning or movement of the scapula. This alteration affects the scapulohumeral mechanics and leads to dysfunction of the joint while promoting impingement of the rotator cuff tendons under the acromion. Both of these adverse effects compromise the biomechanical properties (strength and elasticity) of the tendons, especially the supraspinatus tendon, and contribute to further mechanical impingements. This interaction leads to pain, stiffness, and reduction in shoulder function (3, 4).

One study demonstrated that scapular dyskinesia is a contrributing factor in excessice activity leading to tendon damage, most notably the supraspinatus tendon and long biceps tendon through repetitive overuse. Histopathological studies noted disarray of the tendon fibers and elevated inflammatory response (5).

Alterations in scapular kinematics can result in a reduction in the available subacromial space and undesirable changes in glenohumeral forces, which can impose abnormal loading on the rotator cuff tendons. This can result in inflammation, degeneration, and even tendon tearing. It is obvious that dyskinesia can be a risk factor for rotator cuff tendinopathies, especially supraspinatus tendinopathy. This indicates that early rehabilitation focusing on strengthening scapular stabilizers (such as serratus anterior) is essential to minimize and/or prevent repeated microtrauma to the tendon, and future recurrences (5-7) .

Nonetheless, only three studies found that scapular dyskinesia is commonly observed in rotator cuff tendinopathy, with an even larger presence in patients with more extensive lesions. No direct cause and effect relationship has been established yet, but it could be interpreted either as a functional or adaptive response or a factor contributing to the progression of shoulder tendinopathies (8, 9).The scapula was discovered by Ann Cools et al. to play a pivotal role in maintaining the integrity of the rotator cuff muscles. Scapatular dysfunction affects the rotator cuff and biceps brachii tendons, compromінsing their structural integrity. This increases the propensity for trauma and rupture due to overuse, even in the absence of documented traumatic activity. These findings support the notion that scapular disorders alone are sufficiently contributory to initiating the degenerative cascade that leads to shoulder pathologies, even in the absence of prior trauma. However, Leong HT sheds further light on the matter with a disposition tendinopathy relates to scapula muscle imbalance (3, 10).

According to the existing literature, the relationship between scapular dyskinesis and shoulder pathologies is complex and likely bidirectional. Scapular dyskinesis may either contribute to shoulder pain or result from chronic pain. In the present case, the progression from an initially mechanical pain to one with inflammatory characteristics suggests a multifactorial origin. The most plausible hypothesis is the presence of longstanding scapular dyskinesis, possibly originating during adolescence in the context of subclinical nerve involvement, which may have progressively predisposed the patient to rotator cuff tendinopathy after several years of evolution.

4. Conclusion

Scapular dyskinesia is a frequently missed contributor to rotator cuff tendinopathies and can be responsible for their aetiology or propagation. The case described demonstrates this relationship with a chronic supraspinatus tendinopathy likely second to a long-standing neurogenic dyskinesia.

The literature would advocate for a bidirectional relationship between the two and support the need for more exhaustive clinical screening. A rapid rehabilitation and musculo-tendinous rebalance programme in the initial approach are mandatory to prevent chronicity and functional sequelae.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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