

Isolated Tears of Pectoralis Minor Muscle in Professional Football Players: A Case Series

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ABSTRACT

Our objective is to include pectoralis minor injuries in the comprehensive assessment of differential diagnoses for anterior chest wall pain or medial anterior shoulder pain sustained during blocking activities, which may present in football players.

In this article, we report 2 cases of isolated pectoralis minor tears in professional football players and present mechanisms of injury, clinical presentations, appropriate diagnostic studies, and treatments.

With individuals' increasing participation in competitive sports and weight lifting, tears of the pectoralis major muscle and tendon are no longer uncommon.¹⁻³ In contrast, an isolated pectoralis minor injury, to our knowledge, has been reported only once in the orthopedic literature.⁴ The pectoralis minor, a triangular muscle situated deep in the pectoralis major,⁵ originates from the second to the fifth ribs and the overlying fas-

cia covering the intercostals, passing superiorly and laterally to insert on the coracoid process of the scapula. It provides an anatomical landmark for deeper structures, specifically the axillary artery, the medial pectoral nerve, and the brachial plexus cords. The pectoralis minor origin and insertion are subject to variation.⁶ The pectoralis minor action includes protraction and depression of the lateral angle of the scapula.

A multitude of differential diagnoses may be considered when athletes present with anterior chest wall pain. Our objective is to include pectoralis minor injuries in the comprehensive assessment of differential diagnoses for anterior chest wall pain or medial anterior shoulder pain sustained during blocking activities, which may present in football players.

In this article, we report 2 cases of isolated pectoralis minor tears in professional football players (each player provided informed consent) and pre-

sent mechanisms of injury, clinical presentations, appropriate diagnostic studies, and treatments.

MATERIALS AND METHODS

Case 1

A right-hand-dominant man in his late 20s presented with pain in the anterior region of the left shoulder just inferior to the clavicle. The patient was a fullback in the US National Football League (NFL). His injury initially occurred during practice; when performing blocking drills, he experienced increasing pain in the left shoulder and chest. Approximately 1 week later, he discontinued his practice sessions because of the pain. He said he was having significant difficulty with abduction and external rotation.

Physical examination revealed no apparent ecchymosis or deformity. On palpation, there was significant tenderness over the sternal portion of the pectoralis major and in the area of the

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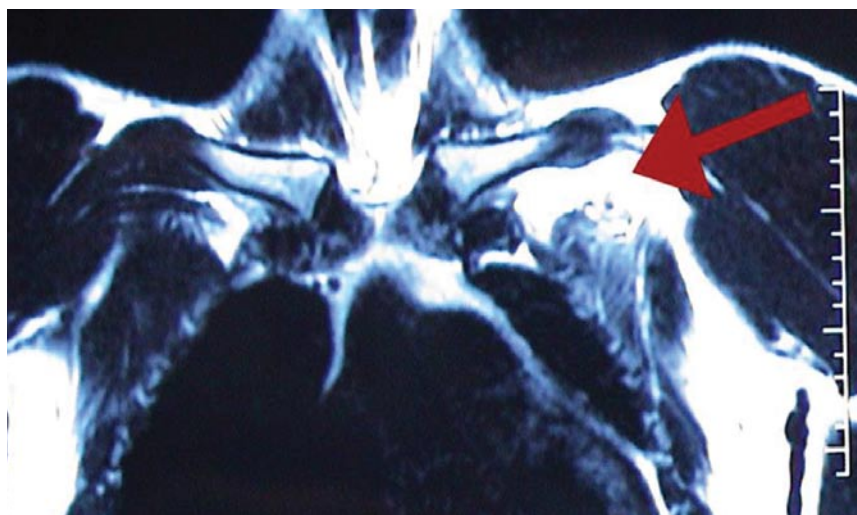


Figure 1. Case 2—anteroposterior magnetic resonance imaging shows isolated tear of pectoralis minor muscle.

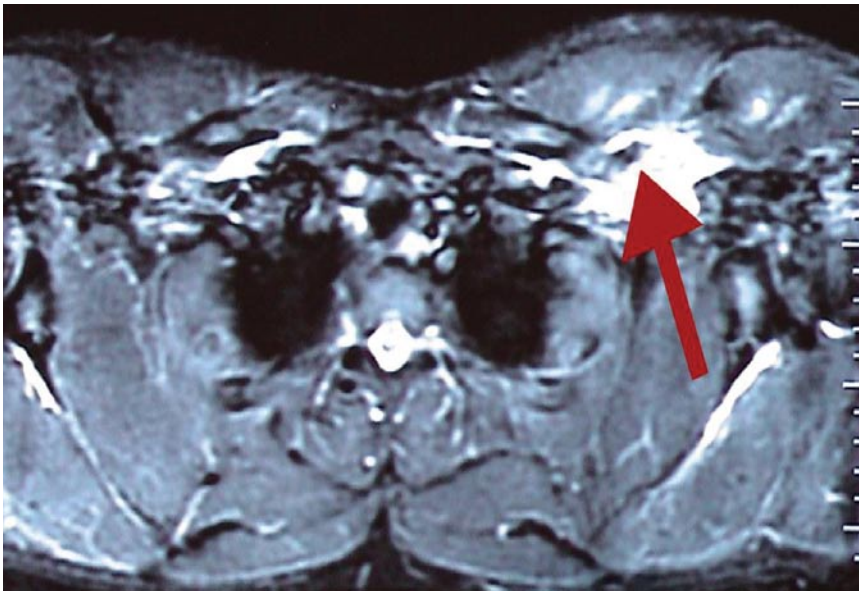


Figure 2. Case 2—cross-sectional magnetic resonance imaging shows isolated tear of pectoralis minor muscle.

coracoid. During bilateral contraction of the pectoralis major, there was no significant asymmetry. The patient had full active and passive range of motion during forward flexion and internal rotation; however, moderate pain was elicited with abduction and external rotation. Neurovascular examination of the left upper extremity was normal. The pectoralis major tendon appeared to be intact.

shoulder region, just inferior to the clavicle, during blocking drills, with the shoulder in flexion and the arms in extension. He continued practicing, without restriction, through his discomfort. His primary complaint was weakness while blocking, during passing drills.

Physical examination revealed no apparent ecchymosis or deformity. Significant tenderness was elicited

ralis major lacked increased signal, indicating that it was intact. Thus, MRI confirmed an isolated pectoralis minor tear. The prescribed treatment and rehabilitation consisted of scapular retraction/protraction and shoulder depression exercises. The patient returned to play during week 3.

DISCUSSION

Considering the variation in the origin and insertion of the pectoralis minor muscle, it is imperative to consider all the differential diagnoses, including costal injuries, high rib (ie, second rib) fractures, sternoclavicular injuries, pectoralis major tears, and pectoralis minor tears.⁷ Pectoralis minor injuries present with anterior shoulder pain immediately inferior to the clavicle. Our 2 patients sustained their pectoralis minor injuries during blocking drills, in each case with arms in extension and shoulder in abduction and flexion. In previous reports, the mechanism of injury for the pectoralis minor was a direct blow to the front of the shoulder.⁴ Comprehensive evaluation combined with MRI studies will ensure an accurate diagnosis. An advantage in using MRI is that

“...an injury sustained during blocking drills or from a direct blow to the anterior chest wall or shoulder could be a pectoralis minor injury...”

Magnetic resonance imaging (MRI) confirmed an isolated pectoralis minor tear, and conservative treatment was prescribed. The rehabilitation protocol consisted of scapular retraction/protraction and shoulder depression exercises for shoulder stabilization. During week 3, function and pain improved, and the patient returned to play.

Case 2

A left-hand-dominant man in his late 20s, an NFL offensive tackle, presented with left anterior shoulder pain. His initial injury occurred during practice. He became increasingly aware of discomfort in the anterior

over the sternal portion of the pectoralis major and in the area of the coracoid. During bilateral contraction of the pectoralis major, there was no significant asymmetry. The patient had full active and passive range of motion during forward flexion and internal rotation. He felt moderate pain with abduction and external rotation. Neurovascular examination was normal. The pectoralis major tendon appeared to be intact.

MRI was performed subsequent to symptoms persisting (Figures 1, 2). Increased signal throughout the entire pectoralis minor indicated a complete tear. However, the pecto-

it can be used to diagnose pectoralis minor injuries and exclude pectoralis major injuries.^{8,9}

Whereas patients with complete pectoralis major tears are encouraged to undergo surgery to regain optimal function, conservative treatment was recommended for our 2 patients. We based this treatment on reports of patients with Poland syndrome, congenital absence of the pectoralis minor, which poses no functional limitations.¹⁰ Furthermore, Mysnyk and Johnson,¹¹ reporting on 2 wrestlers with Poland syndrome, stated that Cybex testing revealed no appreciable decrease in shoulder internal rotation

strength but did show a 20% to 30% decrease in shoulder horizontal adduction strength (though the anomaly imparted no functional impairments). Thus, patients similarly affected may be advised that shoulder strength may be slightly decreased but that functional limitations are unlikely.¹¹

Our main point is that an injury sustained during blocking drills or from a direct blow to the anterior chest wall or shoulder could be a pectoralis minor injury. Remaining aware of the clinical presentation of this injury and conducting MRI studies will permit an accurate, early diagnosis. Early diagnosis will ensure that the athlete receives appropriate treatment and rehabilitation and returns to the field of play.

AUTHORS' DISCLOSURE STATEMENT

The authors report no actual or potential conflict of interest in relation to this article.

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