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Case Report

Isolated traumatic pectoralis minor tendon tear in a young adult diagnosed with MRI

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ARTICLE INFO

Article history:

Received 23 March 2018

Accepted 8 April 2018

Available online xxx

Keywords:

Pectoralis minor

Trauma

MVA

MRI

CT

ABSTRACT

This is a rare case of an isolated pectoralis minor partial-thickness tendon tear in a 24-year-old man who was involved in a major trauma. The purpose of this paper is to report the clinical signs, symptoms, cross-sectional imaging findings, and management of an isolated pectoralis minor tendon tear. Furthermore, this case represents a novel traumatic mechanism of injury, as opposed to the classic sports-related pectoralis minor tendon tear injury. The current limited body of literature on isolated pectoralis minor tendon tears is reviewed.

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1. Introduction

Pectoralis major muscle tendon tears are frequently encountered [1–4]. Pectoralis minor muscle tendon tears are uncommon. If they do occur, they are usually in conjunction with a pectoralis major muscle tear [1]. However, isolated pectoralis minor tendon tears without a pectoralis major muscle tear are exceedingly rare. To our knowledge, only five cases of isolated pectoralis minor tendon tears are currently described in the English literature [Table 1], all of which were sports-related injuries. The medically accepted mechanism for a pectoralis major tear is forced abduction and external rotation. Pectoralis

minor tear mechanisms of injury are relatively unknown since very few cases have been described [5–8]. In these cases, conservative management is indicated [9,10].

The pectoralis minor is a fan-shaped muscle of the shoulder girdle. It originates from the external surfaces of the anterior portion of the third to fifth ribs and inserts onto the coracoid process of the scapula [11]. It is innervated by the medial and lateral pectoral nerves (C6-T1), which are branches of the brachial plexus. The pectoralis minor is located deep to the pectoralis major and together they form the anterior wall of the axilla. Thus, the contracted pectoralis minor muscle can be palpated in the axillary region. It is located in close proximity to the brachial plexus, the subclavian artery, and

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<https://doi.org/10.1016/j.radcr.2018.04.015>

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Table 1 – A review of the findings, imaging, and outcomes of all five literature-reported cases of an isolated pectoralis minor muscle tendon tear.

Authors/ Year	Age	M/F	Mechanism of injury	R/L	Initial impression	Imaging findings	Treatment	Follow-up
Mehallo et al. (2004)	40 years	F	Female football player; during a tackling drill she was hit on the front of the right shoulder. The shoulder was pushed superiorly and posteriorly. The patient's arms were by her side at the time of impact	R	Grade 1 pectoralis major muscle strain	T2-weighted axial MRI showed edema and lack of definition of the right pectoralis minor muscle. Imaging of the right shoulder showed that the pectoralis major was intact including the humeral attachment	Cross-friction massage and shoulder stabilization exercises	Returned to play with full activities 2 weeks post injury
Kalra et al. (2010)	25 years	M	Professional ice hockey player; while avoiding a check he was contacted with the affected arm in slight abduction, external rotation and extension	R	An initial diagnosis of pectoralis major strain was made	T2-weighted proton-density fast spin echo oblique coronal MR images showed extensive edema in the pectoralis minor muscle and a complete isolated tendon tear with 2 cm of retraction. Pectoralis major was intact	Sling and physical therapy; 2 weeks—passive external rotation, passive abduction, and scapular retraction avoided; 3 weeks—abduction was initiated; 3.5 weeks—return to skating; 4 weeks—full return to play without pain/weakness	Pain-free pushups achieved 8 weeks from the injury dapest injury. Patient played the remainder of the season without re-injury or shoulder complaints
Li et al. (2012)	17 years	M	High school football player (linebacker); injured during a game when making a tackle and leading with left arm and chest	L	N/A	Axial T1-weighted magnetic resonance image showing high T1 signal at the pectoralis minor myotendinous junction with muscle rupture and retraction. Sagittal T2-weighted magnetic resonance image showing significant edema within the pectoralis minor muscle and detachment of the tendon from the coracoid	Conservative treatment with physical therapy and NSAIDs	4 weeks—mild discomfort with activities requiring shoulder abduction and extension; 8 weeks—not lifting weights or participating in sports; 12 weeks—Pain completely resolved, released for athletic participation; 12 months—patient reported no residual pain with return for the following season
Zvijac et al. (2009)	Late 20s	M, M	Two male professional football players (NFL); during practice with blocking exercises. The arm position was in extension with the shoulder in flexion in both cases	L, L	N/A	Anteroposterior and cross-sectional MRI imaging showed isolated tear of the pectoralis minor muscle	Scapular retraction and protraction as well as shoulder depression exercises were recommended (scapular stabilizing exercises). Further conservative management included physical therapy, massage and neuromuscular training	Both athletes returned to playing after 3–4 weeks post injury

MRI = magnetic resonance imaging.

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