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Distal Pectoralis Major Tear

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Abstract

Background: Rupture of the pectoralis major muscle is an uncommon injury. We report a total pectoralis major tear, treated successfully with the anchor technique suture. *Case Report*: A 31 years old, right-hand-dominant male presented with pain in shoulder joint following bench-press using weights. He was originally diagnosed as having shoulder sprain. Three weeks later, magnetic resonance imaging (MRI) confirmed total rupture of the pectoral major muscle tendon. Restoration of continuity was achieved by anchors suture technique. *Conclusion*: The rupture of the pectoralis major muscle remains an exceptional traumatic pathology of the athlete. The diagnosis is often ignored in the acute phase. MRI remains the diagnostic tool of choice. The early surgical repair allows total functional recovery.

Keywords: Athletes, Pectoralis Muscles, Rupture, Shoulder, Suture Anchors.

Introduction

The pectoralis major (PM) muscle is a powerful adductor, flexor, and internal rotator of the shoulder, and contributes considerably to upper-body power and motor capacity. Rupture of the PM muscle is an uncommon injury. Athletes who lose all PM muscle function following a complete tear of this muscle risk losing their career [1]. Therefore, complete tear of PM is considered a severe, incapacitating sports injury. These injuries occur primarily during lifting activities that require contraction with the arm in external rotation and extension [2]. Although pectoralis injuries are relatively uncommon, the diagnosis of a tear may be overlooked if the patient is not carefully screened by a thorough physical examination of both the injured and uninjured sides. This case report presents a case of total pectoralis major tear, treated successfully with the anchor technique suture.

Case Report

Mr. EA, a 31 years old, right-hand-dominant male presented with acute onset right shoulder pain. This was accompanied by weakness and inability to move right upper limb. His pain started during bench-presses using weights (300 kg) while preparing for national body-building competition. He had no significant past medical history of using steroids or quinolones or any significant surgical history. Examination showed tenderness in the region of his right pectoralis insertion and slight restriction of movement on adduction and internal rotation of shoulder joint. He was taken to an emergency room where roentgenograms were interpreted as being normal the diagnosis of a shoulder sprain was made. The patient was treated with symptomatic treatment and sent home.

Over the next few days the athlete developed marked swelling and ecchymosis over his injured shoulder joint. He presented three weeks later with increased pain, weakness, and restriction of motion. Clinical examination showed disappearance of the anterior relief of the axillary hollow. This was accentuated by abduction or adduction of the affected arm. Passive and active movements of adduction and internal rotation showed a muscular

weakness and decreased range of motion. Clinical diagnosis of rupture of the pectoral major muscle was suspected and magnetic resonance imaging (MRI) confirmed the diagnosis of total rupture of the pectoral major muscle tendon **[Fig.1]**. The patient was operated under general anaesthesia. Through an anterior delto-pectoral approach, surgical exploration revealed a total rupture of the pectoral major muscle at the confirming the result of the MRI **[Fig.2]**. Restoration of continuity was achieved by anchors suture technique. Follow up treatment of immobilisation in a sling for four weeks and a program of functional rehabilitation of the shoulder, avoiding abduction and external rotation for two weeks was completed. At three months, the patient regained full and painless mobility of the shoulder. At six months of follow-up, the patient resumed his indoor training without restriction of movements; he is also satisfied with the aesthetic result.

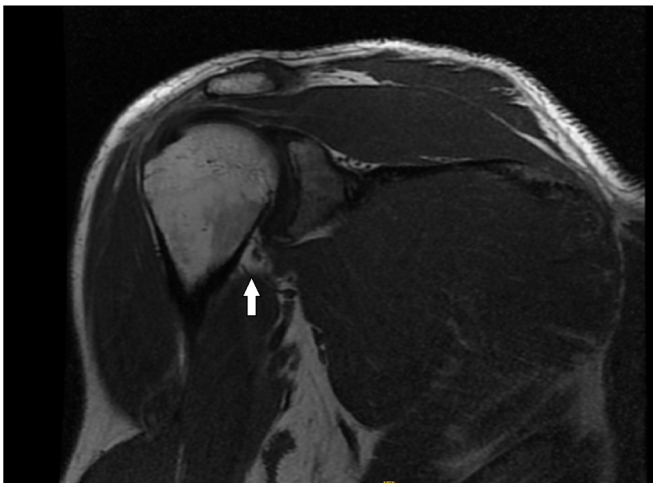

Fig.1: *MRI confirms PM rupture.*

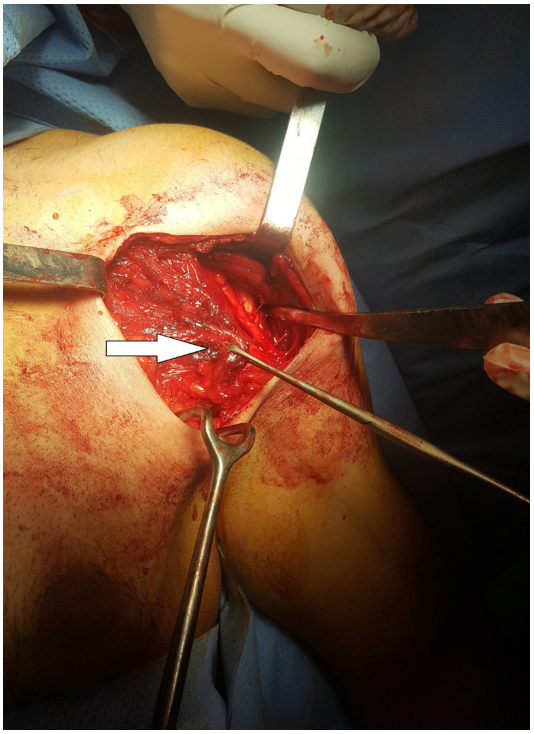

Fig.2: *Per-operative finding: Dis-insertion of PM tendon.*

Discussion

Pectoralis major tendon ruptures are uncommon injuries that, until the mid-twentieth century, were primarily vocational injuries [1-4]. The recent increase is most likely attributable to increased use of anabolic steroids and increased participation in contact sports and weight-training activities [5-8]. Most reports have been limited to either case reports/series or small single surgeon cohorts. More recently, larger case series have been reported [1-3,8]. The pectoralis major is at risk during any activity in which the arm is extended and externally rotated while under maximal contraction. Rupture is often followed by an audible pop, a tearing sensation, immediate pain, and/or weakness. Tears occur almost exclusively in active men in their third to fourth decades of life. Approximately 75% of cases are related directly to sports activity. Weight-lifting exercises account for nearly 50% of cases reported in the literature, with wrestling and gymnastics are also frequently implicated [9,10].

The most common physical examination findings in the acute stages of the injury are swelling and ecchymosis in the affected region, which can be first seen from within a few hours to 48 hours after injury [4]. More specific sign of pectoralis major rupture in both acute and chronic stages is a loss or

thinning of the anterior axillary fold, which can be more easily recognized by looking for asymmetry compared with the non-affected side. Axillary fold defect is accentuated by abduction or adduction of the affected arm. Pain and weakness with adduction, internal rotation and decreased range of motion is also commonly seen [4]. Radiography provides supporting evidence for diagnosis of pectoralis major rupture, can reveal loss of pectoralis major shadow and also the loss of the normal soft-tissue anterior axillary fold when ruptures are complete. It excludes possible fractures or dislocations [11]. Ultrasonography is an effective and relatively inexpensive way to identify and locate a pectoralis major rupture [12,13]. The MRI is the modality of choice to evaluate pectoralis major rupture. Acute injuries may demonstrate high signal intensity at the musculo-tendinous junction while also demonstrating tendon-bone discontinuity and/or tendon-muscle retraction at the rupture site. Chronic injuries demonstrate a lower signal intensity, indicating scarring and fibrosis and may also show muscle retraction [14].

Surgical treatment is recommended as it allows muscular strength and range of motion comparable to before the accident. It also restores the normal contour of the axillary fold [15]. The commonly used surgical approach is the delto-pectoral [4]. Three principle techniques are descripted: the bone trough technique, the anchor technique suture and the cortical button technique [10]. Non-operative treatment is generally recommended for contusions, partial tears, muscle belly ruptures, and complete tears for lower-demand or sedentary individuals [10]. It consists in rest, including sling immobilization in the adducted and internally rotated position, cold compression, and analgesics [4].

Conclusion

The rupture of the pectoralis major muscle remains an exceptional traumatic pathology of the athlete. The diagnosis is often ignored in the acute phase. MRI remains the diagnostic tool of choice. The early surgical repair allows total functional recovery.

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