

Case report

A case of bilateral aberrant pectoralis minor insertion with absent coracohumeral ligament: Clinical relevance and controversies



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ABSTRACT

Aberrant insertions of the pectoralis minor tendon are quite rare. Most cases are incidental findings during cadaver dissections, on an MRI or during surgical procedures of the shoulder joint. Rarely the aberrant insertion points can be a source of pain or restriction of the shoulder joint. From the literature review, we found that there has been no mention regarding the frequency of occurrence of this variation with respect to unilateral or bilateral occurrence, and only three cases have been reported, in which aberrant bilateral insertions have been documented of which two were noted during cadaveric dissection and one radiologically. We report a rare case of aberrant bilateral insertions of the pectoralis minor, which was found during an arthroscopic procedure, and we discuss its clinical and surgical implications.

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1. Introduction

Normally, pectoralis minor (PM) arises from upper margins and outer surfaces of third to fifth ribs and converge to form a flat tendon to be inserted onto the medial border and upper surface of coracoid process of scapula. There are several case reports about the variations from this normal anatomic description. Variations in the proximal attachment includes tendon being inserted onto the coraco-acromial ligament, superior glenoid margin, medial margin of supraspinatus tendon, humeral tuberosities, inferior surface of middle third clavicle, glenohumeral joint capsule, and medial base of the coracoid process (Fig. 1).^{1–5} Le Double was the first to propose a classification system for variations in PM insertion.⁶ According to authors' knowledge, only four cases have been reported in the literature about bilateral aberrant insertions of pectoralis minor, of which three were noted during cadaveric dissection and one was done radiologically.^{4,7–9} We report a case of bilateral PM ectopic insertion over anterior border of supraspinatus tendon with absent coracohumeral ligament (CHL) which was diagnosed during shoulder arthroscopy performed for a painful right shoulder.

2. Case report

A 44-year-old female, a housewife, presented to our shoulder clinic with complaints of the pain of 1-year duration in both the shoulder joints, right side shoulder got affected more than left. The pain was insidious in onset and more in the night associated with morning stiffness lasting for an hour. There was difficulty in performing the overhead activity. On clinical examination, there was no swelling over the shoulder or any wasting of the muscles of the both shoulder. Diffuse tenderness was felt around both the shoulders. The range of motion in the right and (left) shoulder was; flexion 0–80° (0–140°), extension 0–20° (0–40°), abduction 0–60° (0–150°), external rotation 0–60° (0–80°), and internal rotation showing thumb up to L2 vertebrae on both sides. The Jobe's Full Can test was painful but strong on right side but normal on left side. The neurovascular examination was normal. Plain X-rays of the shoulders were unremarkable. Ultrasonography of right shoulder reported rice grain bodies in a distended right subacromial-subdeltoid bursa. Magnetic resonance imaging (MRI) (1.5 T, Seimens, Germany) of the right shoulder revealed multiple subacromial-subdeltoid synovial loose bodies. Radiologist proposed synovial chondromatosis as possible diagnosis (Fig. 2). In view of pain in the left shoulder and morning stiffness lasting for more than an hour, serological assessment in form of rheumatoid factor (RF), anti-cyclic-citrullinated peptide antibody (anti-CCP) and anti-nuclear antibody (ANA) was done to rule out arthralgia of

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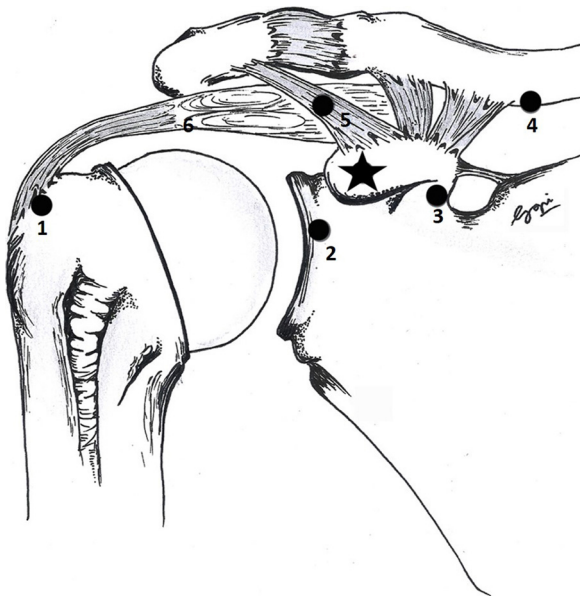


Fig. 1. Illustrated diagram of a shoulder joint; showing various aberrant insertion sites of pectoralis minor 1. Humeral tuberosity; 2. Glenoid margin; 3. Medial base of coracoid process; 4. Middle portion of inferior surface of clavicle; 5. Coracoacromial ligament; 6. Medial border of supraspinatus tendon. [*Usual site of insertion of pectoralis minor.]

inflammatory origin (rheumatoid arthritis, systemic lupus erythematosus). After standard preoperative fitness tests, the patient was taken up for arthroscopic debridement, synovectomy and biopsy as radiologist had mentioned synovial chondromatosis as a possibility. Shoulder arthroscopy was performed under general anesthesia in the lateral position. Glenohumeral arthroscopy was normal. Subacromial bursoscopy revealed synovial hypertrophy and multiple rice bodies in the subacromial space. Using 4.0 mm power shaver (Stryker, USA) and radiofrequency device (Arthrocare, USA); synovectomy, bursectomy and rice body removal was performed. After clearance of Subacromial space, we incidentally noticed that the CHL was absent and pectoralis minor tendon was crossing over the coracoid process and inserting onto the medial border of supraspinatus tendon (Fig. 3a and b). With internal and external rotation of shoulder, the pectoralis minor tendon was sliding over the coracoid. It was left alone, as it did not hinder in rotational movements. Postoperatively, the patient was sent for physical therapy for gentle shoulder mobilization, rotator cuff and scapular isometric exercises. Her serological parameters confirmed

elevated RF titers and positive anti-CCP antibody while ANA was negative. Histopathological report was suggestive of acute on chronic synovitis, and it was suggested by the pathologist that the report should be correlated with RF titers. Based upon serological and histopathological reports confirming the diagnosis of Rheumatoid arthritis, she was started on the disease modifying anti-rheumatoid drugs (DMARD), which included weekly 7.5 mg methotrexate, daily 400 mg hydroxychloroquine and appropriate NSAIDs for the control of disease and pain relief. Postoperatively, her MRI was revisited, and it confirmed the presence of aberrant pectoralis minor tendon with absent CHL that was overlooked in the preliminary MRI report. With patient's permission, MRI of the left shoulder joint was performed, which also revealed a symmetric aberrant course and insertion of the pectoralis minor tendon with absent CHL (Figs. 4 and 5). 12 weeks postoperatively, patient regained full range of movement and strength of right shoulder with minimal pain. One year post operative, patient has remained symptom-free on both shoulders and continues her DMARD treatment.

3. Discussion

Variable insertions of PM were described in the literature by Le Double in 1897, but its clinical and arthroscopic implications have come to light very recently.⁶ Le Double described three types of insertional variation. Type 1 variation is one where entire PM tendon crosses over coracoid process (CP) and inserts over any one of the points such as labrum, supraspinatus, tuberosity or coracoacromial ligament. Type 2 variation is one where a part of the tendon is attached over the CP and other part has anomalous attachment. Type 3 is where muscle attaches anomalously (as opposed to the tendon) itself without inserting over CP. Prevalence of anomalous PM insertion in the general population is not known as they are rarely symptomatic. In a prospective study using ultrasonography, Homsy et al. demonstrated the frequency of occurrence of PM aberrations as 9.57%.¹⁰ They found that there was no correlation between the presence of this anomaly and clinical symptoms. On the contrary, the anomaly was less frequent in symptomatic [8.7%] than asymptomatic [11.4%]. Lee et al. retrospectively reviewed 335 MR arthrogram of the shoulder joint and demonstrated that 1.5% of the cases had anomalous insertions in form of PM crossing over the coracoid process and getting inserted on to the glenohumeral capsule.³ In all such cases, the CHL was absent. Similar case was reported by Tubbs et al., wherein they found an anomalous attachment of PM over the glenohumeral capsule with absent CHL. In our case too, the PM was seen to be crossing over the coracoid and got inserted on to the anterior

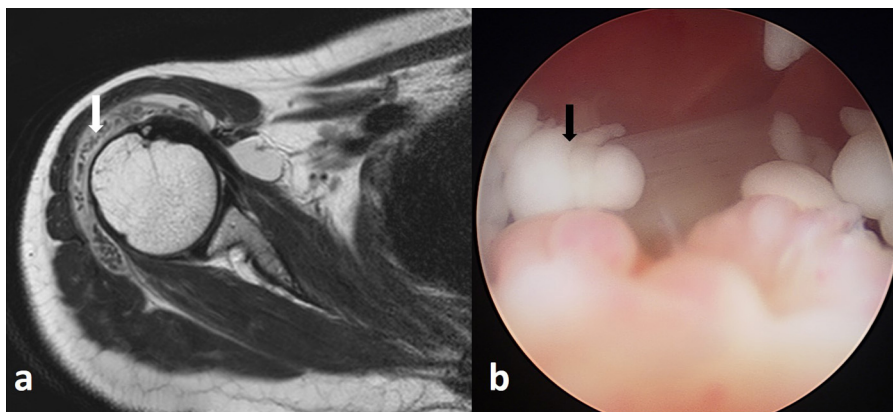


Fig. 2. (a) T2 weighted images of right shoulder reveals multiple small hypointense non-enhancing lesions in subacromial subdeltoid space (white arrow) like rice bodies. (b) Corresponding arthroscopic image of subacromial space from posterior portal reveals rice bodies (black arrow).

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