Journal of Orthopaedics, Trauma and Rehabilitation 18 (2014) 7–11

Contents lists available at ScienceDirect

Journal of Orthopaedics, Trauma and Rehabilitation

Journal homepages: www.e-jotr.com & www.ejotr.org

Review Article

Bicipitoradial Bursitis: A Review of Clinical Presentation and Treatment
肱二頭肌橈骨滑囊炎：臨床表現與治療的分析

Choi Tsz-Lung [a], Lui Tun-Hing [b,*]

[a] Department of Orthopaedics and Traumatology, United Christian Hospital, 130 Hip Wo Street, Kwun Tong, Kowloon, Hong Kong
[b] Department of Orthopaedics and Traumatology, North District Hospital, 9 Po Kin Road, Sheung Shui, NT, Hong Kong, China

ARTICLE INFO

Article history:
Accepted December 2013

Keywords:
arthroscopy
biceps
bicipitoradial bursa
rheumatoid arthritis
tendoscopy

ABSTRACT

The bicipitoradial bursa lies at the insertion of the biceps tendon on the radial tuberosity. It is an unusual site for chronic bursitis and most often results from repetitive mechanical trauma or overuse. Other causes include tuberculosis, immunological complications of rheumatological disease and synovial chondromatosis. Accurate diagnosis requires imaging studies and sometimes histological study. It can be treated conservatively with aspiration and steroid injection. Surgical excision of the bursa is indicated in the case of infection cause, failed conservative treatment with recurrence of the enlarged bursa and pain after aspiration, presence of nerve compression with neurological impairment, mechanical limitation to flexion, and extension of the elbow or biceps tendon degeneration and/or functional impairment.

中 文 摘 要

肱二頭肌橈骨滑囊是位於肱二頭肌遠端肌腱與橈骨結節之間。慢性滑囊炎在肱二頭肌橈骨滑囊並不常見，主要的成因是重覆性的機械性創傷或過度使用。其他原因包括結核病，風濕性疾病的自體免疫並發症和滑膜軟骨瘤病。準確的診斷需要影像掃描檢查，有時並需要組織學研究。滑囊抽吸與類固醇注射等保守性療法可以治療肱二頭肌橈骨滑囊炎。滑囊切除手術在以下的情況適用：保守治療無效，在滑囊抽吸與類固醇注射後滑囊再次腫大並引起疼痛、感染性的滑囊炎、神經被滑囊壓迫做成神經功能缺損、肘關節的屈伸受到滑囊限制、肱二頭肌腱退變或其他的功能障礙。

Functional anatomy of bicipitoradial bursa

The bursae found in the cubital fossa consists of the interosseous bursa and the bicipitoradial bursa. The bicipitoradial bursa lies between the distal tendon of the biceps brachii, which it surrounds, and the radial tuberosity. It reduces friction between the two structures during movement.[1,2] It sits between the biceps tendon and the radius when the forearm is in supination. As pronation occurs, the radius rotates posteriorly and the bursa is elongated and is compressed between the tendon and the radius.[3] The bursa is relatively large, with dimensions ranging from 2.4 cm to 3.9 cm and a mean volume of 4 mL.[1,4–6] It is composed of a simple flattened sac lined by a synovial membrane and is supported by dense irregular connective tissue. The apposed walls are separated by a thin film of fluid. It sometimes presents internal septation. The bicipitoradial bursa may communicate with the interosseous bursa of the elbow.[5] There is controversy regarding the communication between the bursa and the elbow joint cavity. Studies that concluded that there is no communication between the bursa and the joint cavity were from results of a bursogram.[1,4,6] By contrast, communication between the bursa and the joint cavity has been observed from investigation of an elbow arthrogram.[7] This discrepancy may be explained by the presence of a valvular mechanism at the communication between the bursa or the synovial cyst, and the joint cavity and the fluid flows unidirectionally from the joint to the cyst.[7] Both radial and median nerves are located adjacent to this bursa.[8]

Aetiology of the bicipitoradial bursitis

The bicipitoradial bursa is an unusual site for chronic bursitis and most often results from repetitive mechanical trauma or

* Corresponding author. *E-mail:* luithderek@yahoo.co.uk, luith@ha.org.hk.

http://dx.doi.org/10.1016/j.jotr.2013.12.009

overuse.[2,3,9–11] Repetitive supination and pronation in the forearm is considered to be the cause.[4,12,13] It can accompany biceps tendon pathology, for example, tendinosis, partial, or complete tear.[14,15] Other causes include tuberculosis,[8,16] chemical synovitis,[17] synovial cyst of the anterior elbow capsule,[7] bone proliferation,[18] immunological complications of rheumatological disease, for example, psoriatic arthropathy[3] and rheumatoid arthritis,[1] and synovial chondromatosis.[6,19] An antecubital cyst resulting from an acute or chronic tear of the anterior capsule at the sacciform recess may communicate with the bicipital radial bursa and become the cause of recurrent and recalcitrant symptoms. Post-traumatic synovitis and several nontraumatic disorders, such as rheumatoid arthritis or tuberculous arthritis, may induce profuse synovial effusion. Repetitive motion of the joint may pump the joint fluid outwards through a capsular defect and form a synovial cyst through a valvular mechanism.[7]

Clinical presentation

Regardless of its cause, bicipitoradial bursitis can present as an impairment of the range of joint motion,[2,6] pain[1,20,21] and indolent cystic mass[1,21] (Figure 1) in the cubital fossa, and motor and sensory signs and symptoms related to nerve compression.[1,4,5,22]

When the bursa is enlarged, it is often palpable and can impair normal flexion and extension of the elbow. The swelling is accentuated with pronation because the gap between the radial tuberosity and the biceps insertion narrows causing compression of the bursa.[1,4,12,21] This consequently increases the tension within the bursa leading to painfully restricted pronation.[3] By contrast, active biceps action of elbow flexion and forearm supination can also elicit pain.[16,20]

Moreover, the enlarged bursa may have a mass effect in the cubital fossa leading to compression of the adjacent nerves, although nerve compressions are not common symptoms among patients with bicipitoradial bursitis.[21] The radial nerve or its branches and/or the median nerve can be involved.[1,4,9,12,22] The enlarged bicipitoradial bursa is more likely to compress the radial nerve or its branches. Resultant symptoms depend on which nerve is compressed. When the superficial branch of the radial nerve is involved, the symptoms are sensory related and the patient may present with forearm pain but no motor deficit. If the posterior interosseous nerve is affected, the patient may present with motor weakness, abnormal nerve conduction by electromyography and abnormal magnetic resonance (MR) imaging signal in the forearm extensors.[2] The median nerve is compressed if the bursa is substantially distended, an anatomical variation of the nerve or intercommunication between the bicipitoradial and interosseous bursa leading to distension of the interosseous medial bursa.[1,21] In the reported cases with median nerve compression, sensory disturbance was observed without muscle weakness.[4]

This bursitis is sometimes confused with distal biceps tendinitis or rupture. Although click or crepitation on pronation and supination has been suggested to imply bicipital tendinitis with impending rupture, it can present in bicipitoradial bursitis. These physical signs are not pathognomonic to differentiate the distal bicipital tendinitis with impending rupture from bicipitoradial bursitis.[7] Differentiation can be further confused because bicipitoradial bursitis and distal bicipital tendinitis may be concurrent as a result of repetitive mechanical trauma.[2]

Imaging

The diagnosis of an enlarged and inflamed bicipitoradial bursa is based on an adequate anamnesis, physical examination, and imaging studies.[7,21] It is important to note that the biceps tendon at the level of this bursa does not have a tendon sheath. In normal patients, this bursa is not visualised on ultrasound, computed tomography (CT), or magnetic resonance (MR) imaging, only becoming apparent when it is inflamed and distended.[20,21]

Roentgenographical findings of bicipital radial bursitis include occasional, faint calcification in the biceps tendon, and roughening of the anterior radial tuberosity.[12]

Ultrasounds may be used to diagnose bicipitoradial bursitis with the advantage of being an easy, cheap, nonirradiating technique allowing the possibility to guide the needle when performing aspiration of the mass and intrabursal injection of steroids.[5,21] It allows clear differentiation of solid from cystic masses.[20] Enlargement of the bicipitoradial bursa on sonography with regular walls containing anechoic or mildly complex hypoechoic distention of the space between the distal biceps tendon and radial tuberosity with internal septa and increased vascularity were noted on conventional colour Doppler imaging in some cases.[10,23] Power Doppler imaging can aid in providing information about active inflammation.[23] In addition to its role in diagnosing buritis, sonography can provide information about radial nerve injury in the presence of macroscopic damage.[5]

MR imaging (Figure 2) allows accurate diagnosis of bicipitoradial bursitis and investigation of its relationship and effect on adjacent structures, but it is difficult to distinguish bicipitoradial bursitis from interosseous bursitis when the bursa is very enlarged.[1,21] On MR imaging, T2-weighted images usually reveal the lesion to contain the area with homogeneous, increased intensity than that of fat, suggesting fluid collection. Hypointense septal structures may be observed. A biceps tendon with low signal intensity on both T1- and T2-weighted images can be detected at the anterior edge of the bursa. Bicipitoradial bursitis can have

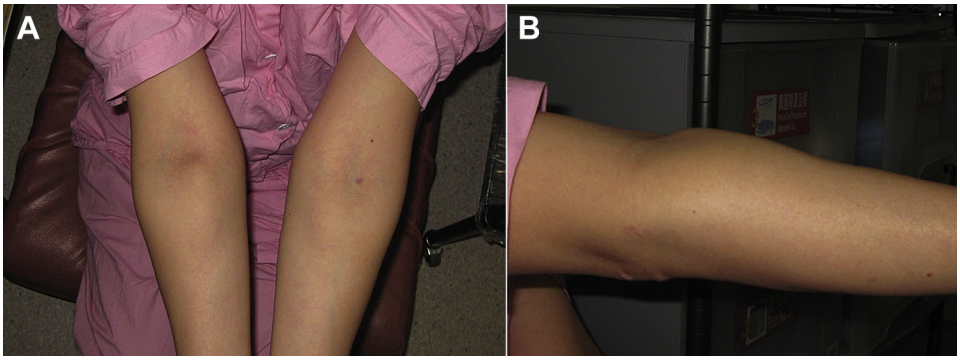

Figure 1. (A,B) Clinical photos showing anterolateral swelling at the proximal forearm in a patient with bicipitoradial bursitis.