



Popeye's sign

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Presentation

A 72-year-old left-handed man presented to the emergency room complaining of the sudden onset of sharp pain, increasing volume, deformity, and a “popping” sound in his left biceps area while he was shaving his beard. Three months before, the patient underwent a total knee replacement for advanced knee osteoarthritis (Kellgren-Lawrence grade 4), in which calcium pyrophosphate deposits were found in the specimen. Laboratory evaluation including calcium, phosphorus, and alkaline phosphatase was normal.

On physical examination, mild weakness and swollen deformity in the anterior aspect of the middle left arm (Fig. 1a) that worsened during arm's flexion and supination (Popeye's sign) (Fig. 1b) was present. Also, a twitching during flexion was observed (Fig. 1c). His neurovascular examination was normal. With a clinical suspicion of an acute rupture of the proximal long head of the biceps brachii tendon, we performed an ultrasound examination.

Transverse ultrasound image showed an empty bicipital groove. A thickened, retracted distal biceps brachii tendon stump surrounded by fluid was observed 5 cm distal from the pectoral major junction (Fig. 1d). A diagnosis of a complete rupture of the long head of the biceps brachii tendon was made. The patient elected non-operative conservative treatment, and he was sent to the physical therapy and rehabilitation department for management. Treatment included physical

therapy, analgesics, and a short course of nonsteroidal anti-inflammatory drugs. At 8-month follow-up, the patient's pain disappeared, and the condition does not affect his daily activities.

Discussion

Biceps tendon ruptures have been reported at a rate of 0.53/100,000 over five years, with a male to female ratio of 3:1 [1]. The rupture of the biceps tendon usually occurs when a sudden eccentric biomechanical load is applied with the forearm flexed and supinated, which can cause the rupture of either the proximal or the distal tendon junctions. Risk factors include older age, smoking habit, the use of certain drugs (corticosteroids, statins), and shoulder overuse (sports or work-related activities) [2].

Degenerative changes of tendons are also not uncommon, usually caused by endocrine and metabolic conditions, such as diabetes, hypercholesterolemia, hyperuricemia, hemochromatosis, and obesity [3]. Chronic tendon disease and tendon rupture are frequent findings in patients with microcrystalline arthropathies such as gout and calcium pyrophosphate deposition disease (CPPD). In the shoulder, the supraspinatus tendon was found to be broken seven times more frequently in CPPD than in gouty patients [4].

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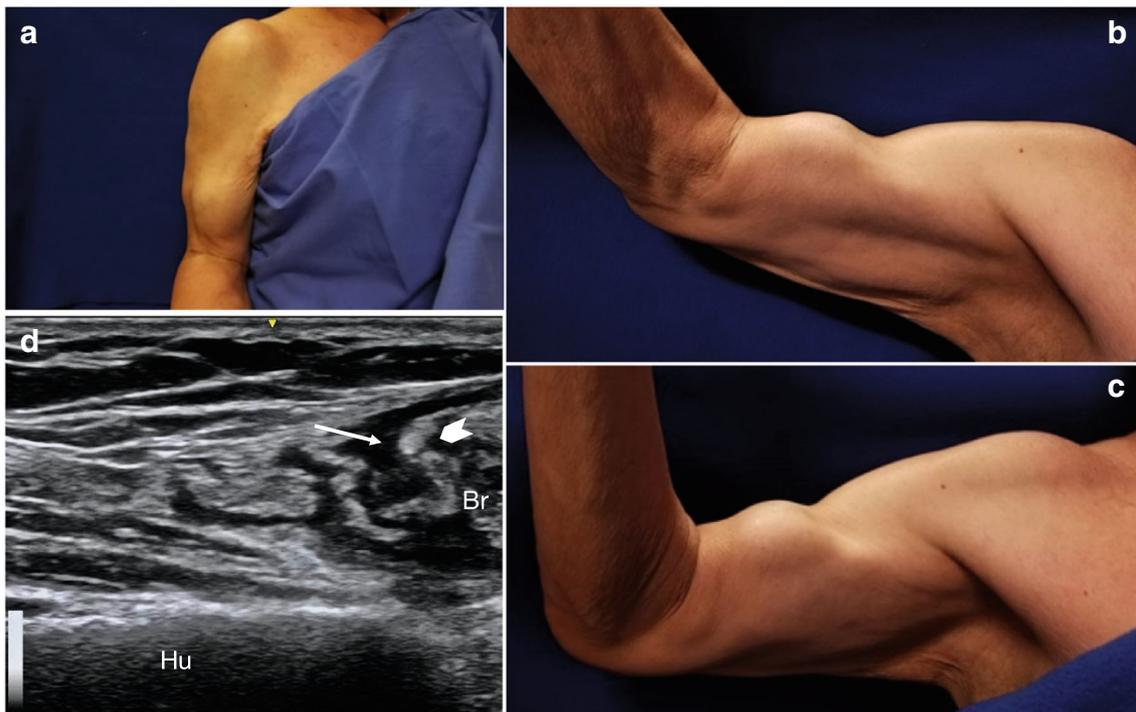


Fig. 1 Popeye's sign. **a** Popeye's sign. A visible or palpable mass present near the elbow or in the mid-upper arm caused by bulging of the biceps muscle belly after rupture of the long head biceps tendon. **b** and **c** When asked to flex the arm, the bulge became more pronounced and a

“twitching” was observed. **d** Longitudinal US scan of the bulge shows a torn and retracted tendon edge (arrowhead) with hypoechoic fluid (arrow) in the gap. Note the humeral shaft (Hu) and the distal tendon stump (Br)

Patients with a completely torn long portion of the biceps tendon usually present to the emergency services where the clinical history and physical examination (visual inspection and palpation) reveal the Popeye's arm sign where the muscle sinks to the middle of the arm [5]. Imaging techniques, such as ultrasound (US) or magnetic resonance imaging (MRI) can be useful to confirm the diagnosis and distinguish a complete rupture from a partial rupture.

This case highlights the clinical significance of the Popeye's sign and the advantage of point-of-care US scan for diagnosis confirmation.

Compliance with ethical standards

Disclosures None.

Ethical approval Informed consent for publication of the case and related images was obtained from the patient.

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