



Case Report

POPEYE SIGN FROM RUPTURE BICEPS BRACHII: A CASE REPORT

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ABSTRACT

Introduction: Biceps tendon rupture without trauma is rare. Most cases occur at the junction between the tendon and the labrum or at the bony attachment site. Advanced age, smoking, and corticosteroid use are common risk factors for tendon degeneration and tendinopathy.

Case Report: A 68-year-old male from Java came in with abrupt discomfort and swelling in his right arm. After examining him and using ultrasound, we found that he had a ruptured biceps tendon. To treat this, we chose a conservative approach with physical therapy and non-steroidal anti-inflammatory drugs (NSAIDs). Initially, we applied ice, supportive bandages, and once the risk of bleeding decreased, we gave him NSAIDs and advised rest. After four weeks of treatment, the patient's condition improved.

Conclusion: A case of total atraumatic rupture of the proximal biceps tendon is presented in this report. The significance of the "Popeye sign" as a pathognomonic indicator is emphasized. The absence of the tendon within the bicipital groove was confirmed through a shoulder ultrasound, thus validating the diagnosis.

Keywords: rupture biceps tendon; popeye sign; ultrasound

INTRODUCTION

Biceps tendon rupture is a relatively uncommon occurrence, with a reported incidence of 0.53 cases per 100,000 population according to a previous epidemiology study. It is more frequently observed in males, with a ratio of 3:1.¹ The highest prevalence of biceps tendon rupture is observed during the sixth decade of life. Complete proximal biceps tendon rupture is more commonly

observed in older men, often occurring spontaneously due to tendon degeneration.² The exact incidence of this condition is unknown, but several risk factors have been identified, including smoking, advanced age, repetitive overhead motions, chronic tendinitis, and previous use or injection of steroids.² It is important to note that biceps tendon rupture can occur without any preceding trauma or

accident, as it can be secondary to degeneration.^{1,2}

The diagnosis of proximal biceps tendon rupture is primarily based on clinical evaluation and is supported by a patient's history of excessive use of the shoulder, persistent tendinitis, or rotator cuff ailment. A specific sign of this condition is the existence of clearly noticeable and visible indications of retraction of the biceps muscle belly, commonly referred to as the "reverse Popeye deformity." In this particular case report, we present the findings of a 68-year-old Javanese male who exhibited the Popeye sign, which ultimately led to the diagnosis of biceps tendon rupture.

CASE REPORT

A 68-year-old Javanese man visited our facility due to the abrupt onset of pain and swelling in his right arm. He had previously worked as a public officer and had dedicated his retirement to gardening. While engaging in his routine gardening activities, he experienced a sudden "pop" sound in his right arm, which was accompanied by severe pain, swelling, and weakness. It is worth

noting that the person is a long-term smoker and frequently exerted his arms during gardening, making him susceptible to a tear in the biceps tendon. There is no record of him using or receiving steroid injections in the shoulder.

Upon clinical evaluation, a noticeable enlargement was observed on the patient's right arm, particularly evident during the flexion of his elbow (Figure 1). Our clinical assessment was made based on the sudden, painful pop experienced during eccentric loading of the elbow from flexion to extension, along with the visible and palpable retraction of the biceps muscle belly, leading to a reverse Popeye deformity. The proximal biceps tendon rupture was confirmed through ultrasound imaging, which effectively and affordably demonstrated the absence of the tendon within the right humerus bicipital groove (Figure 2). Our physical diagnosis and ultrasound examination revealed the final diagnosis of biceps tendon rupture. Upon reviewing the patient's medical history, observing significant upper arm swelling (known as Popeye's sign) during the physical

examination, and confirming the non-existence of the biceps tendon within the bicipital groove through ultrasound imaging, the diagnosis of a tendon rupture in the long head of the biceps was made.

The patient's condition was addressed through a conservative approach involving physical therapy and the administration of non-steroidal anti-inflammatory drugs. The patient was advised to rest the affected arm and

was provided with a prescription for non-steroidal anti-inflammatory drugs to alleviate pain. Additionally, the patient received physiotherapy sessions aimed at strengthening the muscles and engaging in rehabilitation exercises. Encouragingly, the patient exhibited positive progress in response to the therapy, enabling them to resume their normal daily activities within a relatively short period of four weeks, with minimal restrictions.



Figure 1. Popeye's sign in the right upper arm

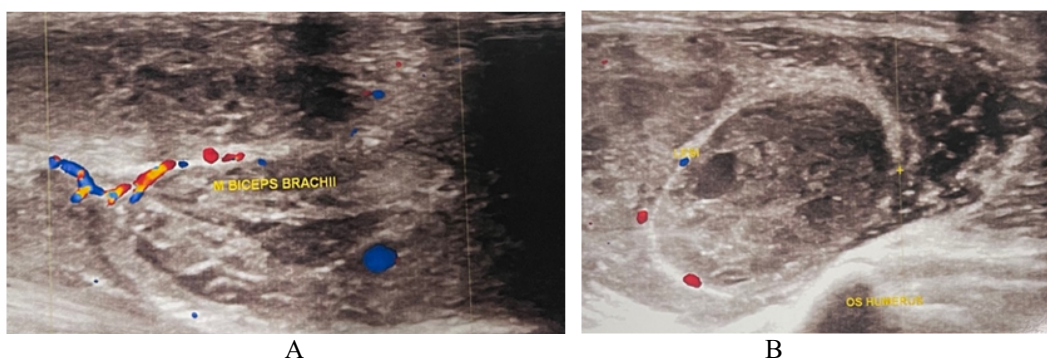


Figure 2. (A) and (B) no presence of the biceps tendon in the bicipital groove of the right humerus. and biceps tendon full thickness tear

DISCUSSION

This report outlines a scenario involving the rupture of the biceps tendon, with emphasis on the "Popeye sign" as a characteristic indicator. Diagnosis was confirmed via ultrasound, showing lack of the tendon within the bicipital groove. Treatment included NSAIDs for pain, rest, activity modification, and physical therapy for range of motion and strength. At the 4-week follow-up, the patient mentioned experiencing intermittent arm cramping but had full shoulder range of motion, with a remaining protrusion when flexing the elbow. Supination was painless and there was no weakness noted.

This is a common occurrence of a full rupture of the proximal biceps tendon, which is more frequent in older males.^{3, 4} Typically, it happens spontaneously due to tendon degeneration.⁴ Various risk factors include smoking, advanced age, repetitive overhead motions, chronic tendinitis, and prior use or administration of steroids through injection.³ It is important to note that this condition can develop from

degeneration and is not necessarily preceded by trauma.⁴

The clinical diagnosis of proximal biceps tendon rupture relies on specific criteria. In cases where the diagnosis is uncertain or there is suspicion of a partial rupture, imaging can provide valuable assistance. The following criteria are utilized to establish the diagnosis:¹ A history of a singular traumatic incident in cases where the individual undergoes an abrupt, uncomfortable snapping feeling as the elbow is eccentrically stressed from bending to straightening;² Observable and palpable indications of retraction in the biceps muscle belly, resulting in a reverse Popeye deformity.^{4, 5} The history of shoulder strain, chronic tendinitis or rotator cuff ailment may help the diagnosis. In our patient ultrasound confirmed the diagnosis. Ultrasonographic examination is a reliable method for diagnosing biceps tendon tear, with a sensitivity of 88%, specificity of 98%, and accuracy of 97%.⁵ Our patient was treated conservatively and showed great improvement. Typically, non-surgical methods are employed to manage proximal biceps tendon rupture. Non-

operative intervention typically proves to be satisfactory for proximal tendon rupture, given its higher prevalence among geriatric individuals.⁵ Patients who have minimal physical requirements and several coexisting medical conditions may benefit more from conservative treatment options. Our patient was elderly and retired, we manage him conservatively. Surgery should be considered only if conservative treatment proves ineffective, or in a particular population of patients with concurrent shoulder conditions.⁶ The prognosis for proximal biceps tendon rupture is generally favorable. The majority of patients will regain the ability to resume their work or engage in activities without any notable limitations.^{5,6}

CONCLUSION

We report a case of complete atraumatic proximal biceps tendon rupture. In this case we highlight the “Popeye sign” as pathognomonic sign. We confirmed the diagnosis with shoulder ultrasound, revealing the absence of a tendon in the bicipital groove.

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The patient provided verbal consent for the publication of this case report and the accompanying images. No identification of the patient was revealed.

REFERENCE

1. Vestermark GL, Van Doren BA, Connor PM, Fleischli JE, Piasecki DP, Hamid N. The prevalence of rotator cuff pathology in the setting of acute proximal biceps tendon rupture. *J Shoulder Elbow Surg.* 2018 Jul;27(7):1258-1262
2. Lim CH, Lee KA, Liew JW. Popeye's sign: biceps tendon rupture. *BMJ Case Rep.* 2020 Feb 4;13(2):e234205.
3. Shibahara T, Tanaka E, Kuroda J, Nakane H. Bilateral Popeye's Sign. *Intern Med.* 2023 Sep 15;62(18):2757-2758.
4. Pineda C, Rodríguez LC, Mendoza J, Sandoval H, Gutiérrez J. Popeye's sign. *Clin Rheumatol.* 2019 Oct;38(10):2949-2950.
5. Carpenito G, Gutierrez M, Ravagnani V, Raffeiner B, Grassi W; Advanced Rheumatology Sonography Group. Complete rupture of biceps tendons after corticosteroid injection in psoriatic arthritis "Popeye sign": role of ultrasound. *J Clin Rheumatol.* 2011 Mar;17(2):108
6. Yamada T. Popeye's sign: A diagnostic clue. *Clin Case Rep.* 2023 May 20;11(5):e7378.