

## UNCOMMON BILATERAL TRICEPS TENDON TEAR

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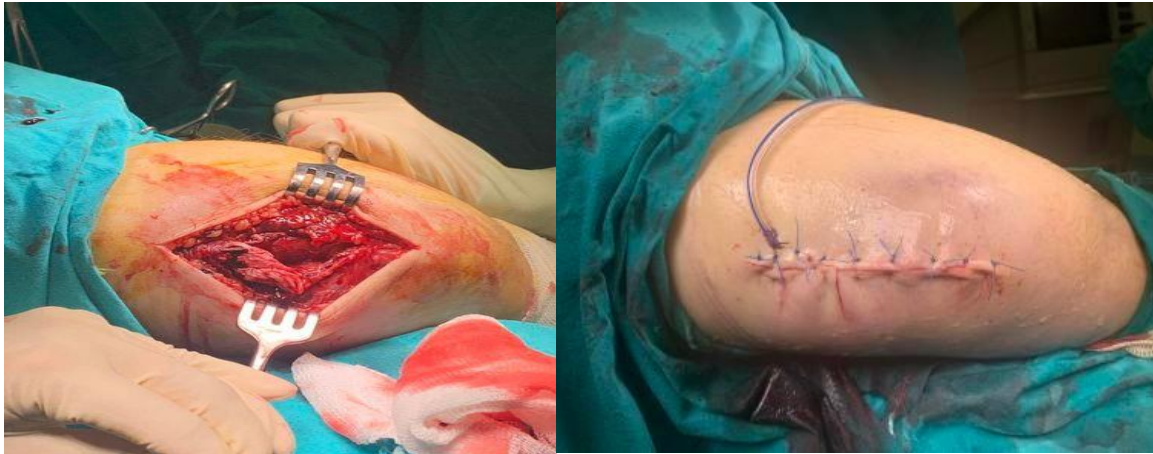
### Abstract

Triceps tendon tear is one of the least commonly recognized major tendon traumatic tears. A bilateral triceps tendon tear is an especially rare and uncommon entity. In this paper, we present the case of a 42-year-old man, with a suspect history of anabolic steroid use, presented to an urgent surgery facility at the day of injury. The pain was present after lifting weight (approximately 210 kg). On physical examination, mild tenderness and a palpable defect over each olecranon was present. He had almost full strength on extension; however, he complained of weakness and pain in both arms, especially on the medial part of the distal triceps tendon. We excluded first a possible fracture of the bones, after making an X-ray of the injured areas. After making an ultrasound on both triceps' tendons, we admitted the patient to the hospital. At the left triceps tendon, we revealed partial rupture of the medial head of the triceps muscle. At the right triceps tendon, the rupture was complete. A subsequent fat-saturated proton-density-weighted MRI of the right confirmed the diagnosis, with extensive oedema and surrounding hemorrhage. Surgery on the right triceps tendon was then performed.

**Keywords:** triceps tendon, weakness, pain, anabolic steroid use, extension

### Introduction

Among tendon injuries, traumatic ruptures of the triceps are a rare entity in comparison to the rupture of Achilles tendon. There have been less than 80 reported cases in the literature and thus, some of them reported that triceps tendon rupture is perhaps the rarest of all tendon ruptures. Simultaneous triceps tendon rupture is even rarer. There have been multiple etiologies of triceps ruptures described in the literature. Imaging studies have identified a bilaminar triceps tendon, consisting of a deep and superficial tendon. The deep tendon is arising from the medial head, while the superficial tendon is arising from the joining of both lateral and long heads. Anatomic variation has also been demonstrated. In a limited number of cases, ultrasound imaging method can differentiate a complete from partial triceps tendon tear, but its ability to localize tears has not been fully studied so far. Thus, MRI remains the golden imaging modality and a standard option when evaluating a tendon rupture. In a review of over 800 elbow MRIs, Kaplas *et al.* cited a 3.8% prevalence of triceps tendon tear. This is an increase over the previously documented <1% prevalence from a study performed in 1959<sup>[1,2]</sup>.



**Fig. 1A.** **Fig. 1B.**  
**Fig. 1A, B.** Intraoperative finding of a suture of the medial head of the right triceps brachii muscle

### Case report

A 42-year-old man, with a suspect history of anabolic steroid use, presented to an urgent surgery facility at the day of injury. The pain was present after lifting weight (approximately 210 kg). On physical examination, mild tenderness and a palpable defect over each olecranon was present. He had almost full strength on extension; however, he complained of weakness and pain in both arms, especially on the medial part of the distal triceps tendon. We excluded first a possible fracture of the bones, after making an X-ray of the injured areas. After making an ultrasound on both triceps' tendons, we admitted the patient to the hospital. At the left triceps tendon, we revealed partial rupture of the medial head of the triceps muscle. At the right triceps tendon, the rupture was complete. Subsequently fat-saturated proton-density-weighted MRI of the right confirmed the diagnosis, with extensive oedema and surrounding hemorrhage. We prepared him for surgery. Surgery of the right triceps tendon was then done. We put a cast on the left elbow. He was then treated with anticoagulant antibiotic and analgetic therapy. The patient was postoperatively followed up. He had a mild pain over two olecranon. Plastic cast for 3 weeks. He then started with mild physical therapy, with ROM. Normal ROM was achieved after 1 month. No pain was then present.

### Discussion

Risk factors for tearing the triceps tendon can include renal failure, repeated local steroid injections, and (most relevant to our case) anabolic steroid use. The use of anabolic steroids can induce a structural alteration of a tendon, making it more susceptible to tears. Mechanisms of injury include fall, direct blow, and weightlifting<sup>[3]</sup>. The exact mechanism of injury typically occurs after a fall on outstretched hand or a direct trauma to the arm. Triceps tendon tear is commonly associated with avulsion at the site of olecranon insertion, which may be visualized on plain radiography. There is a general agreement that surgical repair is the most appropriate management for complete tear of the triceps. However, the debate continues. In a study of 19 professional football players with triceps tendon tears, the authors recommended a nonoperative treatment for tears involving less than 75% of the triceps tendon. Further evidence may be also required. However, the presence of bilateral and simultaneous triceps tendon rupture in a patient, without any predisposing factors to our knowledge has not been reported<sup>[4]</sup>. Metabolic derangements have been noted to be also a possible cause of triceps tendon rupture. Despite very few cases reported on a tendon rupture secondary to renal failure and secondary hyperparathyroidism, authors have rarely reported a bilateral and simultaneous triceps tendon rupture. In addition to renal failure, other predisposing factors for this injury have been

reported<sup>[5,6]</sup>. These include anabolic steroid use and olecranon bursitis. Tendon injuries have also been reported with systemic diseases, such as rheumatoid arthritis and systemic lupus erythematosus, though these ruptures tend to occur in sites other than the triceps region. Most triceps tendon ruptures have been noted to occur in healthy tissue, without any predisposing factors<sup>[7-9]</sup>.

### Conclusion

In conclusion, a triceps tendon rupture should be always included in the differential diagnosis, when a patient presents with a posterior pain and swelling of the elbow. Bilateral triceps tendon tear is exceedingly rare but can be evaluated based on risk factors, physical examination, and imaging. Plain radiography can identify bony avulsion. MRI remains the golden standard of choice for a proper evaluation of the tendon and surrounding soft tissue. Complete tears should be always repaired surgically, but opinion has been still divided for partial tears.

*Conflict of interest statement.* None declared.

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