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Case Report

# Simultaneous Bilateral Patellar Tendon Rupture and PE4 Ankle Fracture in a Professional Weightlifter: A Case Report

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**Abstract**

Simultaneous bilateral patellar tendon rupture is a rare injury, often linked to systemic diseases or steroid use. We report the case of a 31-year-old professional weightlifter who sustained bilateral patellar tendon ruptures and a PE4 ankle fracture during a 190 kg log press lift. The patient had a history of long-term anabolic steroid use, contributing to chronic tendon stress.

Surgical repair of both patellar tendons and osteosynthesis for the ankle fracture were performed. Post-operatively, the patient underwent a structured rehabilitation program. At 15 months, he demonstrated excellent recovery, with full knee flexion and the ability to resume high-level weightlifting, including 380 kg deadlift. Despite minor symptoms such as tendon tightness, the patient aims to return to competitive sports.

This is the first documented case of bilateral patellar tendon rupture in the Danish literature, emphasizing the role of anabolic steroids and repetitive trauma in such injuries and highlighting the potential for recovery with timely surgical intervention.

**Keywords:** Bilateral Patellar Tendon Rupture; Surgical Intervention; Weightlifting Injury; Sports-related trauma; Anabolic steroids

## Introduction

Patellar tendon rupture is a rare injury with an incidence of approximately 0.5% [1], and simultaneous bilateral patellar tendon rupture is 15 times less common than unilateral rupture [2]. This injury is often associated with systemic diseases such as diabetes mellitus, ulcerative colitis, and chronic renal failure, as well as chronic stress on the tendon, corticosteroid use, anabolic hormones, and fluoroquinolones [3]. We present a case of an elite weightlifter who sustained bilateral patellar tendon rupture along with a right-sided PE4 ankle fracture.

## Case Report

The patient is a 31-year-old professional weightlifter who had been using anabolic steroids for several years as part of his training

regimen. He was brought to the emergency department after an accident during a log press lift with 190 kg or 418 lbs. The exercise involves lifting a log-shaped barbell from the ground to the thighs, resting it momentarily, then lifting it to the chest before finally pressing it overhead with extended arms. The event was captured on video, where both the visual and audible rupture of the patellar tendons are clearly evident, followed by the patient collapsing onto his right ankle, resulting in the PE4 fracture.

On clinical examination in the emergency department, the primary finding was a misaligned ankle. The patient was unable to perform straight leg raise, had bilateral high-riding patellae, and palpable defects in the patellar ligaments of both knees. The ankle fracture was highly unstable and was surgically fixed the same evening. A few days later, both patellar tendons were repaired using Ethicon Mersilene tape reinforced with Vicryl sutures. Intraoperatively, the ruptures were classified as type 2. The procedures on both knees were identical. Post-operatively, Don-Joy braces locked in full extension were applied bilaterally. The patient was allowed to weight-bear on his left leg but not on the right due to the ankle fracture. At 12 weeks post-operatively, both braces were removed, and the patient commenced cautious rehabilitation.

At the 15-month follow-up, the patient was able to flex both knees to 145 degrees to soft tissue. He can now deadlift 380 kg and performs squats with 150 kg for 10 repetitions. In log press, the exercise during which the injury occurred, he has returned to lifting 140 kg. He reports a sensation of tightness in his patellar tendons during log press and experiences slight discomfort when climbing stairs, where he also feels tightness around the tendons. His goal is to resume competing in international events.

## Discussion

There are several case reports and systematic reviews on simultaneous bilateral patellar tendon rupture. However, the quality of these reviews is limited by their reliance on case reports, making them more of a literature review or summary than a statistical analysis [1]. Other studies present a single case followed by a literature review [3]. Patellar tendon injuries typically occur with the knee flexed at approximately 60 degrees during eccentric quadriceps contraction [2]. An analysis of the video of our patient confirms this injury mechanism. A systematic review of 45 cases of simultaneous bilateral patellar tendon rupture found an equal distribution of injuries caused by sudden quadriceps contraction and hyperflexion [1].

The injury presents with pain, swelling, a palpable defect, high-riding patella, and an inability to actively extend the knee. Radiographs will typically show patella alta, and the Insall-Salvati ratio can be calculated. MRI or ultrasound may be used to confirm the diagnosis.

Patellar tendon ruptures are classified into three types depending on the location of the rupture: 1) at the inferior pole of the patella, 2) within the tendon substance, and 3) at the tibial tuberosity insertion. Additionally, etiologies are categorized into three groups: 1) systemic diseases, 2) steroid use, and 3) chronic microtrauma [1]. The treatment for complete ruptures is surgical repair or reconstruction, ideally within six weeks. Conservative treatment may be considered for partial ruptures in patients who are not candidates for surgery.

## Conclusion

In this report, we have described the first documented case of simultaneous bilateral patellar tendon rupture in the Danish literature. The patient's long-term anabolic steroid use and chronic microtrauma likely contributed to the risk of tendon rupture [4]. Despite the severity of his injuries, including both the ankle fracture and bilateral patellar tendon ruptures, the patient has made an extraordinary recovery, as evidenced by his current physical performance, highlighting the potential for recovery with timely surgical intervention.

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