WJPMR, 2026, 12(7), 148-150

Case Study

Impact Factor: 7.555

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

ISSN (O): 2455-3301

ISSN (P): 3051-2557

Coden USA: WJPMBB

BILATERAL RUPTURE OF THE PATELLAR TENDONS IN A YOUNG ATHLETE: A CASE REPORT AND REVIEW OF THE LITERATURE

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DOI: https://doi.org/10.5281/zenodo.20961335

How to cite this Article: Abdel Amar Adam Bababody*, S. Traore, A. Shbaita, O. Labrada- Blanco. (2026). Bilateral Rupture of The Patellar Tendons In A Young Athlete: A Case Report And Review Of The Literature. World Journal of Pharmaceutical and Medical Research, 12(7), 148-150.

Article Received on 02/06/2026 **Article Revised on 23/06/2026** **Article Published on 01/07/2026**

SUMMARY

Bilateral lesions are very rare and are often associated with tendinopathy, corticosteroid injections, or systemic diseases such as lupus erythematosus, osteomalacia, or chronic kidney failure. We report the case of a 23-year-old athlete, detailing the mechanism, management, short-term and long-term outcomes, and a review of the literature.

KEYWORDS: Bilateral rupture, patellar tendon, systemic diseases, corticosteroids.

INTRODUCTION

Bilateral rupture of the patellar tendon is a very rare, even exceptional injury that affects both patellar tendons simultaneously. Often associated with risk factors such as pre-existing tendinopathies, corticosteroid use, or systemic diseases (systemic lupus erythematosus, osteomalacia, chronic kidney failure), these injuries generally occur in young adults following direct trauma to a bent knee or against a resisted flexion. In this article, we report the case of a bilateral rupture of the patellar tendons in a young patient with no history of tendinopathy or systemic diseases.

CASE STUDY

This is a 23-year-old patient (120 kg for 179 cm, with a body mass index of 37.45), a rugby player, with no particular medical history, not currently on any treatment, and no previous knee surgery, presenting for consultation with severe pain in both knees and a complete loss of function in both lower limbs. Ten (10) days earlier, during a rugby match, after accelerating with a change of direction, he reportedly felt a sharp pain and giving way in his left knee first, followed by a poor landing on the right lower limb, which also gave way, resulting in a fall from his own height. Faced with pain and absolute bilateral functional impairment, he presented to the emergency department where an initial clinical examination found overall pain in both knees (Visual Analog Scale at 5 and 6 out of 10). Both knees were swollen with a patellar shock but no deformity. There were no trophic disorders. A complete loss of active extension and patellar locking of both knees was noted. Passive extension remained possible but painful. Voluntary contraction of the quadriceps caused the patella to rise without extension. No other abnormalities were observed on examination.

The X-rays taken in the emergency department revealed bilateral patella alta without associated fracture (Figure 1 and Figure 2).

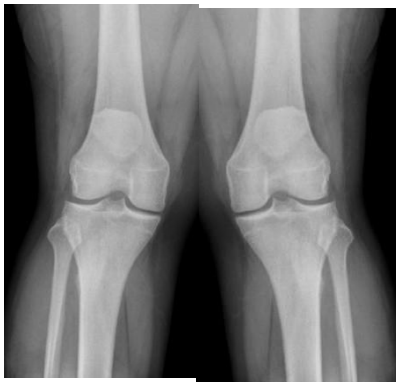

Figure 1: Frontal X-ray of the right and left knees showing an abnormal position of both knees.

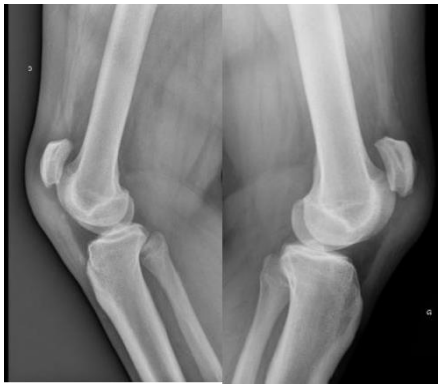

Figure 2: Lateral radiographs of the right and left knees showing patella alta.

The report indicates a bilateral rupture of the patellar tendon with detachment at the patellar level. No other paraclinical examinations were performed. We proposed to the patient a bilateral surgical repair of the patellar tendon in the same way on both sides, and a brace to immobilize both knees in extension was applied while awaiting the surgical procedure. The patient was admitted to the operating room five (05) days after the trauma. He was positioned in the supine position on the operating table under general anesthesia with a pneumatic tourniquet at the root of the limb. First, we made a cutaneous incision on the antero-medial surface extending from the patella to the tibial tuberosity of the left knee. Layer-by-layer opening and exploration revealed a complete rupture of the patellar tendon with adhesions of the tendon to the capsule and the wall. The lateral and middle flaps were opened, followed by the release of the tendon in its proximal, distal, and sub-quadriceps portions. The ends of the ruptured tendon were approximated, then sutured using Ethibon 6 threads with a Krakoff-type two-strand reinforced overlock; the internal and external flaps were sutured with Vicryl 2 threads. To protect the suture, a metallic frame of the patellar tendon passing through the patella and the TTA was put in place. The same procedure was performed in a second stage on the right knee. A control X-ray in profile at 30° of flexion, as recommended by Ait Si Selmi[1], was taken to adjust the patellar height according to the Caton-Descamps index (Figures 4 and 5). Immobilization with a removable brace was used for 45 days. Weight-bearing was deferred until day 45 since the lesion is bilateral.

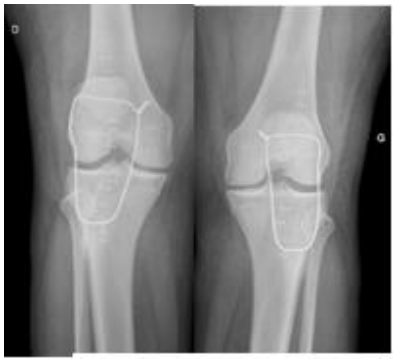

Figure 4: Frontal X-ray of the right and left knees after patellar tendon repair and protection by framing.

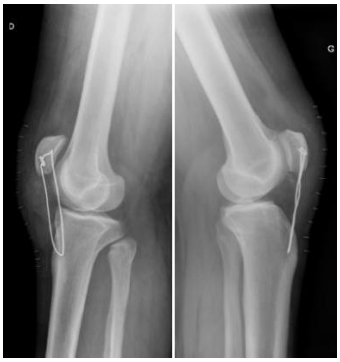

Figure 5: Lateral radiograph of the right and left knees after patellar tendon repair and protection by framing.

Functional rehabilitation began early on the 3rd postoperative day, promoting passive flexion, limited to 70° for 45 days. The patient was regularly reviewed with clinical and radiographic monitoring. After a follow-up of six (6) months, we evaluated the progress of the two sutures according to Siwek's criteria[2], based on the study of two elements: joint range of motion and quadriceps strength. According to these criteria, the clinical progress of our patient was considered very good for both knees.

DISCUSSION

Rupture of the patellar tendon is the third most common injury after quadriceps tendon rupture and patellar fracture, which cause disruption of the extensor mechanism.[3] The most frequent lesion is patellar avulsion, followed by midsubstance rupture[4], while the most common mechanism is a violent contraction of the quadriceps with a flexed knee (landing from a jump with knees bent, sudden rise from a squatting position).[5] Bilateral rupture of the patellar tendon is rare. Most patients report a history of systemic disease or previous

knee surgery.[6] Inflammatory signs may be noted at the site of rupture in cases of lupus erythematosus[7] or amyloid deposits in cases of chronic renal failure.[8] Taylor[9] categorized patellar tendon ruptures according to their pathophysiological causes into three groups: the first consists of ruptures due to autoimmune disorders or systemic conditions that cause changes in the structure of the patellar tendon. The second group consists of ruptures due to the use of corticosteroids, either orally or by injection. The third group is made up of ruptures caused by repeated microtraumas. Our published case belongs to the third group because the patient has never been treated with corticosteroids and has not been managed for an autoimmune or systemic disease. A workup for systemic diseases was not carried out, as recommended by Caldas for all patients over 40 years old, since the patient is young. Bilateral patellar tendon ruptures present certain diagnostic and therapeutic challenges. Indeed, the detection of a high-riding patella can be difficult due to a similar appearance on the contralateral side.

Similarly, difficulty with active extension of the leg may be masked by intact patellar wings. Radiological examinations prove useful for detecting patella alta. Ultrasound and MRI can be used in case of diagnostic uncertainty. Regarding treatment, two difficulties should be noted: the first lies in the absence of a comparative reference for patellar height, as recommended in some publications.[7] It is therefore essential to place both patellae at the same levels with a Caton index[10] below 1.2; intraoperative ratios are necessary to ensure proper adjustment of patellar height. The second difficulty is the requirement to delay weight-bearing for 45 days, which is restrictive for the patient. The lacing technique described by Judet, coupled with provisional framing to protect the suture, has given us satisfactory results.

CONCLUSION

Bilateral rupture of the patellar tendon, although rare, constitutes a major orthopedic emergency requiring early diagnosis and appropriate surgical management in order to achieve good recovery of lower limb function.

Immobilization to protect the suture is essential in these cases where the lesions are degenerative in nature.

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