

## BILATERAL PATELLAR TENDON RUPTURE

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### Abstract

Bilateral patellar tendon ruptures are extremely rare to see especially in young healthy patients without systemic diseases. A case of bilateral simultaneous patellar tendon rupture in healthy athlete 35 year old adult male after sport injury in absence of systemic disease or steroid usage, both tendon disruption are in proximal mid substance of the patellar tendon. The patient was operated bilaterally for his ruptures and back to his daily activity fully functioned.

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### Introduction

Bilateral patellar tendon rupture is a rare case to see, with approximately 22 reported cases in the Medline literature in the last 10 years. It is thought to be associated with systemic disease such as rheumatoid arthritis, lupus erythematosus, hyperparathyroidism and diabetes mellitus. In addition, long term micro-trauma and corticosteroid use may also contribute to it. Bilateral rupture in the absence of systemic disease or corticosteroid use is accounting for only a small percentage in the literature. (1)

The aim of our study is to present a case of bilateral rupture of the patellar tendon in a young athlete male who used to participate in sport activity with no history of previous medical diseases.

## Methods

In September 2013, a 35-year-old man had jumped while playing cricket, brought both feet to the ground, and upon landing, had immediate pain and a popping sensation in both knees started in the right then in the left. He was unable to ambulate after that. He denied any prior trauma. He was having mild pain over his both knees while practicing sport for a long time which was ignored. Regarding past medical history patient was athlete body builder and no history of corticosteroid or anabolic steroid usage, the only thing that he was using is “whey proteins from GNC” for 8 months which was stop 1 year prior to this event.

Physical examination showed a healthy muscular appearing man. Both knees had large effusions without skin lacerations, abrasions, or other skin defects. A noticeable step-off of the normal patellar tendon was palpated on both knees (Fig. 1). He was unable to extend or hold either knee in extension when passively positioned.

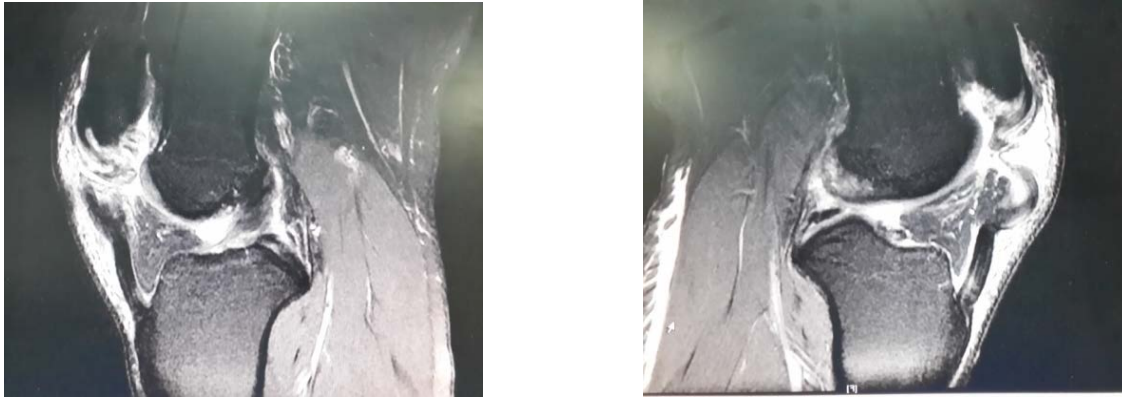


**Fig.1. Physical examination of the knees.**

At presentation to the emergency department, plain radiographs of his bilateral knees revealed significant patella alta (Fig. 2). MRI was taken and revealed the details of the injury (Fig. 3).

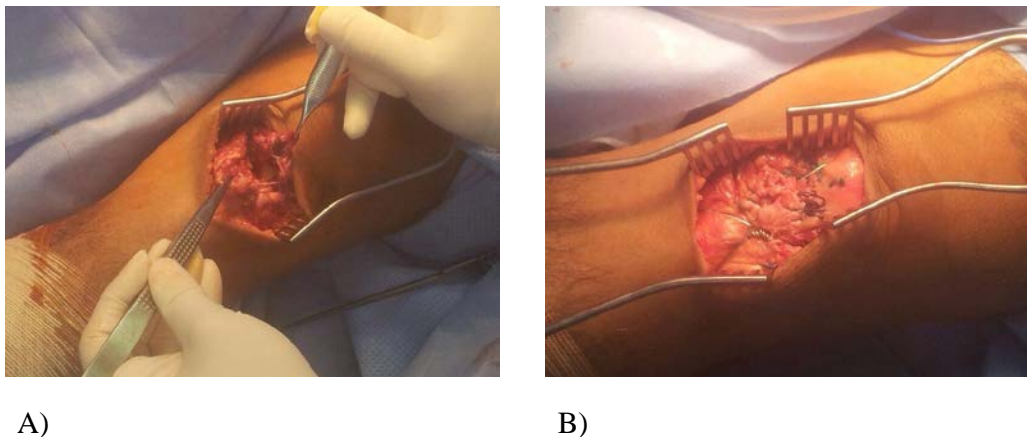


**Fig.2. X-ray of bilateral knees shows patellar alta.**



**Fig.3. MRI of bilateral knees shows rupture of the tendons.**

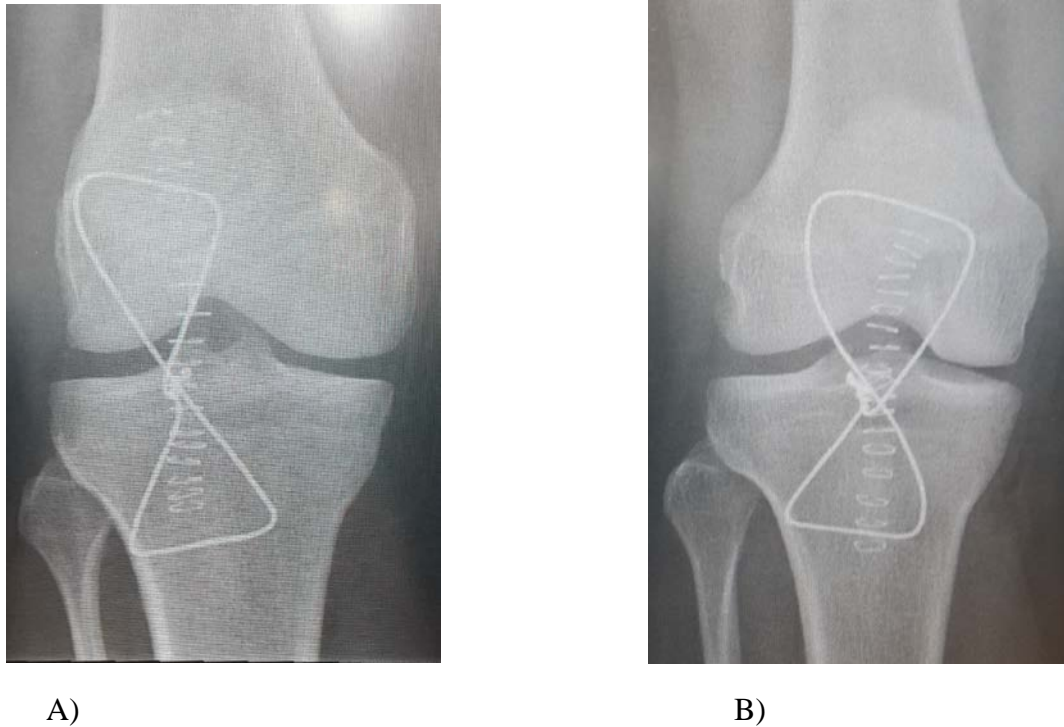
Operative repair of his bilateral patellar tendon ruptures was performed the following week. Intraoperatively, the patellar tendon had a mid substance rupture proximally near the insertion to the patella with good stump remaining attached to it for repair bilaterally with mop-like ends and disruption of the retinaculum. There were no other intra-articular injuries. The ruptures were each repaired with Fiber-Wire suture (Ethipond) in Krackow fashion augmented by running sutures (vicrel) to approximate both ends and supplemented with Cerclage wire (Fig.4); the retinaculum was also repaired using (Vicrel) suture. Excellent range of motion was achieved without any gapping of the tendon repair. Knee immobilizers were applied at the end of the operation.



**Fig.4. Intra-operative shows the tears (A) and post repair with circulage wires (B).**

## Results

Postoperatively, we change the knee brace to hinge brace to allow 30 degree rang of motion from extension. Physiotherapist allowed bed to chair for four weeks then with walker frame. He was kept in Enoxaparin post operative for one month. Postoperative x-rays are shown in (Fig. 5)



**Fig.5. Post-operative x-rays Right (A) and Left (B).**

## Discussion

Bilateral patellar tendon rupture is a rare case to see, with approximately 22 reported cases in the Midline literature in last 10 years. It is thought to be associated with systemic disease such as rheumatoid arthritis, lupus erythematosus, hyperparathyroidism and diabetus mellitus. (2) In addition, long-term microtrauma and corticosteroid use may also contribute to bilateral rupture. (3) Bilateral rupture in the absence of systemic disease or corticosteroid use is accounting for only a small percentage of the reports in the literature. In this report present rare case of a young fit and well gentleman without any past medical history or regular medications.

To start with, have to address the extensor mechanism of the knee first. This system consists of the quadriceps tendon, the patella, the patellar tendon, and the insertion of the patella on the tibial tubercle. Patellar tendon rupture is the third most common cause of extensor dysfunction. The moment arm of the extensor mechanism is increased and enforced by the patella. Patellar rupture is thought to be result from contraction of the quadriceps in a flexed knee. If the opposing forces are strong enough, the patellar tendon will rupture. In Benjamin et al study shows that forces greater than 17.5 times body weight has been reported as the estimated force required to rupture the patellar tendon.(4) The patellar tendon sustains greater stress than the quadriceps tendon during knee flexion. According to Rasul and Fischer, ruptures are classified according to site as musculotendinous, midtendinous, or at the tendon-bone junction.(5) Athletic movements such as acceleration, deceleration, and jumping are reported to create forces of seven-to-eight times the body weight. In compare both sex for this condition we found only 6 reports out of 24 that women had such rupture. Most of them associated with underlying medical diseases.

Diagnosis of such injury can be difficult and often delayed.(6) Those patients usually present with a sudden onset of bilateral knee pain, effusions, and extensor weakness. Some patients may still have some extension function if extensile forces are able to be conducted through intact medial and lateral retinacula. (7) Bilateral rupture could be diagnosed via x-ray with presence of bilateral patella alta. The best way to make this diagnosis is through a lateral view of the knee in slight flexion 30 degree to tension the patellar tendon. On this view, an Insall-Salvati ratio can be calculated which measured from the inferior pole to the tibial tubercle. A patellar length: tendon length < 0.8 is indicative of patella alta. Another radiographic test for patella alta involves the use of Blumensaat's Line. In a lateral x-ray view, with the knee in 30° of flexion, a line is drawn through the roof of the intercondylar notch in the distal femur. A patella that is > 2 cm above Blumensaat's line is considered to exhibit patella alta. (6)

Treatment for bilateral patellar tendon rupture is early primary operative repair. If repair is delayed, it may be necessary to release scar tissue, use patellar traction, and adjunct allograft or gracilis/semitendinosis autograft to facilitate repair. Delayed fixation also leads to increased rehabilitation time due to atrophy of the tendon (8).

This case highlights some important points. First, although spontaneous bilateral patellar tendon rupture is uncommon, its occurrence can be preposterously debilitating. In this case, early recognition in the acute sector of the hospital enabled the patient to be referred to the appropriate specialty where accurate surgical and rehabilitative techniques were provided, ensuring the best opportunity to restore his pre-morbid level of functional activity.

## Conclusion

In summary, a 35-year-old athletic body builder man experienced bilateral patellar tendon ruptures while playing cricket. Bilateral rupture was diagnosed in the emergency department and primary repair was performed upon admission. MRI showed a midsubstance tear in proximal tendon in bilateral knees. There have only few other published reports in which such rupture occurred. Despite that, surgeons must be able to recognize and appropriately treat these patients in an early manner for optimal outcomes.

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