

# Snapping Knee from Biceps Femoris Tendon Subluxation: A Case of Persistent Lateral Knee Pain in an Amateur Cyclist

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## Abstract

**Background:** Snapping knee caused by biceps femoris tendon subluxation is an unusual phenomenon but can happen after a certain degree of flexion of the knee in individuals with some anatomical variations in this region.

**Case presentation:** 37-year-old male patient presented with a long history of right lateral knee pain precipitated by cycling. Over the years, the lateral knee pain worsened substantially to the point he has now been unable to engage in sports activities. During physical investigation was noted a prominent fibular head and a painful snap on the lateral aspect of the right knee reproduced at 90 degrees of flexion. After a failure of conservative treatment, the patient was submitted by a partial fibula resection which clearly resolved the symptoms.

**Discussion:** Cases of snapping knee syndrome from biceps femoris tendon subluxation reported in the literature are all caused by similar mechanisms finally leading to tendon dislocation and pain and this condition should be kept in mind.

We described a relatively simple technique that in this case enabled rapid recovery without the need for tendon fixation, repositioning or knee immobilization.

## Keywords

Snapping knee; Biceps Femoris Tendon Subluxation; Cyclist; Partial Resection Fibular Head

## Introduction

Symptomatic snapping knee caused by biceps femoris tendon subluxation is an unusual phenomenon [1,2] that can be difficult to diagnose and can subsequently result in unnecessary surgeries, treatment failures and patient dissatisfaction [1,3].

In this case report, we present a case of right-sided unilateral knee snapping and pain associated with the patient's cycling activities. Following failure of numerous conservative treatments, patient underwent a partial resection of the fibular head with subsequent symptom resolution and return to baseline activities and sports.

## Case Report

A 37-year-old, otherwise healthy male patient presented with a history of right lateral knee pain precipitated by cycling. Over the last 10 years, lateral knee pain worsened substantially to the point he has now been unable to engage in sports activities for 2 years. No history of trauma was reported and no symptoms were present in the contralateral knee.

Upon physical exam, bilateral varus alignment (Figure 1) and a prominent fibular head were noted (Figure 2). Meniscus tests revealed no positive findings and ligamentous stability was confirmed. Active as well as passive range of motion revealed a painful snap on the lateral aspect of the right knee reproduced at 90 degrees of flexion. Displacement of the long head of the biceps femoris tendon was grossly seen and eliminated with manual compression of distal biceps during the examination.

Radiographic imaging showed no abnormalities but Magnetic Resonance Imaging (MRI) revealed a deep fissure on the medial facet of the patella as well as a complex posterior horn medial meniscus tear. After conservative treatments including rest, physiotherapy and anti-inflammatory medications have failed, we decided to proceed with an operative intervention.

The surgical procedure was performed under general anesthesia and with tourniquet elevated to 250 mmHg. First, diagnostic arthroscopy was performed which revealed no evidence of osteoarthritis, ACL pathologies or signs of patellar lesions.

However, in the medial compartment there was a partial thickness undersurface tear of the meniscus. The meniscus tear was debrided to a stable rim. Subsequently, a curvilinear

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**Figure 1:** Physical exam revealed bilateral varus alignment of the legs



**Figure 3:** Aspect of the prominent fibular head intraoperative before the resection: a) Biceps Femoris Tendon, b) Prominent fibular head



**Figure 2:** Prominent fibular head noted during flexion

incision was made based over the fibular head. After identifying and securing the common peroneal nerve, fibular head was dissected down to the bone. At this point, it was possible to clearly visualize the exact site of snapping and to deduce that it is most likely caused by the prominent head of the fibula (Figure 3). As such, excess fibular head was removed with an osteotome and rongeurs while protecting the insertion site of biceps femoris (Figure 4).

The patient was discharged on the day of surgery with a knee immobilizer with progression to full weight-bearing as tolerated within the first postoperative week.

Postoperative follow up at 1.5 years revealed sustained relief from previous symptoms and the patient had returned to practice all sports activities as per baseline.

## Discussion

Snapping syndrome is a well-known occurrence in many joints such as in hips, ankles, shoulders and elbows [1]. However, there is a paucity of reported cases of snapping knee syndrome in the literature [2]. Painful snapping knee can be attributed to numerous etiologies such as discoid lateral meniscus in children, synovial plicae, iliotibial band friction syndrome, proximal tibiofibular instability [3], torn meniscus and intra-articular rheumatoid nodules to name a few [4]. Subluxation of tendons can also cause the said knee pain; medially by gracilis and semitendinosus tendons and laterally by biceps and popliteus tendons [5-9].

Few reports on snapping biceps femoris tendon have also described causes such as anomalous insertion onto the anterolateral aspect of the tibia, prominent fibular head and trauma. Date et al. [10]



**Figure 4:** Final aspect after the partial fibular head resection: a) Biceps Femoris Tendon, b) Partial resected fibular head

reported a snapping knee caused by an anomalous insertion divided into three tendinous components. One component was inserted onto the anterolateral aspect of the proximal tibia, and the others were located on the lateral edge and posterolateral portion of the fibular head. In their case, the symptoms were resolved after the resection of the abnormal insertions and tendon repositioning.

Furthermore, Lokiec et al. [8] and Hernandez et al. [11] reported cases with an anomalous insertion onto the anterolateral aspect of proximal tibia. Lokiec reported that a partial repositioning of the tendons was successful. In the report by Hernandez complete repositioning of the tendons was performed by detaching the tendon and repairing it with suture anchors in a position that avoided tendon subluxation.

Kristensen et al. [12] and Bagchi and Grelsamer [13] described similar cases caused by anomalous insertion of the tendon on tibia, but the resolution of symptoms was achieved solely by resecting the lateral portion of the fibular head.

Fung et al. [14] and Bach et al. [2] presented similar cases, where the snapping symptoms were caused by an exostosis or a prominent fibular head. Otherwise, Bach et al. described a bilateral knee pain and more specific with internal rotation. Symptom resolution was possible with partial or full resection of the exostosis.

In previous reports in the literature of non-traumatic biceps dislocations, symptoms were noted bilaterally. Interestingly, in our case the patient presented with a unilateral painful knee snapping most prominent over high degrees of flexion during cycling, which point towards an intrinsic anatomic abnormality being the cause.

Cases of snapping knee syndrome from biceps femoris tendon subluxation reported in the literature are all caused by similar mechanisms finally leading to tendon dislocation and pain. Either a prominent fibular head or an anomalous insertion caused the tendon to be levered over the fibula during extension and flexion of the knee joint, resulting in dislocation, snapping and pain.

In our case, progressive tendon stiffening with loss of flexibility related to aging and many years of training may have contributed to the progression of worsening pain and snapping. Physiotherapy was ineffective in relieving the symptoms.

Biceps tendon subluxation is a rare cause of symptomatic lateral knee pain. In cases where more common intra-articular pathology is ruled out, this condition should be kept in mind.

We described a relatively simple technique that in this case enabled rapid recovery without the need for tendon fixation, repositioning or knee immobilization.

## Conflict of Interest

No conflict of interest to declare.

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