Snapping Knee Caused by Symptomatic Fabella in a Native Knee

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Abstract

We report a case of a 31-year-old man with a 5-year history of snapping knee syndrome secondary to a single, large symptomatic fabella of the knee. On physical examination, the patient was able to reproduce an audible and palpable snapping with active range of motion. His condition was refractory to physical therapy. He had undergone a prior iliotibial band release at an outside facility. After excision of the fabella, measuring 15 × 8 × 9 mm, the patient's snapping and pain with activity were resolved.

The reported literature has focused on snapping tendon syndromes of various locations throughout the body with the knee being a less commonly affected joint.[1] Numerous case reports have discussed etiologies of snapping knee syndromes including iliotibial band (ITB) friction syndrome, intra-articular ganglion cyst, snapping biceps femoris tendon, snapping semitendinosus and gracilis tendons, snapping popliteus tendon, intra-articular tumors, and fabella snapping over the posterior aspect of a prosthetic lateral femoral condyle.[1-8] In this report, we present a case of snapping in a native knee caused by a large, symptomatic fabella in a previously active individual.

The fabella is a sesamoid bone that is present unilaterally in 10% to 30% of individuals and bilaterally in 80%.[9] The anatomical location of the fabella is at the musculotendinous junction in the lateral head of the gastrocnemius muscle. Fabellar size ranges from pinpoint to 2.2 cm in diameter with an average diameter of 1 cm once ossified, which usually occurs between ages 12 and 15 years.[9-10] Due to its articulation with the posterior aspect of the lateral femoral condyle, the anterior surface of the fabella is covered with hyaline cartilage and aids smooth gliding throughout range of motion.[11]

The patient provided written informed consent for print and electronic publication of this case report.

Case Report

A 31-year-old male active-duty service member presented to the orthopedic clinic with a chief complaint of 5-year history of left lateral knee pain associated with snapping. The patient related an atraumatic, insidious development of symptoms and was originally diagnosed with ITB snapping. The patient underwent an ITB release procedure at an outside institution, which did not relieve his symptoms. As the pain and snapping continued, the patient became unable to tolerate running, physical fitness activities, or prolonged walking. Snapping was present when moving from a seated position to standing. On physical examination, the patient was tender to palpation over the biceps femoris at the level of the joint line. Full active range of motion was intact with reproducible audible and palpable snapping of the lateral knee when moving from flexion to extension. However, this was not consistently reproducible with passive range of motion. Radiographs of the left lower extremity showed no fracture or dislocation. Incidentally, a large fabella was noted (**Figure 1**). Given the history of failed conservative management and failed ITB release, surgery was indicated. The presumptive

Figure 1. Preoperative lateral radiograph demonstrating fabella.

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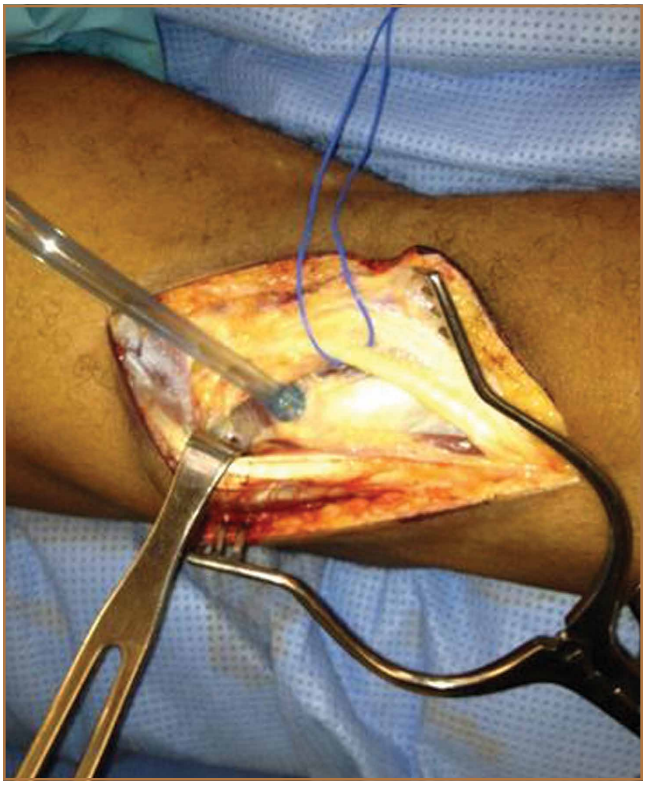

Figure 2. Intraoperative photograph demonstrating fabella deep to the lateral head of the gastrocnemius.

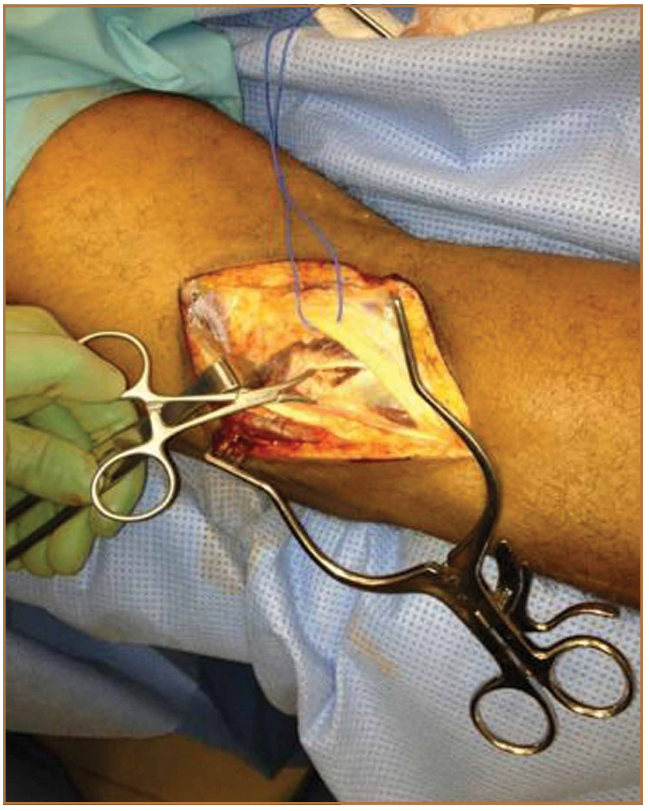

Figure 3. Intraoperative photograph after fabella excision.

etiology was snapping of the biceps femoris tendon over the fibular head, and the patient consented to a partial fibular head resection and other procedures as indicated.

Operatively, a posterior approach was utilized. The dissection was carried down to the level of the biceps femoris and the tendon was mobilized (**Figures 2 and 3**). This tendon had correct anatomic insertion but was overlapping a large fabella in the lateral head of the gastrocnemius. When the posterolateral knee was palpated through passive range of motion, we found snapping of the biceps femoris tendon over the fabella. An incision was made directly over the fabella and it was excised. The specimen measured 15 × 8 × 9 mm (**Figure 4**). Radiographs following the procedure demonstrated removal of the fabella (**Figure 5**).

Postoperatively, the patient was placed in a knee immobilizer with full weight-bearing in extension as tolerated for 2 weeks. The patient recovered well and had immediate relief of preoperative symptoms. He was able to return to physical fitness activities and was running 1 mile without difficulty at 8-month follow-up. Western Ontario and McMaster Universities Arthritis Index (WOMAC) score was 75.8 at that time.

Discussion

Though less common than other snapping syndromes, there are numerous reports of snapping knee with multiple etiologies.[1-8] After examination, a snapping biceps femoris tendon was thought to be the reason for this patient's dysfunction although the fibular head was without abnormality or prominence on radiographic studies. Valvalle and Capozzi[1] reported a case in which the fibular head was not prominent, but the biceps femoris was directly visualized snapping over the fibular head during surgery. A partial resection of the posterior aspect of the fibular head was performed and the snapping resolved without any alteration to the tendon itself.

Other authors have detailed complete rupture of the long and short heads of the biceps femoris. Bernhardson and LaPrade[2] reattached both heads of the muscle to anatomic insertion points in a case series of 3 patients with all patients returning to normal function. Date and colleagues[3] described a case of multiple slips and anomalous insertions of the long head of the biceps femoris resulting in painful snapping syndromes of the knee. The patient had 3 tendinous slips with only 1 having a normal anatomical insertion. Both anomalous slips inserting on the anterolateral tibia were resected and sutured to the periosteum at the normal anatomical insertion site providing resolution of symptoms.

Segal and colleagues[8] reported a case of snapping knee secondary to a fabella snapping over the posterior aspect of a prosthetic lateral femoral condyle following total knee arthroplasty. The patient complained of pinpoint pain to the lateral posterior knee with certain motions, such as climbing stairs or rising from a seated position. Dynamic sonography was essential in making the correct diagnosis in this case and demonstrated the fabella snapping over the implanted component during

Figure 4. Excised fabella measuring 15 × 8 × 9 mm.

Figure 5. Postoperative lateral radiograph after excision of fabella.

range of motion. Jaffe and colleagues[12] and Larson and Becker[13] independently reported 2 similar cases of a fabella causing impingement on the posterior aspect of the polyethylene insert after total knee arthroplasty.

The present case is the first that the authors have evaluated with a prominent fabella as an etiology for snapping knee syndrome in a native knee. This was an unexpected finding intraoperatively and was only discovered by directly visualizing and palpating the long head of the biceps femoris snapping over the fabella during passive range of motion. We suggest that dynamic sonography be considered during the preoperative work-up to better evaluate this pathology as an origin of snapping knee. Based upon the favorable outcome obtained in this case, fabellectomy may be considered for this indication. The present case adds to the differential diagnosis that must be considered in the evaluation of snapping knee syndrome in a native knee in order to decrease morbidity by preventing unnecessary and unsuccessful surgical procedures.

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References

1. Vavalle G, Capozzi M. Symptomatic snapping knee from biceps femoris tendon subluxation: an unusual case of lateral pain in a marathon runner. *J Orthop Traumatol.* 2010;11(4):263-266.
2. Bernhardson AS, LaPrade RF. Snapping biceps femoris tendon treated with an anatomic repair. *Knee Surg Sports Traumatol Arthrosc.* 2010;18(8):1110-1112.
3. Date H, Hayakawa K, Nakagawa K, Yamada H. Snapping knee due to the biceps femoris tendon treated with repositioning of the anomalous tibial insertion. *Knee Surg Sports Traumatol Arthrosc.* 2012;20(8):1581-1583.
4. Karataglis D, Papadopoulos P, Fotiadou A, Christodoulou AG. Snapping knee syndrome in an athlete caused by the semitendinosus and gracilis tendons. A case report. *Knee.* 2008;15(2):151-154.
5. Krause DA, Stuart MJ. Snapping popliteus tendon in a 21-year-old female. *J Orthop Sports Phys Ther.* 2008;38(4):191-195.
6. Liu PC, Chen CH, Huang HT, et al. Snapping knee symptoms caused by an intra-articular ganglion cyst. *Knee.* 2007;14(2):167-168.
7. Mine T, Ihara K, Taguchi T, et al. Snapping knee caused by intra-articular tumors. *Arthroscopy.* 2003;19(3):E21.
8. Segal A, Miller TT, Krauss ES. Fabellar snapping as a cause of knee pain after total knee replacement: assessment using dynamic sonography. *AJR Am J Roentgenol.* 2004;183(2):352-354.
9. Sutro CJ, Pomeranz MM, Simon SM. Fabella (sesamoid in the lateral head of the gastrocnemius). *Arch Surg.* 1935;30(5):777-782.
10. Pancoast H. Radiographic statistics of the sesamoid in the tendon of the gastrocnemius. *U Penn Med Bull.* 1909;22:213-217.
11. Pritchett JW. The incidence of fabellae in osteoarthritis of the knee. *J Bone Joint Surg Am.* 1984;66(9):1379-1380.
12. Jaffe FF, Kuschner S, Klein M. Fabellar impingement: a cause of pain after total knee replacement. A case report. *J Bone Joint Surg Am.* 1988;70(4):613-616.
13. Larson JE, Becker DA. Fabellar impingement in total knee arthroplasty. A case report. *J Arthroplasty.* 1993;8(1):95-97.

This paper will be judged for the Resident Writer's Award.