

Case Report**The Fibular Fleck Sign: An Avulsion Fracture of the Superior Peroneal Retinaculum**

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Abstract:

Background: The peroneus longus and brevis tendons course through the posterior fibular groove and are stabilized by the superior peroneal retinaculum (SPR). Avulsion fractures of the SPR, radiographically identified as the “fibular fleck sign”, are uncommon but clinically significant injuries associated with peroneal tendon instability.

Case Presentation: We report the case of a 22-year-old male who presented with right ankle pain and swelling following a fall. Radiographs demonstrated a small bony fragment lateral to the distal fibula consistent with an avulsion fracture of the SPR (fibular fleck sign). Surgical exploration revealed anterior dislocation of the peroneal tendons without tendon rupture. The bony fragment was reduced and stabilized using a suture anchor and K-wire fixation. Postoperative rehabilitation included immobilization followed by gradual weight-bearing and physical therapy. At the three-month follow-up, the patient was asymptomatic with no evidence of tendon instability.

Conclusion: The fibular fleck sign is a rare but important radiographic indicator of SPR avulsion and peroneal tendon dislocation. Early recognition and appropriate surgical management are essential to prevent chronic instability and functional impairment.

Keywords: Peroneal tendons; Superior peroneal retinaculum; Fibular fleck sign

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Introduction

The peroneus longus and peroneus brevis tendons run along the posterior fibular groove in the distal one-third of the fibula and are prevented from being subluxated primarily by the superior peroneal retinaculum. An injury or tear to the SPR can lead to peroneal tendon dislocation and most likely will require surgery.¹ Eckert and Davis in 1976 categorized three grades of acute tears.² In grade 1, the SPR is separated from the fibrocartilaginous lip and lateral malleolus.

In grade 2, there is detachment of the fibrocartilaginous lip along with the retinaculum. In grade 3, there is a thin flake of bone, which is an avulsion of the SPR from its attachment in the fibula. Oden in 1987 described a fourth grade, relating to a detached SPR from its posterior attachment on the calcaneus.³ In Type 3, the sliver of bone is termed the “fibular fleck sign” when visualized on radiographs and is usually an indication of anterior dislocation of the peroneal

tendons.⁴ In this scenario, conservative management without surgery will most likely lead to persistent peroneal tendon instability, snapping, and tears with a bleak prognosis.^{5,6}

Case Presentation

We present a case report of a 22-year-old male patient with right ankle pain and swelling following a fall 1 day earlier. On physical examination, he had localized swelling on the lateral malleolus. The range of motion (ROM) of the ankle was limited due to pain. Neurovascular status was intact. Radiographs taken soon after presentation are shown in Figure 1.



Figure 1: Plain radiograph of the right ankle (anteroposterior view) demonstrating a small osseous fragment lateral to the distal fibula, consistent with the fibular fleck sign indicating avulsion of the superior peroneal retinaculum.

The fibular fleck sign, seen lateral to the distal-most aspect of the fibula, indicates an avulsion fracture of the SPR. A brief discussion was held with four colleagues (orthopedic surgeons); three advised surgical intervention, and one opted for conservative management.

We advised the patient to proceed with surgery, and it was done the following day. No further radiological investigation was taken.

A lateral approach to the distal fibula was made, as we would normally create in case of a lateral malleolar fracture. A careful dissection then revealed a bony fragment attached to the SPR. On inspection, the SPR was not found to have any rents or tears. Both peroneal tendons were found to be anteriorly dislocated, with no tendon injury (Figure 2).

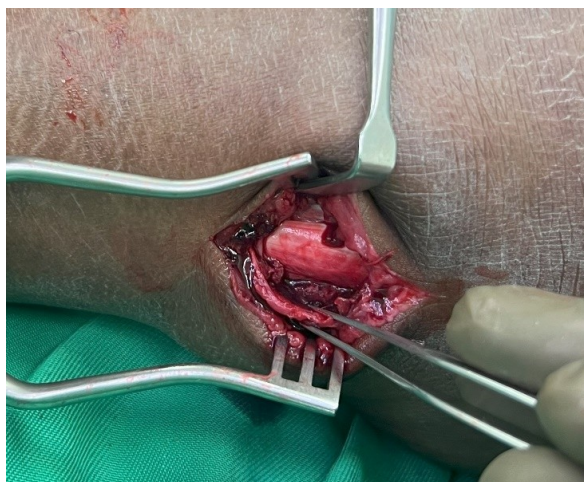


Figure 2: Intraoperative photograph showing anterior dislocation of the peroneal tendons after exposure of the distal fibula.

The tendons were retracted to their original positions in the fibular groove. A posteriorly placed temporary K-wire kept the tendons in place. The hematoma was cleared. A 2.8 mm

suture anchor was applied, and the sutures were taken through the bony fragment. The flimsy fragment was carefully reduced back to position and stabilized with a 1 mm K-wire. The sutures were then tied. The K-wire was cut short and left in place for later removal, as we feared any undue movement could fracture the bony fragment due to its fragility (Figures 3 and 4).

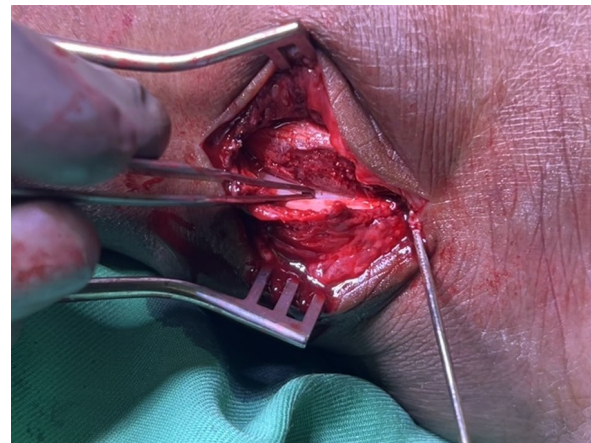


Figure 3: Intraoperative image demonstrating reduction of the bony fragment and fixation using a suture anchor with temporary K-wire stabilization.



Figure 4: Postoperative radiograph showing anatomic reduction of the avulsed fragment with retained K-wire fixation.

Postoperatively, he was kept in a posterior backslab in neutral position for a period of 4 weeks. During this time, he was non-weight-bearing (NWB). After the 4 weeks were over, the backslab was removed, and he was kept NWB and started on ankle passive ROM exercises. At 6 weeks, the K-wire was removed under local anesthesia in the clinic. He was then allowed to gradually bear weight under the guidance of a physical therapist, progressing to proprioception exercises and gait training over the next 6 weeks.

At the 3-month follow-up, the patient was ambulating well. He was asymptomatic and had no impression of peroneal tendon subluxation.

Discussion

The fibular fleck sign is rare, and its management often requires surgical intervention. Among the four colleagues who discussed this case, at least one recommended conservative treatment. This suggests there may still be some confusion about these injuries. The main reason for needing surgery in these cases would definitely be the high possibility of peroneal tendon dislocation.⁷ In addition, there may well be injuries to soft-tissue structures, such as the SPR and the peroneal tendons, which should be well explored during surgery.⁸ In our case, we noted that the tendon had dislocated anteriorly; however, no tears were found in the SPR or the tendons. Regarding the lower limb, many surgeons are aware of the 'fleck sign' of the midfoot indicating a Lisfranc injury, but are completely unacquainted with the 'fibular fleck sign' of the lateral malleolus.⁹

Conclusion

The fibular fleck sign is a rare injury that indicates an avulsion of the SPR, resulting in peroneal tendon dislocation, and warrants awareness among orthopedic and trauma surgeons. The sliver of bone is usually visible on the radiograph and should prompt surgical treatment.

Declarations

Patient Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Ethical Approval: Ethical approval was not required for this single case report as per institutional policy.

Conflict of Interest: The authors declare no conflict of interest.

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Author Contributions: All authors contributed to patient management, study conception, manuscript drafting, and final approval of the submitted version.

Data Availability: Data supporting the findings of this study are available from the corresponding author upon reasonable request.

AI Disclosure: No artificial intelligence tools were used in the preparation of this manuscript.

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