*Received: October 18, 2024*
*Accepted: November 23, 2024*

*Acad Med J 2024;4(3):118-121*
UDC: 616.718.7-001.5:616.758-007.43
https://www.doi.org/10.53582/AMJ2443118b
*Case report*

# CONCOMITANT IPSILATERAL ACHILLES TENDON RUPTURE AND MEDIAL MALLEOLUS FRACTURE

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**Abstract**

Concomitant ipsilateral ankle fracture with Achilles tendon (AT) rupture is a rare injury pattern with no consensus on optimum management. The present report discusses this rare combination. A 34-year-old man twisted his ankle with foot fixated on the ground following an unexpected sliding 100 m down while he was hiking and sustained a closed fracture of the medial malleolus, with an ipsilateral complete Achilles tendon (TA) rupture. Fortunately, both lesions were diagnosed from the start although such combination of injuries is commonly delayed or misdiagnosed.

**Keywords:** AT rupture; Achilles tendon rupture; ankle fracture; medial malleolus fracture; simultaneous

## Introduction

Medial malleolus fractures, Achilles tendon ruptures and traumatic dislocation of the peroneal tendons are often seen as isolated injuries after a trauma or sports-related injury. In rare circumstances, a combination of these injuries can occur simultaneously, and missed or delayed diagnosis is common in these combination injuries[1-3].

Achilles tendon ruptures and medial malleolus fractures are both significant injuries that can severely impact a patient's mobility and quality of life. While each injury individually presents substantial challenges, their concomitant occurrence on the same limb complicates the clinical picture and management strategy[1-3].

The aim of this paper was to present the interplay between these two injuries, reviewing relevant literature and providing insights into effective treatment protocols.

## Case report

A 34-year-old man came to the emergency department with a painful right ankle after twisting his joint with foot fixated on the ground following an unexpected sliding 100m down while he was hiking. On physical examination, there was edema and palpable tenderness over the medial aspect of the right ankle, with reduced range of movement and intact neuromuscular structures. He had a palpable defect at the midpoint of the Achilles tendon and a positive Thompson test. Plain radiographs were performed and revealed a medial malleolar fracture. Computed tomography (CT) was performed, confirming the diagnosis. The ankle was immobilized and surgical treatment was indicated.

Two days following to the accident, open Achilles tendon technique repair, open reduction and internal fixation of the medial malleolus were performed under spinal anesthesia in prone position. Medial longitudinal incision was made 2 cm proximal to the

Achilles tendon gap and the tendon was repaired with PDS I, using the open Achilles tendon technique – tenorraphy and Bunnel suture. Standard medial approach and blunt dissection were performed, identifying the fracture site at the anteromedial aspect of the tibial malleolus. The fracture was anatomically reduced and fixated with 1 cancellous screw.

The ankle was maintained in a walking boot with mild equinus position to protect the repaired Achilles tendon. Sutures were removed 14 days after surgery and progressively passive dorsiflexion was allowed until a neutral position was achieved at 5 weeks. Isometric exercises with restriction of active dorsiflexion, and progressive weight loading were started on week 6 postoperatively. Follow-up x-rays at 6 weeks showed a successful consolidation of the medial malleolus. The removable immobilizing splint was discontinued on week 7 after surgery and full weight bearing was allowed.

At 12 months follow-up, the patient is fully recovered without any limitation in daily living activities.

**Fig. 1.** Intraoperative image after Achiles tendon suture

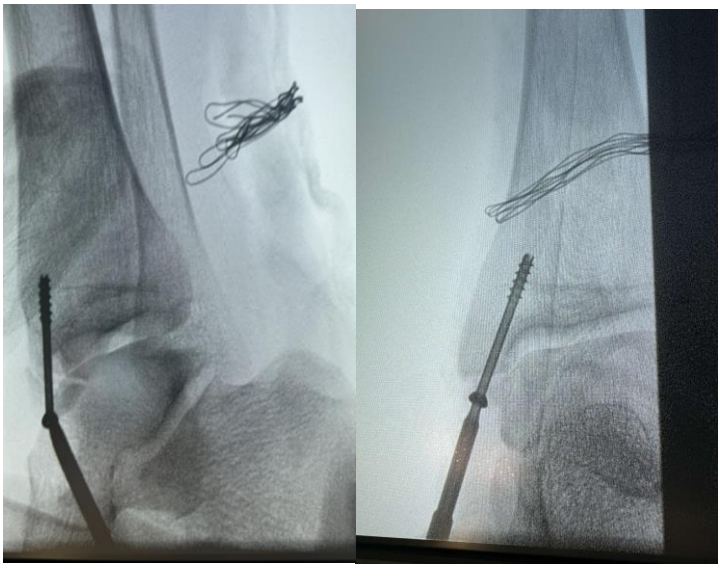

**Fig. 2.** Osteosynthesis of medial malleolus

## Discussion

Acute rupture of Achilles tendon is one of the most common injuries in adults, especially among men[1,4]. Malleolus fractures are also frequently seen in orthopaedics and traumatology practice, which usually occur after ankle sprains[1,2,4-6]. Medial malleolus fractures are sometimes seen as isolated, but they are often present together with fractures of lateral malleolus. Although acute Achilles tendon rupture and medial malleolar fractures are relatively frequent, the concomitant association of those two injuries in ipsilateral ankle is rare with only several single cases having been reported in studies written in English[4,5 7-9].

When finding acute Achilles tendon rupture in a high energy context, there must be a high degree of suspicion of associated lesions, such as medial malleolus fracture. On the other hand, when assessing ankle injuries associated with sudden dorsiflexion, an Achilles tendon rupture should be ruled out[8].

Clinical presentation typically involves acute pain, swelling around the AT and a palpable defect around the midpoint of the tendon, and functional impairment. Missed or delayed diagnosis of any of these injuries can lead to significant patient morbidity. Ankle swelling, tendon sheath hematoma and motor contribution by the long flexor tendons of the foot can make a clinical diagnosis of AT rupture difficult[8].

The ruptured Achilles tendon leads to an inability to perform plantar flexion, while the medial malleolus fracture is marked by localized tenderness and swelling over the medial ankle. The Thompson test is pivotal for diagnosing Achilles tendon rupture, demonstrating a lack of plantar flexion when the calf is squeezed. For fractures, radiographic imaging is the first-line diagnostic tool, with X-rays providing initial assessment and CT or MRI offering detailed visualization of fracture alignment and soft tissue damage. Assal *et al*. proposed that all supination-adduction fractures (Danis-Weber A) should have a thorough Achilles tendon examination and, on the other hand, all Achilles tendon injuries should have routine x-rays in order to detect possible medial malleolar fractures[9].

Management of these injuries involves a combination of surgical and non-surgical approaches. Surgical intervention is often required for both the Achilles tendon and medial malleolus fracture to ensure optimal functional recovery.

Surgical options for Achilles tendon repair typically include direct repair or reconstruction using autografts or allografts. Early surgical intervention is associated with better functional outcomes compared to conservative management.

Open reduction and internal fixation (ORIF) are frequently recommended for medial malleolus fractures to achieve proper alignment and facilitate healing. According to the literature, ORIF is associated with lower rates of nonunion and malunion compared to conservative treatments[10].

Rehabilitation strategies are critical for recovery. Physical therapy focusing on strengthening, range of motion, and weight-bearing exercises is essential for functional recovery. Long-term outcomes generally depend on the severity of the injuries and the effectiveness of the surgical and rehabilitation interventions[10].

## Conclusion

The simultaneous presence of an Achilles tendon rupture and a medial malleolus fracture on the same limb is frequently missed. It poses significant challenges in both diagnosis and treatment. A multidisciplinary approach, incorporating prompt and accurate diagnosis, surgical intervention, and comprehensive rehabilitation, is essential for achieving optimal outcomes and minimizing long-term functional impairment.

*Conflict of interest statement*. None declared.

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