

Case Report

Unrecognised Acute Rupture of the Achilles Tendon in Severe Ankle Sprain

在嚴重的腳踝旋後扭傷個案中被忽略了破裂跟腱

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ABSTRACT

Inversion ankle sprain is a common sport injury. It commonly refers to the injury of lateral collateral ligaments of the ankle. Failure to detect the concomitant injuries would lead to inappropriate treatment and suboptimal result. A case of unrecognised rupture of the Achilles tendon in a patient with severe inversion ankle sprain is reported.

中文摘要

腳踝旋後扭傷是常見的運動損傷。它通常暗示僅是腳踝的外側副韌帶損傷。忽略伴隨的損傷會導致不適當的治療和不良的治療結果。

Introduction

A sprained ankle commonly results from the stretching or tearing of the fibres of the anterior talofibular ligament, calcaneofibular ligament, and posterior talofibular ligament, occurring as a result of excessive supination and inversion of the plantarflexed foot while the tibia is externally rotated. Inversion injuries involve about 25% of all injuries of the musculoskeletal system, and about 50% of these injuries are sport related.¹ An ankle sprain is often thought of as an injury involving only the lateral ankle ligaments. Concomitant injuries including fractures, soft tissue sprains, muscle strains, or neuritis can frequently occur.² We reported a case of unrecognised rupture of the Achilles tendon accompanying severe collateral ligament injury of the ankle joint. To the best of our knowledge, this injury pattern has not been reported previously in the English literature, although Achilles tendinitis has been reported in 12.2% of ankle sprain cases.²

Case report

A 27-year-old gentleman suffered a left ankle injury during a football match. He jumped up and landed on his left foot with the

ankle in inverted position, and then felt left medial ankle pain. He could not bear any weight on his left ankle after the injury. He was admitted to our department for further management. Clinically, there was tenderness over the medial malleolar region without any tenderness over the distal tibiofibular syndesmosis or the lateral ankle. Radiography showed chip fractures at the articular side of the medial malleolus (Figure 1). Computed tomography confirmed the fractures without obvious disruption of the syndesmosis (Figure 2). He was treated conservatively with an ankle-foot orthosis and physiotherapy. Magnetic resonance imaging was arranged to look for any occult injury to the syndesmosis or chondral lesion of the ankle. It was performed 3 weeks after the injury, and showed that the anterior talofibular and deltoid ligaments were torn with marrow oedema in the medial talus and medial malleolus. There was no evidence of syndesmotic injury. However, a recent complete tear of the Achilles tendon at its calcaneal insertion was noted (Figure 3). He was interviewed again. He disclosed that he had on-and-off mild left heel cord pain after football games for 3 months prior to the injury. He did not notice any pain over the heel cord after this injury. There were no comorbidities or history of steroid intake. Clinically, the rupture gap of the Achilles tendon cannot be confidently felt because of the diffuse ankle swelling. The Simmonds' calf squeeze test over the left side did not initiate ankle plantarflexion. Surgical reattachment of the Achilles tendon with suture anchors was performed.

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Figure 1. Radiograph showing chip fractures at the articular side of the medial malleolus.

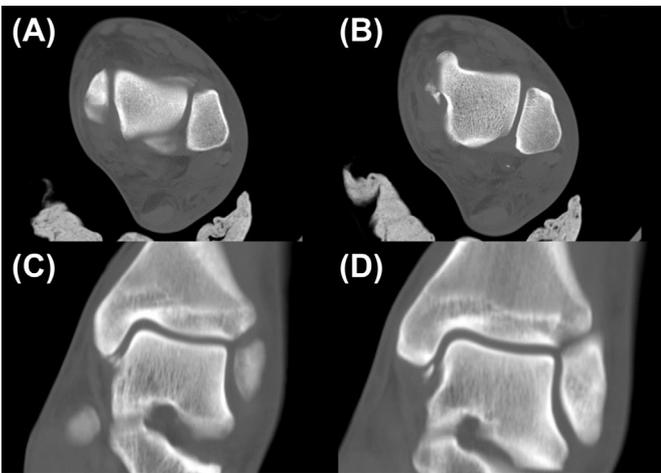


Figure 2. (A–D) Computed tomography confirming the fractures without obvious disruption of the syndesmosis.

Discussion

This patient suffered from inversion injury to his left ankle. Although the lateral collateral ligaments were often solely implicated,² medial collateral ligaments were also damaged. This was evidenced by significant pain and local tenderness over the tip of the medial malleolus and chip fractures at the articular surface of the medial malleolus, as shown in the radiographs. Fallat et al² have reported deltoid ligament injury in 32.9% of cases of inversion ankle sprain. In this case, the chip fracture was thought to be an avulsion of the deep posterior talotibial ligament.³ Magnetic resonance imaging was arranged for detection of any associated syndesmotic or chondral lesion.^{1,2} Although Achilles tendonitis has been reported in 12.2% inversion ankle sprain cases,² Achilles tendon injury was not suspected earlier. This is because the inversion ankle sprain was not the usual mechanism of injury of the Achilles tendon rupture. Moreover, the patient did not have any significant posterior heel pain.

Achilles tendon ruptures are common injuries in athletes; however, they are rarely associated with osseous or ligamentous lesions of the ankle.⁴ Concomitant rupture of the Achilles tendon and the calcaneofibular ligament,⁴ superficial peroneal retinaculum,⁵ or medial malleolar fracture^{6–10} has been reported. Two cases of acute Achilles tendon ruptures with concomitant ligamentous injury presented with severe posterior heel cord pain and were primarily diagnosed to have acute Achilles tendon ruptures.^{4,5} The concomitant superior peroneal retinaculum rupture⁵ and avulsion of the calcaneofibular ligament⁴ were detected by detailed clinical examination and radiography/subtalar arthrography, respectively. The mechanism of injury was hyperdorsiflexion of the ankle in both cases.

Our patient had a history of heel cord pain a few months prior to the injury, which may imply underlying Achilles tendinosis predisposing to an acute Achilles tendon rupture. The Achilles tendon was suspected to be ruptured during the jump. The patient then lost balance during landing, resulting in an inversion sprain to the ankle. This patient's clinical presentation was mainly a case of severe ankle sprain with injury to the medial and lateral

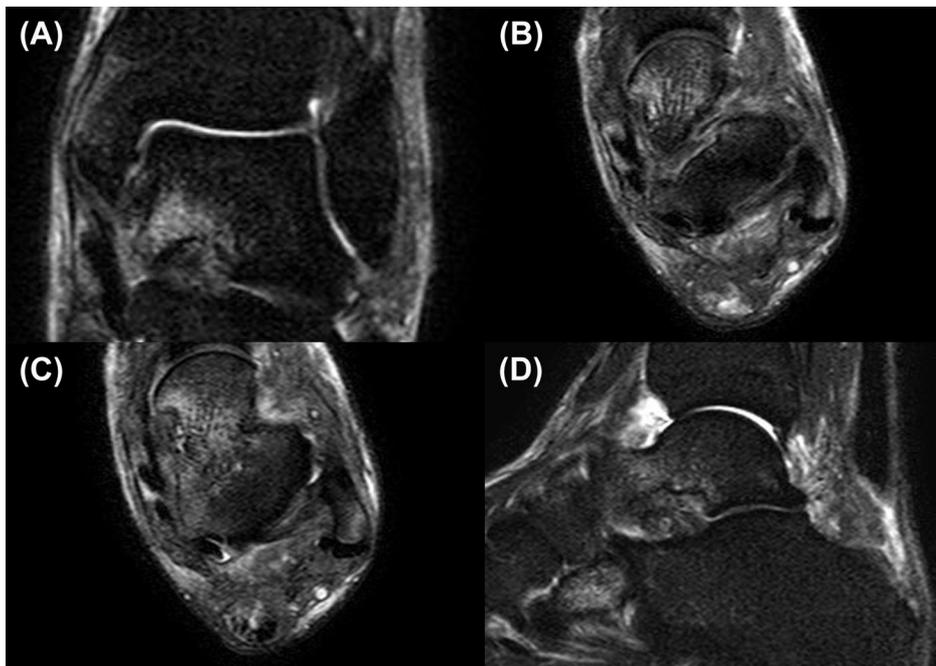


Figure 3. (A–D) Magnetic resonance imaging showing that the anterior talofibular and deltoid ligaments were torn with marrow oedema in the medial talus and medial malleolus. There was no evidence of syndesmotic injury. A recent complete tear of the Achilles tendon at its calcaneal insertion was noted.

collateral ligaments. He had severe medial and lateral ankle pain that might have masked the posterior heel pain of a ruptured Achilles tendon.

As the primary diagnosis of our patient was severe ankle sprain with medial and lateral collateral injuries, he was treated by compression, ice, elevation, and a short period of ankle immobilisation, followed by gradual resumption of mobilisation.^{1,2} This treatment plan of early mobilisation may have an adverse effect on the ruptured Achilles tendon. By contrast, delayed treatment of the Achilles tendon rupture may lead to pain and stiffness, affecting daily activities.¹¹ Moreover, a further period of ankle immobilisation after the repair of the Achilles tendon may have a detrimental effect on the functional recovery of the ankle ligaments.¹

In summary, although the ankle ligaments are often solely implicated in ankle sprain, the patient should be evaluated for concomitant injuries. This is important for formulation of the most appropriate treatment for the patient. The diagnosis would be incomplete without considering the concomitant injuries, resulting in a suboptimal treatment outcome.²

Conclusion

Ankle ligamentous injury can only be a part of the “acute ankle sprain syndrome”. Detailed history taking and clinical examination are most important to detect the concomitant injuries and assist in the formulation of an appropriate treatment plan.

Conflicts of interest

The authors declare no financial and personal relationships with other people or organisations that could inappropriately influence (bias) the preparation of this manuscript.

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