Acute Ankle Injuries

CHAPTER 33

WITH JON KARLSSON

Epidemiological data suggested that there were over 300 000 annual emergency department presentations with ankle sprains in the United Kingdom[1] and that 42 000 of these were 'severe'. The highest rates were in girls aged 10–14 years. Extrapolated to the populations of Australia and the United States, these UK data would equate to an ankle-injury related burden of 100 000 emergency department presentations annually in Australia, and 1.5 million annually in the United States.

Although the term 'sprained ankle' is sometimes thought to be synonymous with 'lateral ligament injury' and, thus, imply a rather benign injury, this is not always the case. If the ankle injury is indeed a lateral ligament sprain, inadequate rehabilitation can lead to prolonged symptoms, decreased sporting performance and high risk of recurrence. Thus, the first half of this chapter focuses on anatomy, clinical assessment and management of lateral ligament injuries after ankle sprain and two less common sequelae of ankle sprain—medial ligament injury and Pott's fracture.

The seemingly benign presentation of 'sprained ankle' can also mask damage to other structures in addition to the ankle ligaments, such as subtle fractures around the ankle joint, osteochondral fractures of the dome of the talus and dislocation or rupture of the peroneal tendons, in most cases the peroneus brevis tendon. Such injuries are frequently not diagnosed and thus cause ankle pain that persists much longer than would be expected with a straightforward ankle sprain. This is often referred to as 'the problem ankle' and this presentation is discussed in the second half of this chapter.

Functional anatomy

The ankle contains three joints (Fig. 33.1):

1. talocrural (ankle) joint
2. inferior tibiofibular joint
3. subtalar joint.

The talocrural or ankle joint (Fig. 33.1a) is a hinge joint formed between the inferior surface of the tibia and the superior surface of the talus. The medial and lateral malleoli provide additional articulations and stability to the ankle joint. The movements at the

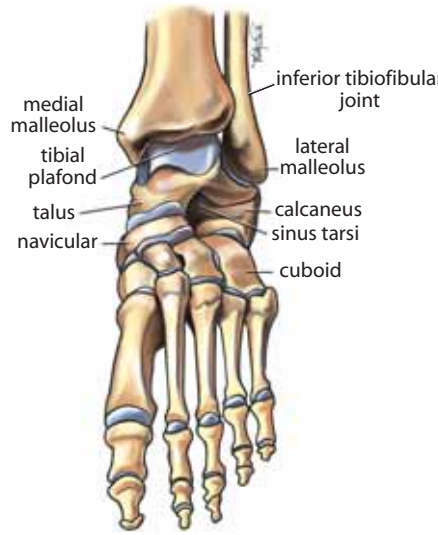
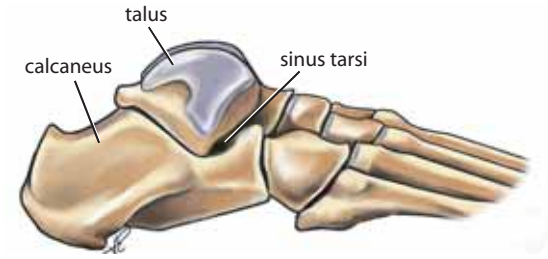
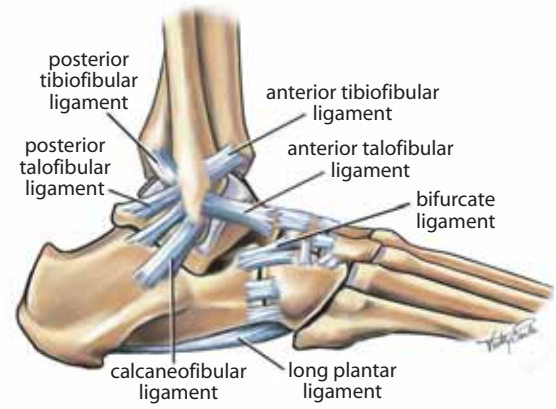


Figure 33.1 Anatomy of the ankle

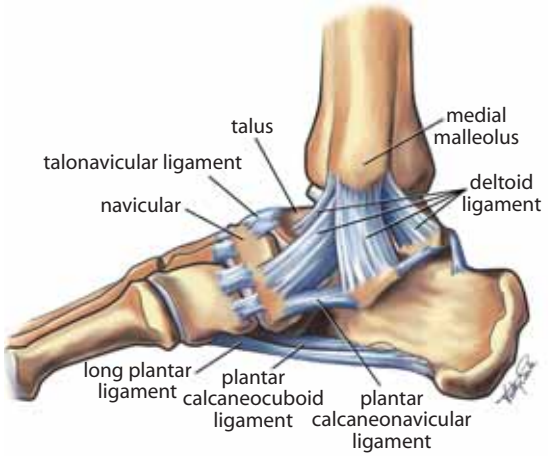
(a) Talocrural (ankle) joint



(b) Subtalar joint



(c) Ligaments of the ankle joint—lateral view



(d) Ligaments of the ankle joint—medial view

ankle joint are plantarflexion and dorsiflexion; the joint is least stable in plantarflexion. This leads to an increased number of injuries with the foot in the position of plantarflexion.

The inferior tibiofibular joint is the articulation of the distal parts of the fibula and tibia. The inferior tibiofibular ligament or syndesmosis. A small amount of movement is present at this joint and the rotational movement, even though minimal, is extremely important, for instance, for barefoot walking and running.

The subtalar joint (Fig. 33.1b), between the talus and calcaneus, is divided into an anterior and posterior articulation separated by the sinus tarsi. The main roles of the subtalar joint are to provide shock absorption, to permit the foot to adjust to uneven ground and to allow the foot to remain flat on the ground when the leg is at an angle to the surface. Inversion and eversion occur at the subtalar joint.

The ligaments of the ankle joint are shown in Figures 33.1c, d. The lateral ligament consists of three parts: the anterior talofibular ligament (ATFL), which passes as a flat and rather thin band from the tip of the fibula anteriorly to the lateral talar neck, the calcaneofibular ligament (CFL), which is a cord-like structure directed inferiorly and posteriorly, and the short posterior talofibular ligament (PTFL), which runs posteriorly from the fibula to the talus. The medial or deltoid ligament of the ankle is a strong, fan-shaped ligament extending from the medial malleolus anteriorly to the navicular and talus, inferiorly to the calcaneus and posteriorly to the talus. This ligament is strong and composed of two layers, one deep and the other more superficial. Accordingly, the deltoid ligament is infrequently injured.

Clinical perspective

Inversion injuries are far more common than eversion injuries due to the relative instability of the lateral joint and weakness of the lateral ligaments compared with the medial ligament. Eversion injuries are seen only occasionally. As the strong medial ligament requires a greater force to be injured, these sprains almost always take longer to rehabilitate. The differential diagnoses that must be considered after an ankle injury are listed in Table 33.1. The aim of the initial clinical assessment is to rule out an ankle fracture, if possible, and to diagnose the site of abnormality as accurately as possible.

History

The mechanism of injury is an important clue to diagnosis after ankle sprain. An inversion injury suggests lateral ligament damage, an eversion injury suggests medial ligament damage. If the injury has involved compressive forces on the ankle mortise, consider the possibility of osteochondral injury.

The onset of pain is very important. A history of being able to weight-bear immediately after an injury