

## Sporttrauma: Foot& Ankle Injuries

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A high percentage of sporttrauma involve the ankle and foot. Acute injuries can result from direct trauma or indirect trauma. Most injuries are not sportspecific. Their treatment and rehab however can differ. Most residual complaints in athletes result from supination trauma. At long term follow-up 30-40% of patients report restrictions. Development of residual complains after supination trauma is related to the initial pathology (see table).

### *Sequela of supination trauma in relation to initial pathology*

Lateral	- rupture lateral ankle ligaments - chronic instability - ligament avulsion fibula tip - syndesmotic rupture
Anterolateral	- sinus tarsi syndrome - cuboid avulsion - fracture metatarsal V
Anteromedial	- navicular bone fracture - cartilage damage medial malleolus/medial talar facet
Posteromedial	- damage deltoid ligament/ossicle/calcification
Posterior	- posterior talar facet fracture/os trigonum impingement
Posterolateral	- longitudinal rupture peroneus brevis tendon - recurrent tendon dislocation
Ankle joint	- (osteo)chondral damage - synovitis/scar tissue/soft tissue impingement

### *Lateral*

Treatment of acute lateral ligament rupture is conservative. In the Athlete surgical repair of acute ruptures has preference because of better stability and higher satisfaction. The incidence of chronic mechanical instability after acute ankle ligament rupture is reported to be less than 10% (Karlsson 1988). More than half of these patients will regain satisfactory functional stability after a supervised rehabilitation program based on peroneal muscle strengthening and coordination training (Kerkhoffs 2002). Chronic instability will lead to degenerative changes (Bosien 1955, Jackson 1975, Harrington 1979, Krips 2002).

Some patients have residual complaints due to an avulsion which has resulted in a non-union of the avulsion. A neglected rupture of the syndesmotic ligaments can result in chronic syndesmotic instability. The incidence of subtalar instability is highly over-estimated.

### *Anterolateral*

The incidence of sinus tarsi syndrome after supination trauma is unknown.

Patients with a sinus tarsi syndrome in 70% report an inversion injury as the cause (Klein 1993, Taillard 1981, Oloff 2001). In case of failure of conservative treatment with inlay and corticosteroid injections endoscopic treatment is the preferred strategy. Avulsion fractures of the cuboid joint have no consequences. A fracture of metatarsal V can result in a painful non-union when neglected. Stress fractures of Meta V are sport-specific as is their treatment.

### *Anteromedial*

After a supination trauma 60% of patients have pain on the anteromedial aspect or posteromedial aspect of the ankle. It has been shown that between 60 and 90% of patients have damage of the cartilage in the medial aspect of the ankle joint after an acute lateral ankle ligament rupture (van Dijk 1996, Taga 1993). In 20% of the patients this results in chondral flakes (loose body) in the joint. These chondral flakes will result in synovitis and can result in limitation of movement. The cartilage damage in the anteromedial aspect of the ankle joint on the long term can result in spur formation. These spurs and scar tissue can lead to anterior ankle impingement.

### *Posteromedial*

Avulsion can lead to ossicles' and persisting pain and swelling. Damage of the deep portion of the deltoid ligament can lead to persistent swelling and calcifications. This so called Cedell fracture can be treated by means of a 2-portal endoscopic hindfoot approach.

### *Posterior*

Compression of the posterior talar process or an os trigonum can result in a chronic posterior ankle impingement syndrome. These patients experience pain on forced plantar flexion.

### *Posterolateral*

Longitudinal (partial) rupture in the peroneus brevis tendon can result in chronic disability with swelling and pain over the posterolateral aspect of the lateral malleolus. Conservative treatment with injections have a 50% chance of success. Operative treatment should be by means of a 2-portal endoscopic hindfoot approach

### *Ankle joint*

Chondral damage in the anteromedial aspect of the ankle joint is present in two thirds of patients. They can result in anterior ankle impingement due to spur formation and scar tissue formation. Osteochondral defects in the talar dome are reported in 5-7% of patients after acute ankle ligament rupture (Bosien 1955, Lippert 1989, van Dijk 1994). These defects can give rise to deep ankle pain. First line of operative treatment for chronic talar OCD remains Debridement and bonemarrow stimulation with an expected good/excellent result of 85%. This result has demonstrated to last over time for lesion < 15 mm. Larger lesions need fixation or OATS in case of secondary treatment.

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