

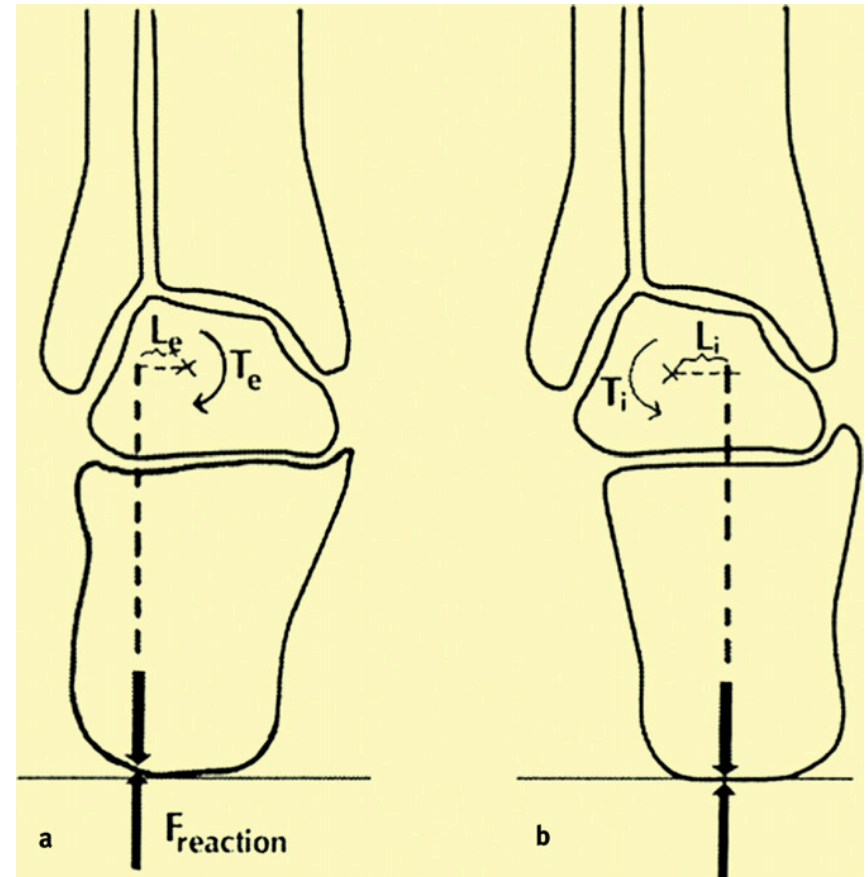
Ankle sprain related problems

Ankle sprain: ORTHOPAEDICS AND TRAUMA 25:256

- The incidence in the UK of 52.7/10 000/year equates to 300 000 injuries/year.
- There is little role for surgery in the acute phase.
- Symptomatic ankle instability can develop in as many as 10%
- The ankle joint complex consists of three articulations: the talocrural, subtalar and distal tibiofibular joints. The three joints work together to allow coordinated movement.
- ATFL is most vulnerable
- Deep deltoid is important in resisting lateral translation
- Post TF ligament ; strong and main restraint.

Pathomechanics

- Lateral ankle sprains occur as a result of excessive supination
- There is often sequential failure : the ATFL, followed by the CFL.
- Isolated ruptures of the CFL are rare and may play a role in subtalar instability.
- Increased plantarflexion causes the subtalar joint axis to drift laterally and thus increases the risk of injury.
- Gauffin determined that the ankle everters are unable to withstand a supinating moment lever arm greater than 3 cm,



Instability

Mechanical

- It is traditionally thought of as the result of anatomical insufficiencies such as either ligamentous laxity, synovial changes or a fault in the kinematics
- Karlsson :

10 mm or more of anterior draw
- or 9degree of talar tilt was consistent with CAI.
- Alternatively, a difference of 3 mm of anterior draw or 3degree of talar tilt

Functional

- Functional instability Injuries to the lateral ligaments results in neuromuscular changes to the stabilizing muscles around the ankle, leading to a proprioceptive deficit.
- Weakness of the peronei have been reported amongst individuals with CAI as well as impaired reflex
- Most patients presenting with CAI will invariably have an element of functional instability and it is often the predominant problem.

Anterior Drawer test

- Anterior draw test: with the patient relaxed, anterior subluxation of the talus can easily be demonstrated.
- With the foot in 20 degrees of plantarflexion, the tibia is pushed backwards against the fixed foot or the foot drawn forwards against the tibia .
- The characteristic sign is the 'suction sign' as the skin is sucked inwards over the lateral gutter.



Inversion stress test

- Inversion stress test: excessive hindfoot inversion with the foot in a plantigrade position may indicate tibiotalar laxity, and is usually positive where there is complete CFL disruption.
- Both ankles should be tested simultaneously to determine asymmetry. It is sometimes difficult to differentiate between ankle and subtalar motion, and palpation of the talar neck may help.



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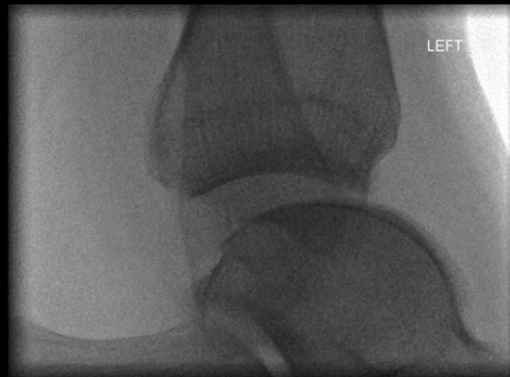
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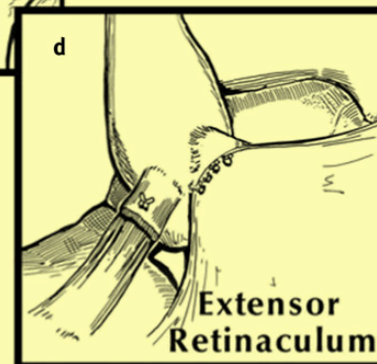
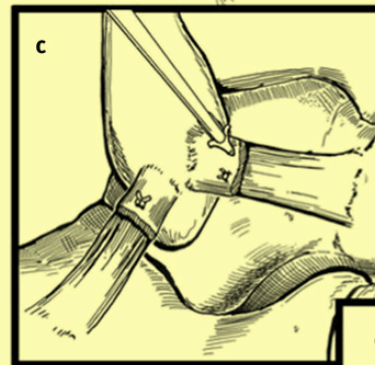
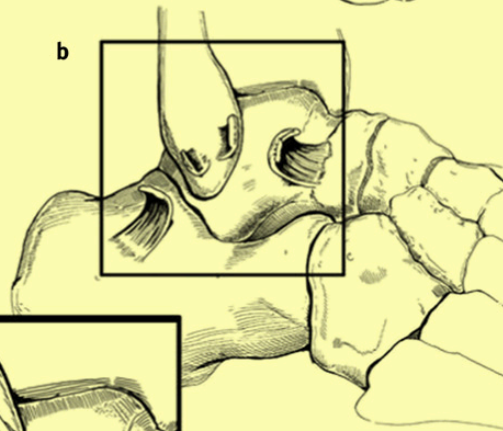
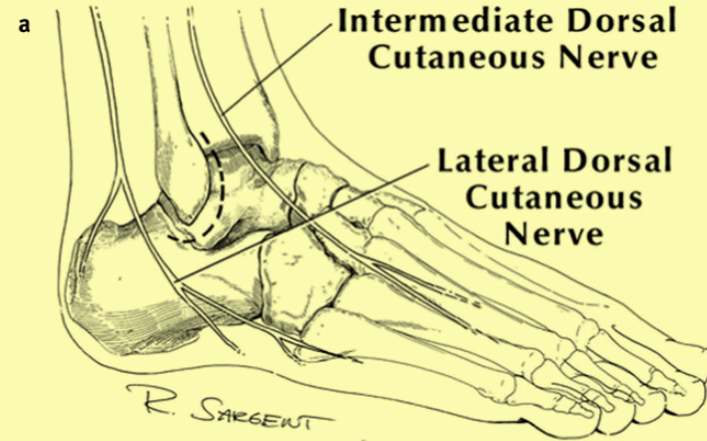


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- Physio
- No relief at 6 weeks
- MRI
- An initial ankle arthroscopy in all suspected cases of intra-articular pathology
- After 3 months of physio: Proceed to ligament reconstruction
- Modified Brostrums.



Ankle arthritis epidemiology.

ORTHOPAEDICS

AND TRAUMA 25:4: 258, 2011

Trauma is the most common cause of ankle OA

Study of 406 ankles with end-stage OA

- 1 Post-traumatic OA accounted for 78%
2. 13% was secondary arthritis [Septic, RA, Hemophilia]
- 3 Primary OA accounted for only 9%

Of the 78% of post-traumatic OA cases, 62% was attributed to fracture events and 16% to ligamentous posttraumatic OA

- The low incidence of primary OA of the ankle is surprising, given that the ankle joint experiences a greater force per unit area than either the hip or the knee.
- The thickness of the articular cartilage of the ankle is less than that of the knee. There is an inversely proportional relationship between cartilage thickness and compressive modulus), and thinner cartilage tends to allow for increased joint congruency.
- The ankle moves mainly as a rolling joint as oppose to the rolling, sliding and rotational movement seen in the knee. Therefore the ankle maintains congruency throughout movement and at high loads, again protecting against degeneration.
- Ankle has increased superficial layers. the superficial regions are more responsible for compressive deformity this may play an important role in resistance to development of OA.

- Congruency of the ankle joint plays an important role in preventing OA, therefore any mal-union seen after a fracture can alter the contact area and stresses. 1 mm lateral talar shift reduces the contact area between 15% and 42%.

Chronic Ankle Instability and arthritis

- Recurrent lateral instability following an inversion ankle sprain is thought to be a risk factor for the development of ankle osteoarthritis.
- Sugimoto et al. performed an arthroscopic study of patients with prolonged lateral ankle instability to clarify risk factors for chondral injury as a potential precursor to ankle arthritis¹¹. Chondral lesions of some degree were found in 77% of the ankles overall.
- Chondral lesions were most frequently located in the medial half of the ankle and were localized to the tip of the medial malleolus in 58% of cases. The duration of instability was not a factor affecting the severity of chondral damage as observed arthroscopically.
- The risk factors associated with more severe chondral changes were increased age, a larger talar tilt angle, and varus inclination of the tibial plafond. Of these risk factors, mechanical instability is most commonly corrected surgically through lateral ligament reconstruction and repair.

FOOTBALLER'S ANKLE

- The condition of anterior impingement was first recognized and named “athlete’s ankle” by Morris¹² in 1943
- Later renamed “footballer’s ankle” by McMurray¹¹ in
- 1950; McMurray reported good results in athletes after
- surgical resection.

Antero-medial impingement ankle

- Chronic anteromedial ankle pain is a frequently overlooked entity that often leads to delayed diagnosis and thus a significant amount of time lost to play in athletes.
- To the best of our knowledge, this is the first case series to report the outcomes following
- arthroscopic resection of AMI.
- The present hypotheses on the manifestation of AMI relate to repetitive capsular traction and also direct and recurrent microtrauma to the anteromedial aspect of the ankle joint. The “traction spurs” theory was first hypothesized by McMurray
- The capsular attachment an average of 6 mm proximal to the origin of the bony spurs.
- They found that the impact forces of a soccer ball on the anteromedial ankle joint region are of a high enough magnitude to damage anatomical structures.

- However, the exact mechanism of injury is not fully understood in many cases
- At the time of arthroscopy, it was not uncommon to note scarring of the anterior fibers of the deltoid, thus causing a soft tissue impingement.
- Although pain on palpation to the anteromedial ankle joint has been considered an inconsistent finding with AMI, several factors may elucidate a positive diagnosis.
- - Only 32% and 40% of talar and tibial spurs, respectively, may be recognized on lateral radiograph. The most prominent aspect of the tibia on standard lateral radiographs is anterolateral, hence appreciating anterolateral osteophytes. In contrast, anteromedial osteophytes are often invisible on standard lateral films. Thus, when used as an adjunct to standard lateral radiographs, oblique AMI view radiographs (45° craniocaudal radiograph with 30° external rotation of the leg) may increase the recognition of talar and tibial osteophytes to 73% and 85%, respectively.

- Magnetic resonance imaging has emerged as the gold standard of imaging. In addition to the soft tissue component
- Allowing ligament, accurate diagnosis of osteochondral and chondral lesions of
- the talus or tibia. Each patient in the present cohort had MRI before surgery.

AM

- Chronic anteromedial ankle joint pain that is intensified by activity or placing the ankle into forced dorsiflexion
- Pain on palpation of the medial ankle joint line on physical examination may reproduce typical symptoms of AMI but is not considered a definitive diagnostic sign
- Repetitive capsular traction during kicking
- Movements; Chronic microtrauma; Inversion ankle sprain, including the entrapment
- and/or tearing of the anteromedial joint
- capsule

ALI

- History of prior ankle sprain with chronic and persistent lateral ankle pain
- Tenderness of the AL gutter of the ankle joint
- Must distinguish symptoms of ALI from sinus tarsi syndrome
- Reactive synovitis in the lateral gutter as a result of hematoma reabsorption after ankle sprain
- Inversion sprain leading to inflammation of torn ligaments after repetitive motion, thereby causing hypertrophic synovitis and
- scar tissue in the lateral gutter



AMI view:when
 used as an adjunct to standard lateral radiographs, oblique
 AMI view radiographs (45 craniocaudal radiograph with
 30 external rotation of the leg) may increase the recognition
 of talar and tibial osteophytes to 73% and 85%,



- 1. The previously unsuccessful results of nonoperative treatment for impingement are well recognized in the literature.
- 2. Arthroscopic surgery for the removal of bony spurs in anterior ankle impingement syndrome has been shown to be reproducible.
- 3.

MRI Evaluation of sprain

Foot & Ankle International/Vol. 31, No. 8/

656, 2010

The purpose of this study was to determine the effectiveness and reliability of routine MR I in the diagnosis of anterolateral soft tissue impingement.

The surgical and MRI reports of 24 patients who had an arthroscopic diagnosis of anterolateral

- **soft tissue impingement .**

Results: Using this technique, we report a 78.9% accuracy in diagnosis, a sensitivity of 83.3%

- **and a specificity of 78.6%.**

Conclusion: Although not indicated in all cases of anterolateral ankle impingement, we advocate the use of MR imaging in complicated clinical presentations where the exclusion

- **of additional pathology in the ankle or subtalar joint, and the confirmation of anterolateral soft tissue impingement would be beneficial.**

DISCUSSION

The initial description of a meniscoid lesion causing anterolateral impingement of the ankle by Wolin. *Classically, anterolateral soft tissue* impingement occurs at three sites:

1. the superior portion of the anteroinferior tibiofibular ligament (AITF);
2. the distal portion of the AITF ligament, which may involve a separate fascicle;
3. the anterior talofibular ligament (ATFL) and lateral gutter near the area of the lateral talar dome.

All of these areas are visualized during an arthroscopic evaluation and also can be seen on MRI evaluation.

The merits of MRI for anterolateral impingement.

(93%) were satisfied with the procedure.