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Update on Syndesmosis Ankle Sprains

By

Todd Gothelf

Foot, Ankle, Shoulder Surgeon



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Epidemiology

- 1-18% of all ankle sprains are syndesmosis injuries
- Lateral ankle sprains are far more common



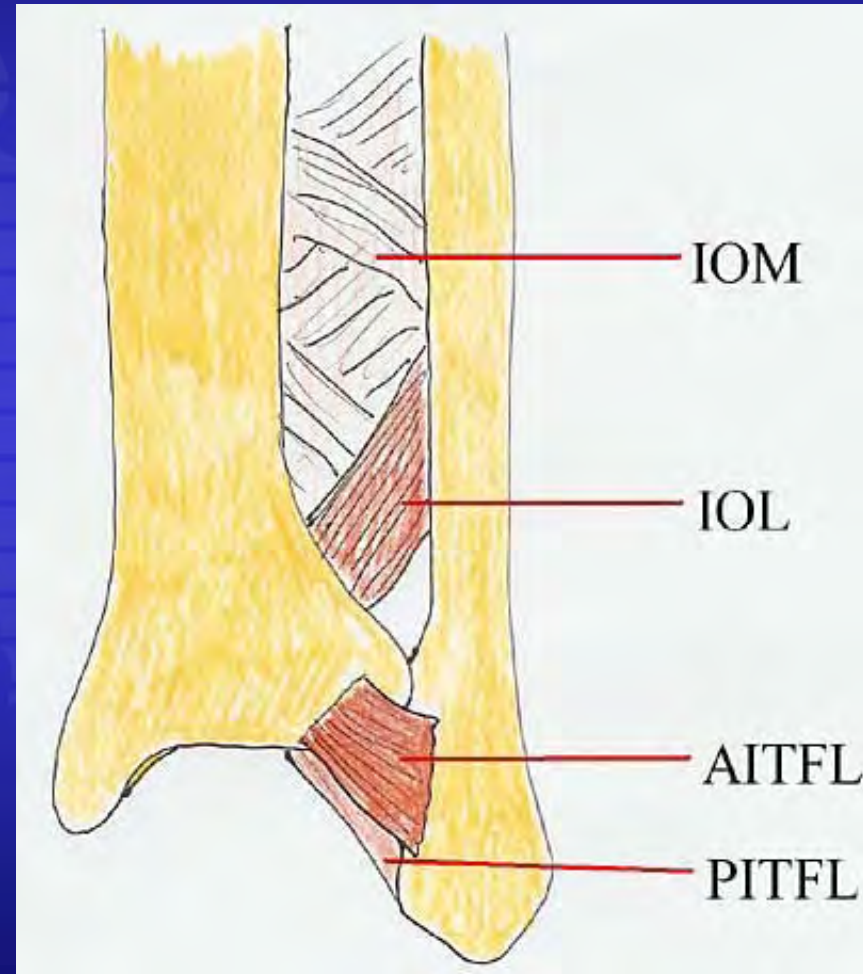
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Anatomy

- Syndesmosis controls tib/fib stability
- IOM
- IOL
- AITFL
 - Usually first injured
 - Rotational injury
- PITFL



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Mechanism of Injury

- External rotation injury

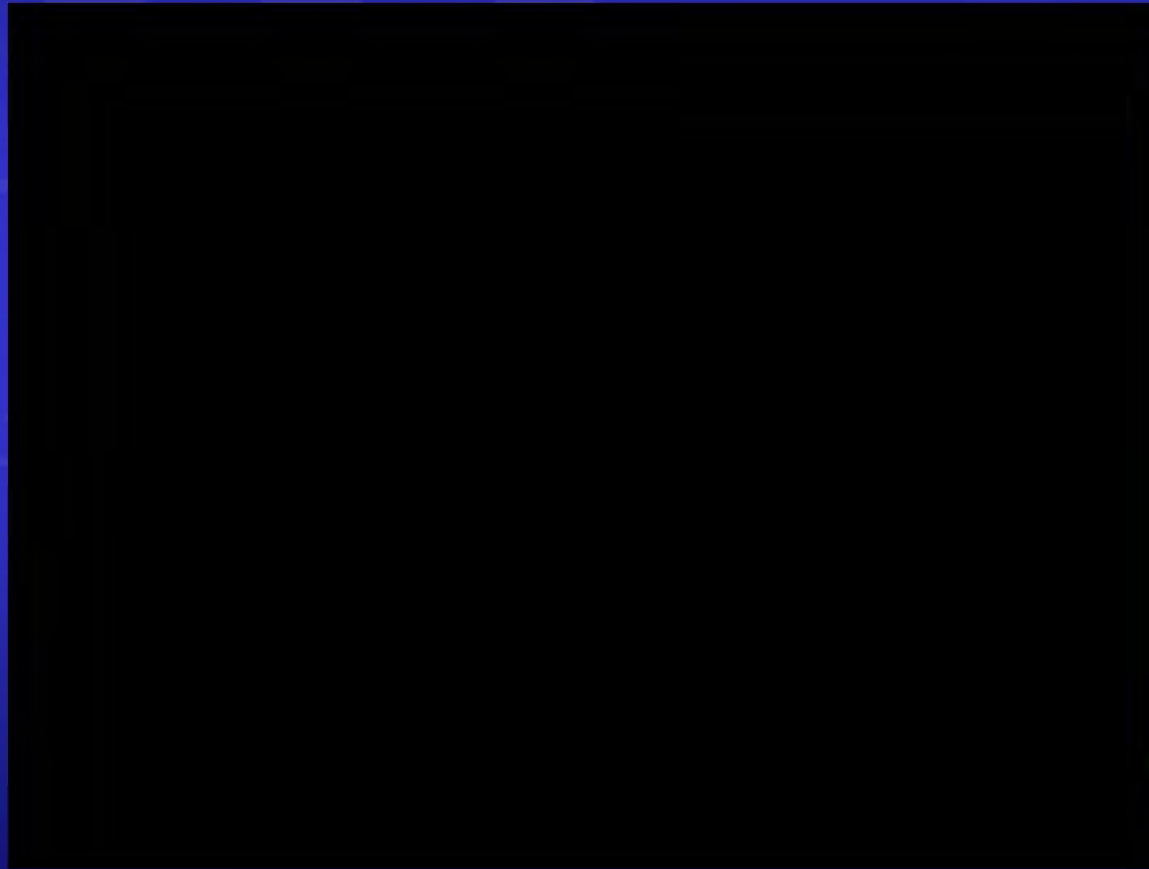


Lateral Ankle Sprain

- Usually different mechanism
- Inversion injury
- Tearing of ATFL and CFL ligaments
- Deltoid and syndesmosis unlikely to be injured



Syndesmosis Ankle Sprain



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Classification

- Gerber described based on grades of stability
- I- No instability
- II- Some instability
 - Not evident on static radiographs.
- III- Frank instability
 - Evident on static radiographs.

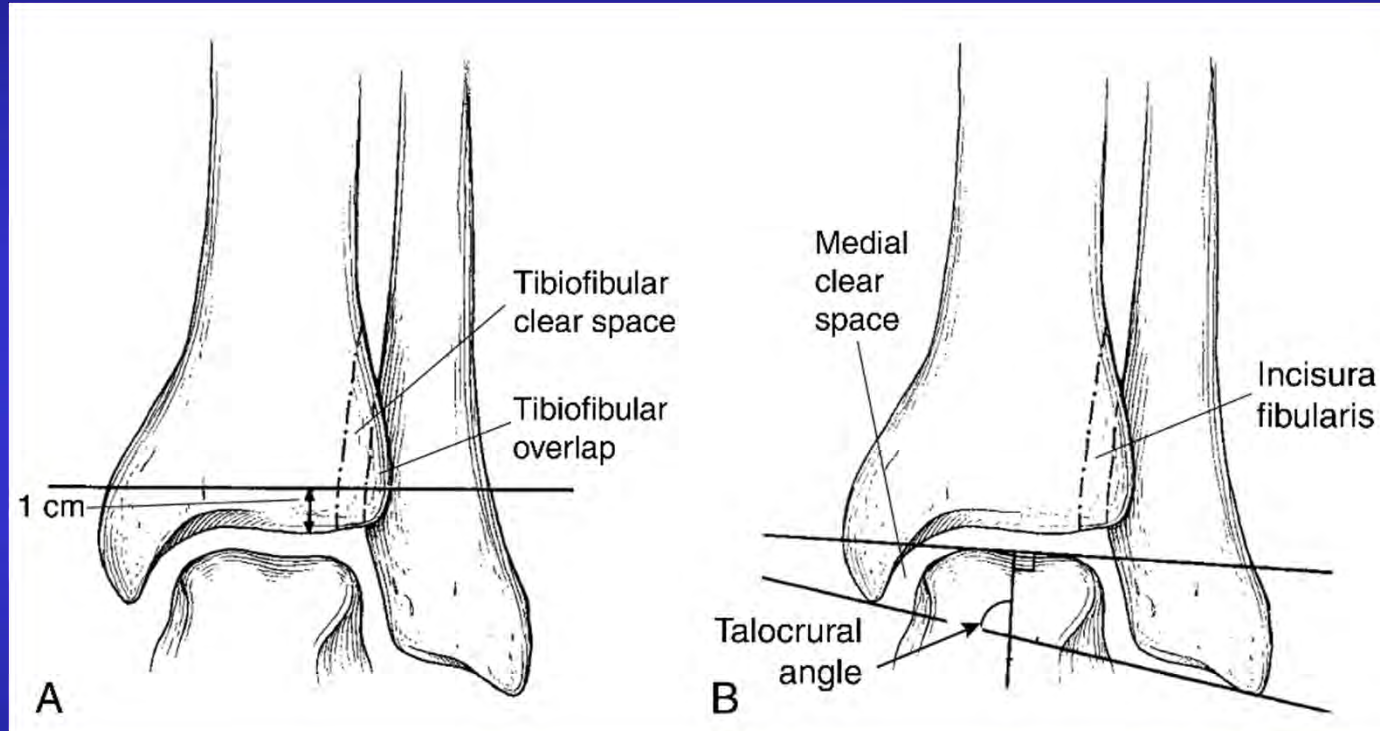


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Radiographs



- Medial Clear Space and Tib-fib clear space



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Grade I Ankle Sprain

- Stable on all views
 - Non weight bearing xrays
 - Weight bearing xrays
- Treatment
 - Period of immobilisation
 - Reduced WB
 - Gradual rehab



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Grade III syndesmosis

- Severe displacement
 - Non weight bearing xrays
 - Weight bearing xrays
 - CT
 - MRI
- Generally agreed that surgery is a necessity



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Grade II Syndesmosis

- Latent Diastasis
- NWB Xrays normal
- WB x-rays widening
- Wide range of instability here
- Treatment controversial
- Some do well, some don't



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Dilemma

- Grade IIs do not always improve.
- It is hard to assess the severity with current imaging techniques.
- Difficult to determine who would benefit from surgery.



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Why Syndesmosis Requires Surgical Treatment

- Bekerom VD, Lamme B. J Foot and Ankle Surg 2007.
- Talar displacement >2mm results in 90% degenerative changes.
- Jenkinson RJ, Sanders DW et al. J Orthop Trauma 2005.
- A 1mm lateral talar shift, joint contact area decreases by 42%.



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Assessing an Ankle Injury

Dr. Gs seven point exam

- Achilles tendon
- Midfoot lisfranc
- Deltoid ligament
- Syndesmosis
- Peroneal tendons
- ATFL ligament
- Bony tenderness



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Physical Examination

- Point Tenderness
- Anterior talofibular ligament (ATFL)
- Anterior Inferior Tib Fib Ligament (AITFL)
- Deltoid Ligament



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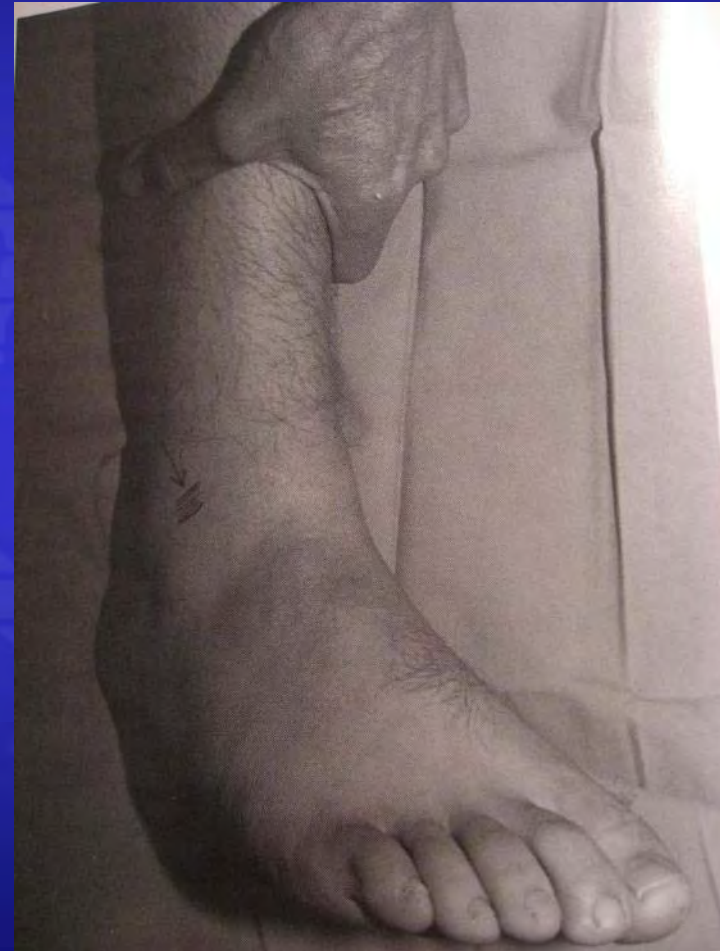


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Squeeze Test

- Compressing proximal tibia and fibula at mid-calf
- Pain at the level of the ankle joint



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Tenderness Interosseous Membrane

- Distance tenderness extends upward from ankle- “tenderness length”
- Correlates well with degree of injury and return to sports participation.
 - Nussbaumb et al., Am J Sports Med 2001.
- 2 cm up- 5 days lost
- 8cm – 15 days lost
- 14 cm- 24 days lost



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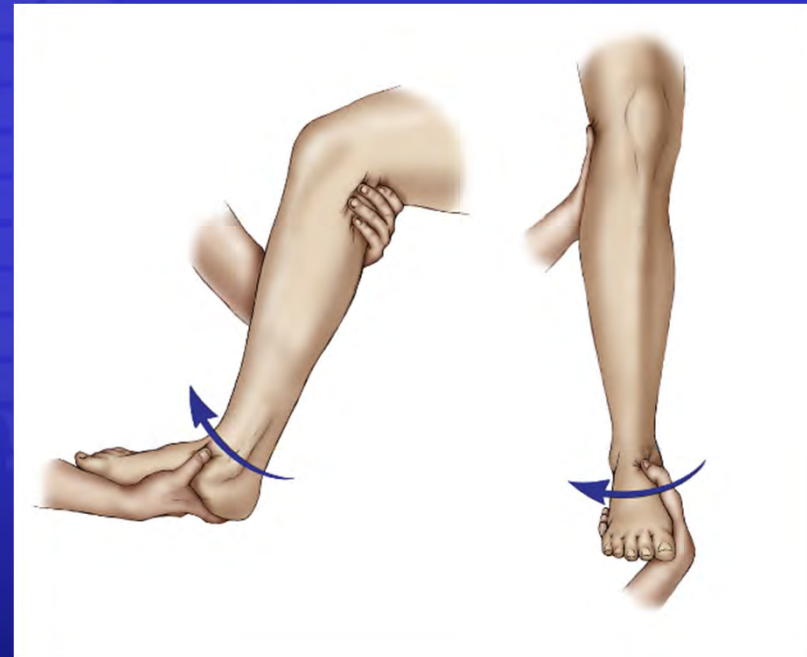


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External Rotation Stress Test

- Foot and ankle are held with one hand and upper leg stabilised with other hand
- Foot is externally rotated, pain is reproduced.
- Stresses deltoid and tib/fib ligaments



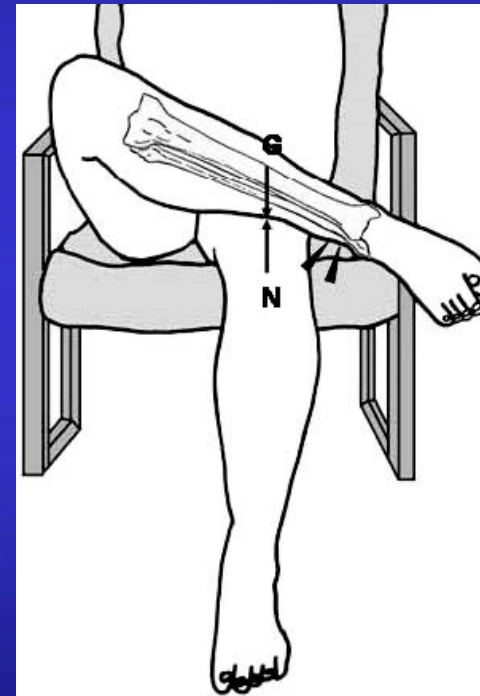
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Crossed-leg Test

- Kiter and Bozkurt. Foot Ankle Int, 2005.
- Sitting Crossed leg.
- A gentle downward force on the medial side of the knee
- Positive if pain at syndesmosis.



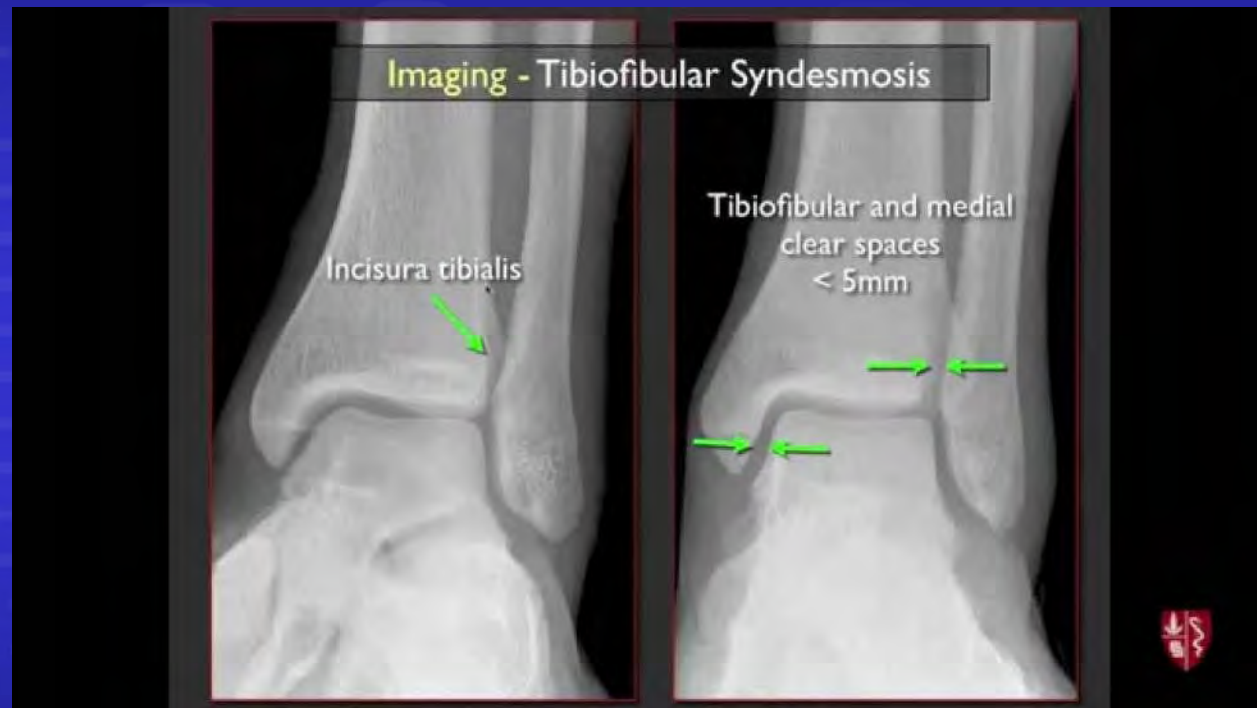
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X-rays

- Medial Clear Space
- Tib/fib overlap and space between
- < 5mm



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WB X-rays

- Weight bearing Radiographs
 - Dynamic Test
 - Compare normal with abnormal side
- Not always reliable as can be subtle

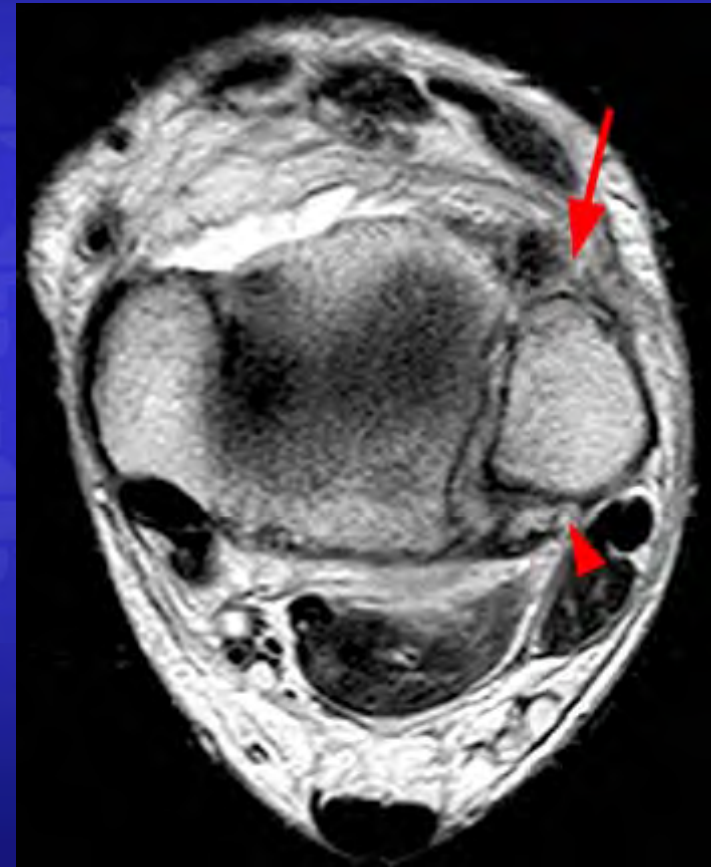


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MRI



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How to determine which grade IIs need fixation?

Stable Versus Unstable Grade II High Ankle Sprains: A Prospective Study Predicting the Need for Surgical Stabilization and Time to Return to Sports



James D. Calder, M.D., F.R.C.S.(Tr&Orth), F.F.S.E.M.(UK),
Richard Bamford, M.Sc., Aviva Petrie, B.Sc., M.Sc., C.Stat., C.Sci.F.H.E.A., and
Graham A. McCollum, F.C.S.Orth.(SA), M.Med.(UCT)

- Prospective study to determine which Grade II injuries needed surgery and which did not.
- Defined a IIa (stable) and IIb (unstable) and treated them boot or scope.



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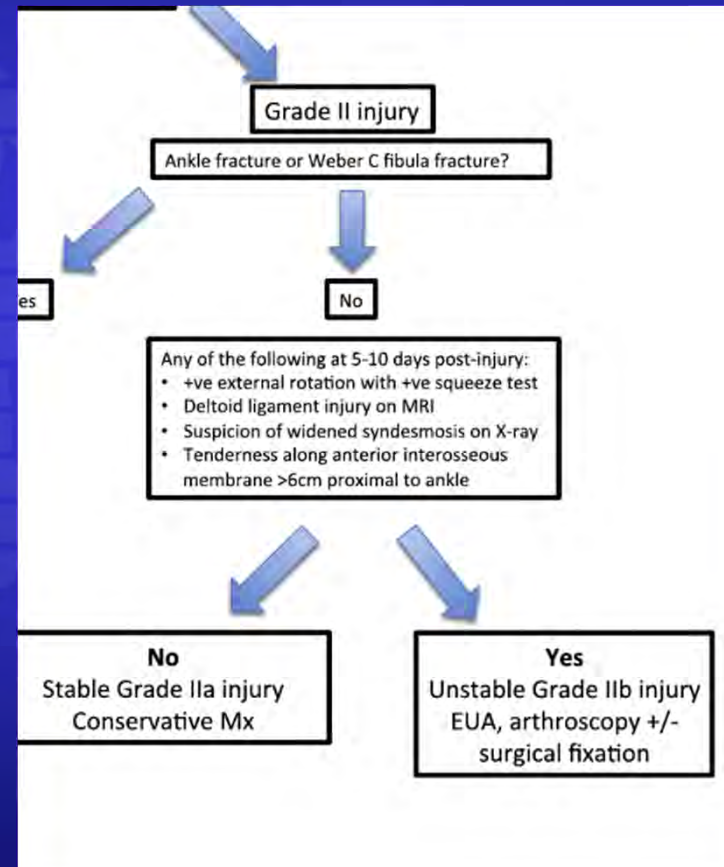
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Unstable vs Stable?

- Criteria
 - + ER stress and + Squeeze
 - Tenderness >6cm above ankle along syndesmosis
 - MRI- Deltoid or PITFL injury
 - X-ray- Widened syndesmosis

- Stable- Boot

- Unstable Arthroscopy



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Arthroscopy

- Can visualise AITFL and PITFL
- Can Assess Tib/fib space
- Can assess medial clear space
- Can visualise reduction



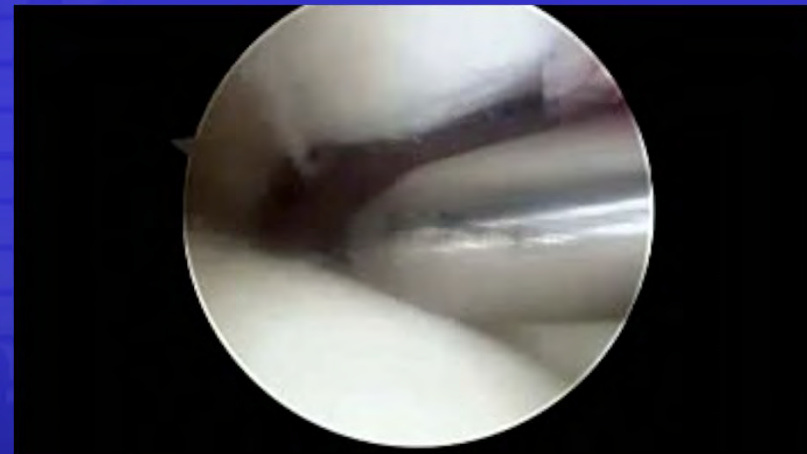
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Arthroscopy

- Rupture and widened tib/fib interspace
- Tear AITFL
- Widened medial clear space



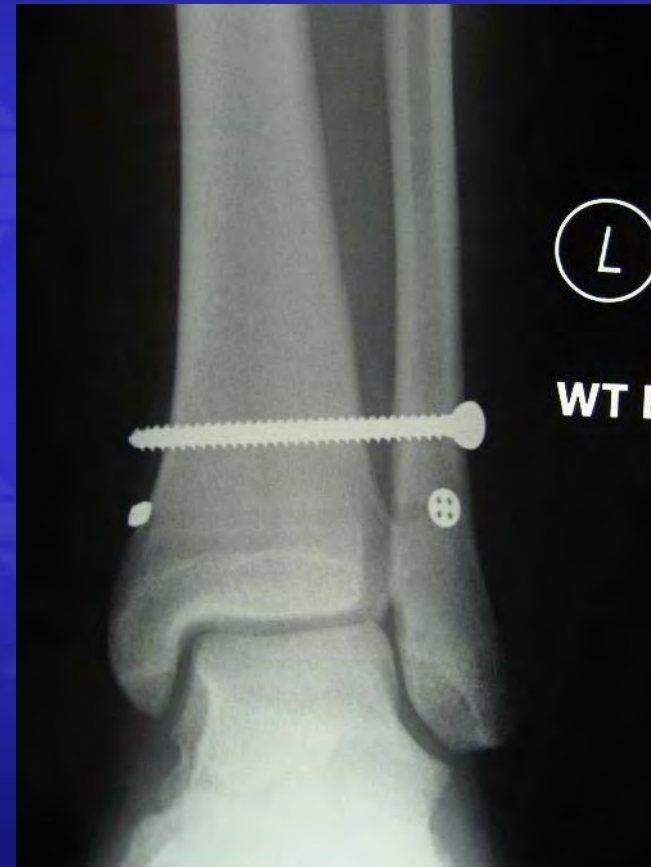
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Results

- 64 Grade IIs
- 26 stable Grade IIa
 - Boot three weeks and rehab
 - Average 45 days to return to sport
- 38 unstable Grade IIB
 - Underwent arthroscopy
 - 2 were stable at scope
 - Rest had surgery
 - 65 days to return to sport



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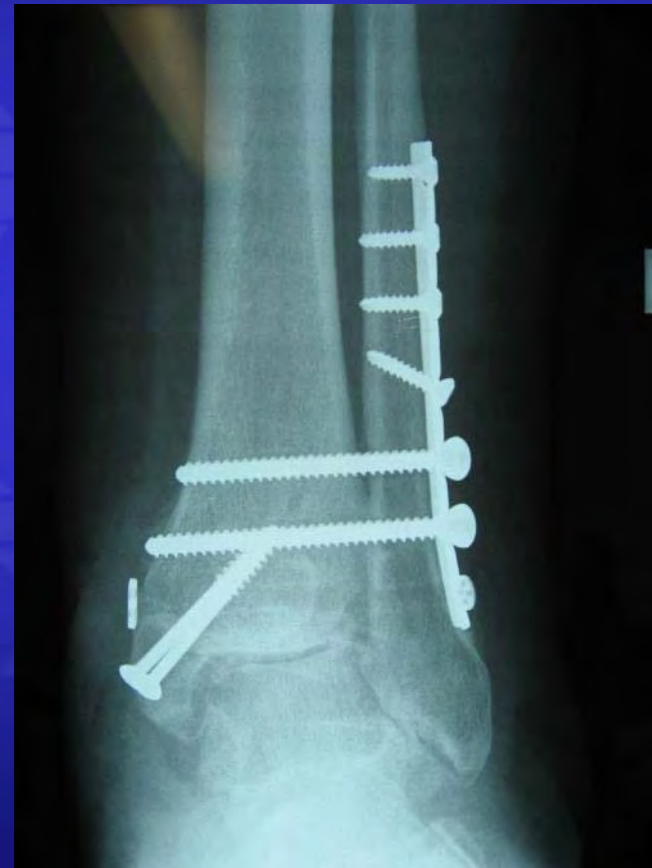


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How I treat Grade II

- Physical Examination Suggests Syndesmosis
- WB X-rays of both ankles
- MRI
- If AITFL and PITFL torn on MRI, or any evidence of widening, then arthroscopy



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