

Australian Institute of Orthopaedic Technologists Inc.

AIOT newsletter

October 2016

- **Letter from the President**
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**The AIOT
executive board
and its
members
would like to
sincerely thank our
2016 symposium
sponsors**

Letter *from the President.*

Hi Members,

Welcome to our September 2016 newsletter.

The AIOT has just recently held our National Conference and AGM at the Royal North Shore Hospital in Sydney. A big thank you to Trish Evans Resident Physiotherapist for convening an outstanding 2016 conference. It was well attended by Orthopaedic Technicians, Physiotherapists and Nurses from around the local Sydney area and our interstate members.

The AIOT Executive and members would like to thank all the Medical Companies who supported our conference and we look forward to your continued support in the future.

The AIOT is continuing discussions and negotiations with the agency that is responsible for the reinstatement of the Certificate IV in Cast Technology, This process is unfortunately slow and therefore may take some time. However, we will leave no stone unturned to achieve this and we have asked the Australian Orthopaedic Surgeons Association for their recommendation of the certificates relevance and importance. We will update you with any developments. We have had many enquiries of people wanting to take up the course, I urge those people to please be patient.

At this present time we are in negotiation to have the 2017 AIOT conference in Brisbane either in July or August, when we have a definite date we will pass it on to all members.

As this will be our last Newsletter for 2016, I would like to wish all of our members, the AIOT Executive team and the many medical companies who support our association, a Merry Christmas and a safe and prosperous New Year.

See you all in 2017.

Regards
Terry James
AIOT President.

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www.aiot.com.au

Sydney 2016



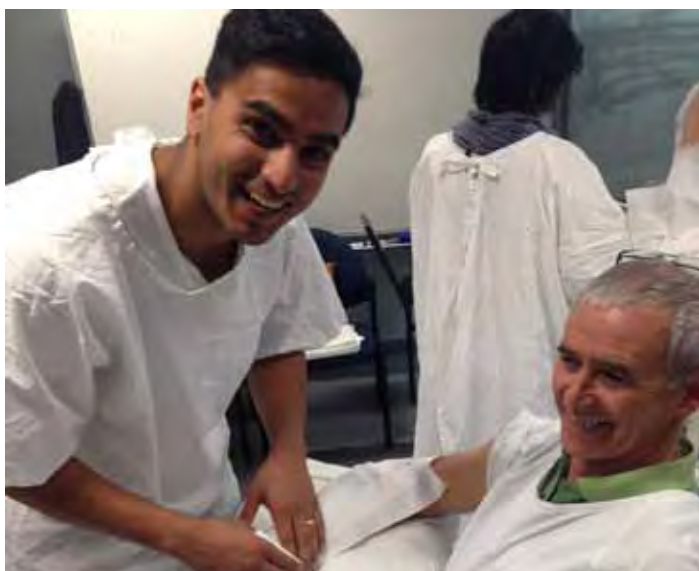
Sydney 2016



Sydney 2016



Sydney 2016



Sydney 2016



Sydney 2016



Sydney 2016



Answers

Why?

From the last newsletter

A 66 year old female has presented with a Colles' fracture following a FOOSH injury. Once reduced a below elbow cast was applied with slight palmar flexion and ulnar deviation with three point moulding. A broad arm sling has also been applied. Both verbal and written cast and limb care instructions were provided and a neurovascular check was performed prior to the patient being discharged for a check x-ray.

The patient's daughter asks these questions- what is your response?

1. Why is the wrist flexed?

The wrist is slightly flexed to create ligamentotaxis through the dorsal carpal ligament and the intact periosteal hinge which helps to correct the normal volar tilt or angle of the articular surface.

2. Why is the wrist bent away from the thumb (ulnar deviation)?

The wrist is ulnar deviated to try to maintain the length of the radius to the ulna, correct the loss of the normal radial inclination and to block radial translation of the distal fragment.

3. Why is there flattened areas on the cast?

These are moulding points of which there should always be three. Any fracture that was displaced or angulated must have Charnleys' three point moulding. Moulding is used to correct slight angulation or displacement, maintain the current position and can prevent further malalignment.

4. Why is there a web space bar?

The webspace bar provides ulnar deviation which is imperative to place the wrist into this position.

5. Why are the knuckles (MCP) free?

The MCP joints should be free to actively flex and extend there is no need to include them in the cast.

6. Why is it so long?

Length provides hold and hold provides purchase. Length is required to not only make the cast more comfortable but maintain the fracture position as well.

7. Why does it finish 2-3 fingers from her elbow crease (AnteCubital fossa)?

To allow the elbow to fully flex and extend.

8. Why does her thumb hurt to move it?

Quite often the distal fragment rubs and bruises the EPL tendon.

9. Why does she have to wear the sling?

Acute Colles' fractures require a sling in the initial period to prevent gross swelling. If they are not elevated neurovascular complications can arise requiring the cast to be split.

10. Can she take the sling off, if yes why and what exercises should she do?

Yes it is important that the sling be regularly removed and the elbow flexed and extended as well as shoulder ab and circumduction. Fingers movement should also be encouraged that includes flexion and extension especially at the MCP joint and opposition of the thumb to fingers.

11. Why is it important she flexes her knuckles (MCPj)?

MCP flexion is important to maintain the length of the collateral ligaments. If the patient fails to do so, stiffness due to shortening can present within a week in the elderly.

12. What type of fracture does she have and in what part of the bone is it?

She has sustained a Colles' fracture and is in distal part of the radius and is in metaphyseal bone.

13. How long on average will the cast need to be on for?

Six weeks.

14. If the cast causes any problems what should the patient do?

Firstly elevate above the heart for 20-30 minutes if there is any pins and needles or change of colour, if issue resolved maintain elevation. If no relief return to their treating Doctor or hospital.

15. Will her wrist hurt when the cast comes off?

Yes as residual joint stiffness is common.

16. Why didn't you put lots and lots of layers of padding to protect her skin?

Excessive padding causes loose casts which can allow malalignment of the fracture and unwanted movement. This allows rubbing which can create pressure areas. It also does not support the limb and creates pain

17. Why can't she rotate her forearm now that the cast is on?

The cast if fitting correctly should prevent rotation. Rotation illicit great pain.

18. How will we know if it is too tight?


Increased pain, Cyanosis, inability to move fingers and numbness are all signs of a tight cast.

19. Will the cast be changed?

More than likely one to two more casts are applied over the treatment period due to the decrease in swelling. Some surgeons like to bring the wrist up to neutral wrist position once the fracture is deemed more stable which is usually around the 3-4 week mark.

20. Why don't they take the cast off to do a check x-ray at our next visit?


The check x-ray on the first visit is to assess if the fracture has maintained the correct position. If it is performed out the the cast malalignment may occur. The final check x-ray is performed out to the cast to ensure a clearer view of the fracture.




OAPL SHOULDER IMMOBILISER NEW LOOK IMMOBILISER AVAILABLE NOW!

New features include:


- Colour coded buckles
- Adjustable and removable immobilising strap
- Padded straps for comfort



The immobilising strap restricts abduction and rotation of the shoulder and arm.

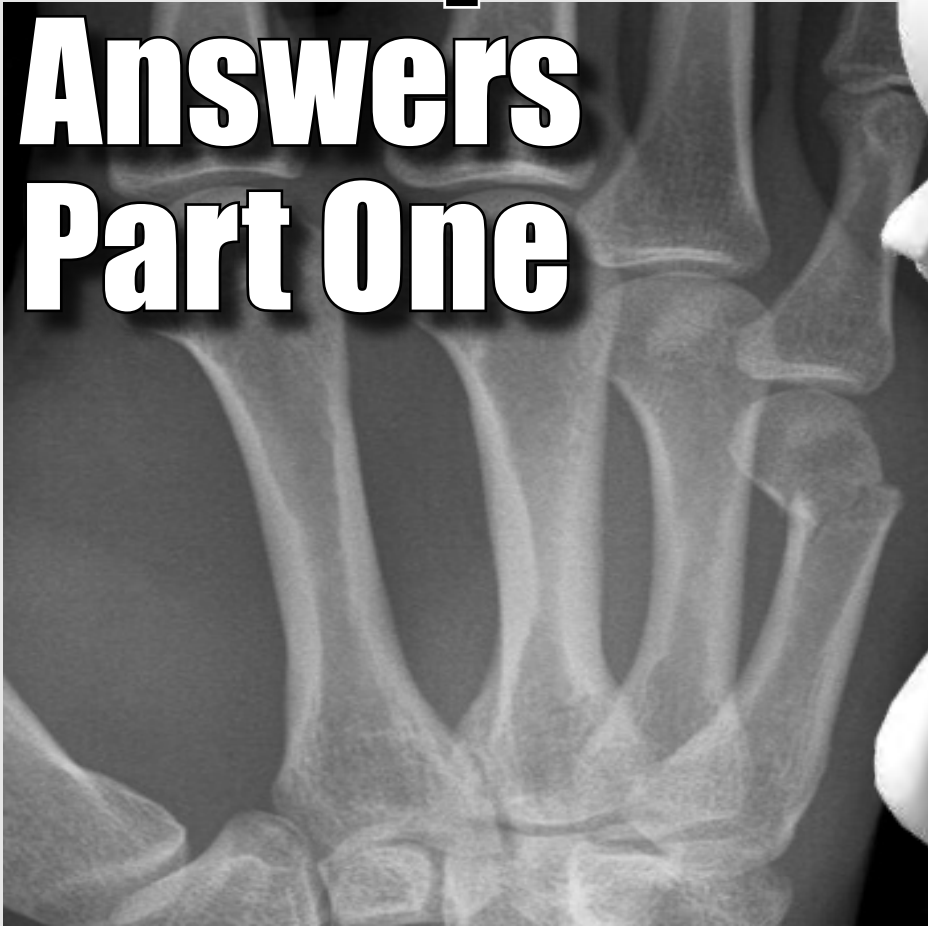


The padded strap should be attached between the shoulder blades to provide optimal immobilisation and comfort.



Remove the immobiliser strap to use the device as a sling.

Fracture Definitions & Descriptions Answers Part One



Jesse Kalachoff

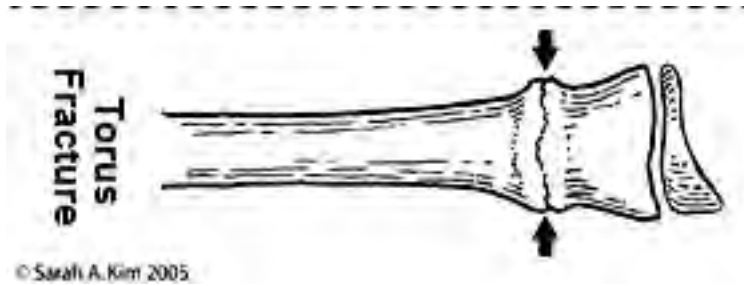
John Kinealy

This is a copy of the presentation that was delivered by Jesse Kalachoff and John Kinealy at last years symposium. The answers will be in the next issue.

Torus or Buckle



1. *What is the name of this fracture?
Torus or Buckle.*
2. *How would you describe this fracture?
A bulge in the cortex of the bone.*



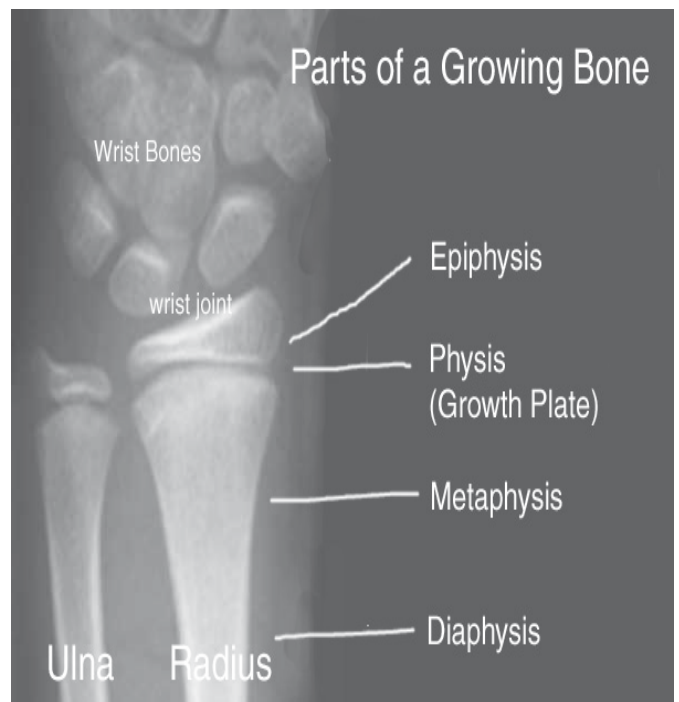
<http://www.orthopaedicsone.com>

3. *Define the part of the bone this fracture is found in?
It is usually found at the metaphysis or metadiaphy seal junction. They are commonly occur in the radius but any long bone can have this type of fracture.*

Anatomy of a Long Bone



- Diaphysis - shaft
- Epiphysis - one end of a long bone
- Metaphysis - growth plate region
- Articular cartilage over joint surfaces reduces friction & acts as a shock absorber
- Medullary cavity - marrow cavity
- Endosteum - lining of marrow cavity
- Periosteum - tough membrane covering bone but not the cartilage
 - fibrous layer - dense irregular CT
 - osteogenic layer - bone cells & blood vessels that nourish or help with repairs



<http://www.imagekb.com/metaphysis>

4. What is the mechanism of the injury?
It is a compression injury.

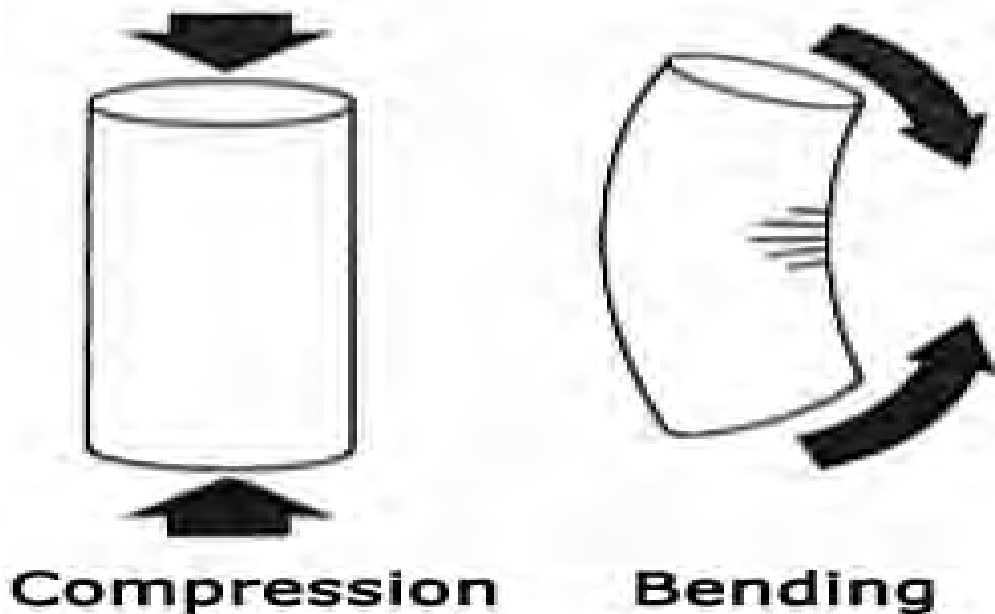


image.wikifoundry.com

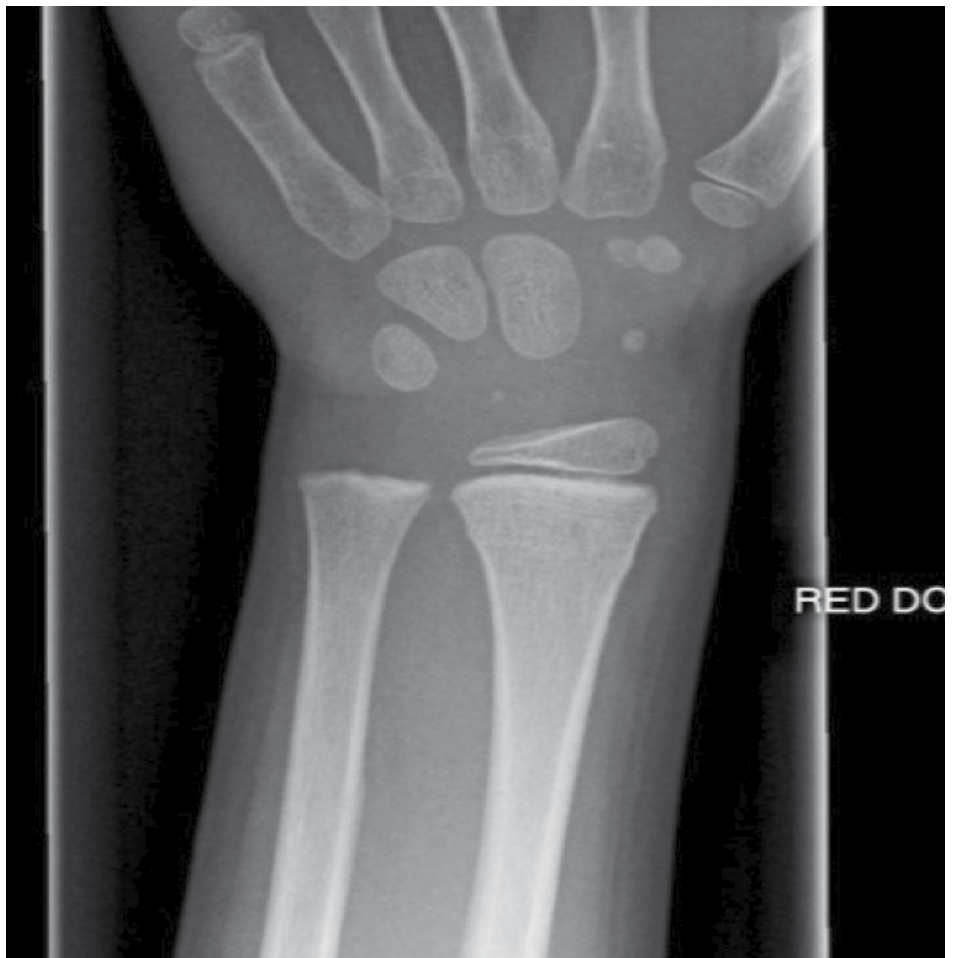
5. Is this considered a stable or unstable fracture?
Stable
6. What type of cast or splint is applied to this injury?
Volar, Charnley, Volar/Dorsal or full Below Elbow Cast.
Some hospitals use off the shelf wrist splints.
7. How long on average does it need to be immobilized?
Usually 3 weeks but some hospitals leave them on longer.
8. What age group sustains this type of injury?
4-10 years. Age related fracture prevalence of the distal radius sustained by a fall on an out stretched hand (FOOSH) usually results in injuries specific to the patients age.
4-10 years - Torus fx of the distal radial metaphysis.
11-16 years - Salter Harris type II fx of the wrist.
17- 40 years - Scaphoid fx.
40 & over - Colles' type fx.
(www.imageinterpretation.co.uk)

9. Looking at the x-ray roughly how old is the patient?
Four to six.

Ossification timings of the carpal bones occur in a sequence. Beginning at the capitate a good way to remember the order of their appearance is to start at the capitate then move counterclockwise looking at the right hand from the volar aspect.

Capitate: 1-3 months
Hamate: 2-4 months
Triquetral: 2-3 years
Lunate: 2-4 years

Scaphoid: 4-6 years
Trapezium: 4-6 years
Trapezoid: 4-6 years
Pisiform: 8-12 years



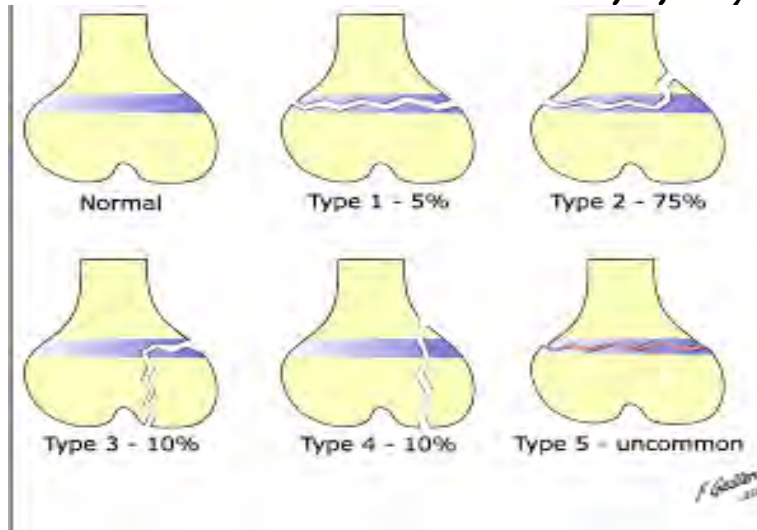
10. Is any moulding of the fracture required?
No

Tillaux



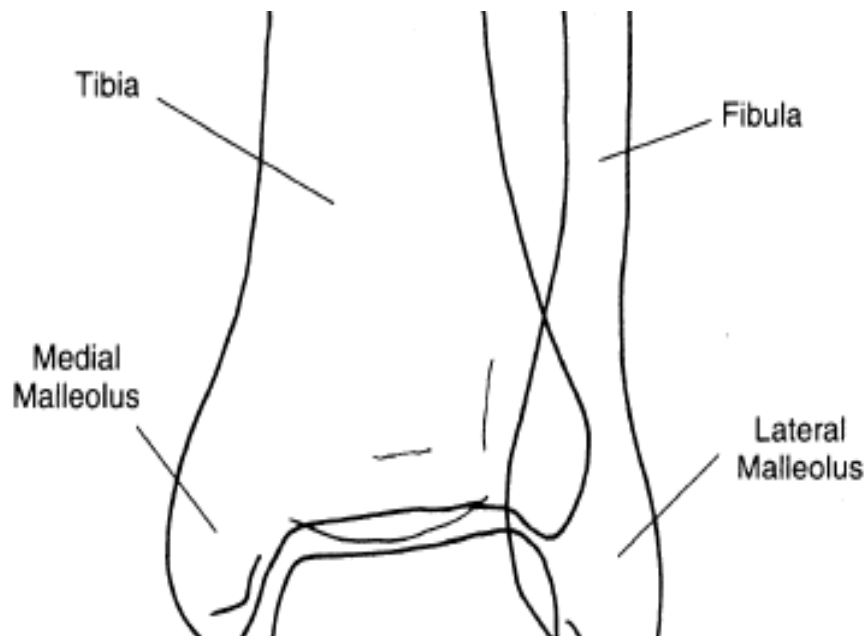
<http://www.orthobullets.com/pediatrics/4028/tillaux-fractures>

1. What is the name of this fracture?
Tillaux fracture.
2. How would you describe this fracture?
Tillaux fractures are a Salter-Harris type III fracture through the anterolateral aspect of the distal tibial epiphysis.



<https://wikimedia.org>

3. Define the part of the bone this fracture found in?
Lateral border of the Distal tibial epiphysis.

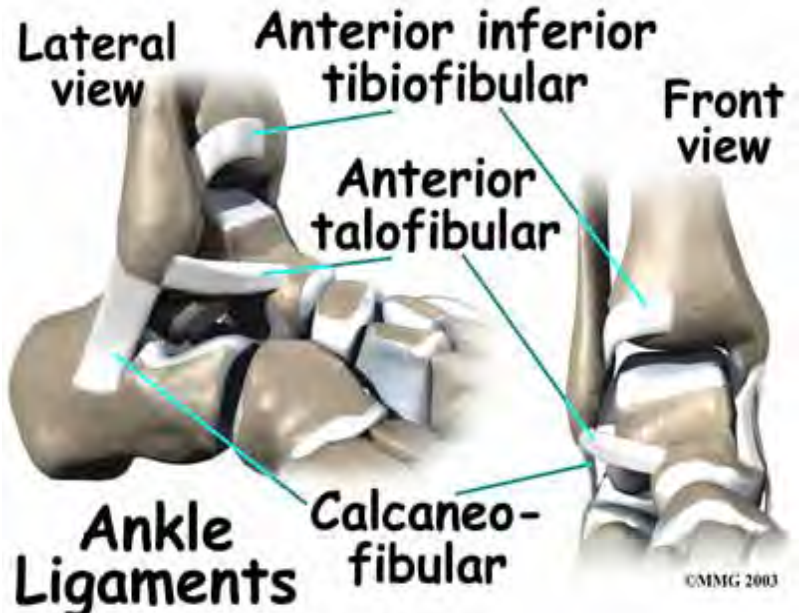


Emergency Medicine Practice May 2002 Vol 4, No 5.
Ankle Injuries In The ED: How To Provide Rapid And Cost Effective
Assessment & Treatment. <http://emprctice.net>

4. What is the mechanism of the injury?
Abduction External rotation, caused by an avulsion of the anterior inferior tibiofibular ligament.



<http://emergencymedicinecases.com>



<http://www.eorthopod.com/>

A Triplaner ankle injury (films below). is a Tillaux fracture that continues through to the posterior or distal tibial metaphysis. This makes it a Salter Harris IV injury. Both fractures occur in children at the end of their growth and are caused by the same mechanism.



<http://emergencymedicinecases.com>

5. Is this considered a stable or unstable fracture?

Depends on the amount of displacement as the fracture can have varying degrees of displacement. Any step in the articular surface usually warrants surgical intervention.

6. What type of cast or splint is applied to this injury?

B/K 3/4 splint of full B/K.

7. How long on average does it need to be immobilized?

six weeks

8. What age group sustains this type of injury?
Adolescents.

Ossification of the distal tibial physis closes in the following order

central (first)

posterior

medial

anterolateral (last)

www.orthobullets.com

9. Looking at the x-ray roughly how old is the patient?

12-15

www.wheelessonline.com

Weber B

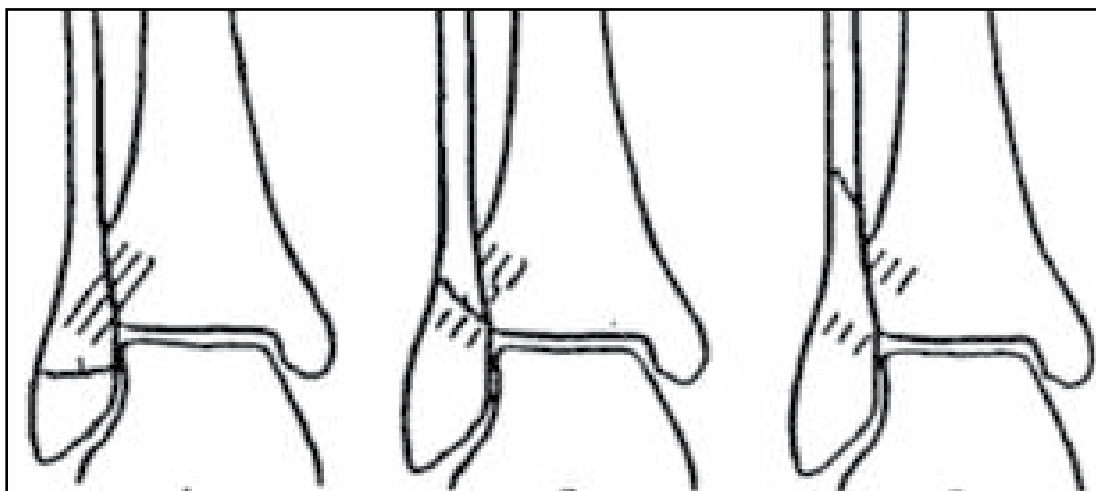


www.orthofracs.com



www.radiologyassistant.org

1. What is the name of this fracture?
Weber B
2. How would you describe this fracture?
Oblique fracture at the level of the joint.



- A - Below the level of the joint. (Infrasyndesmotic)
B - at the level of the joint. (Trans-syndesmotic)
C - Above the level of the joint. (Supra-syndesmotic)

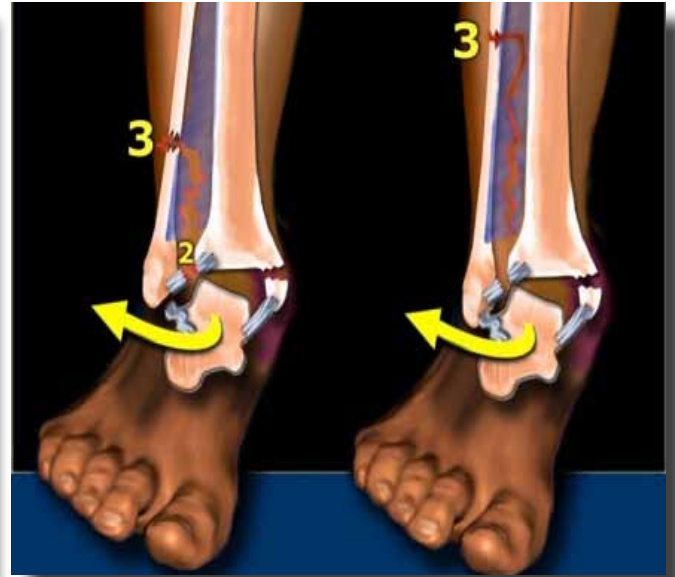
3. Define the part of the bone this fracture found in?
Distal Fibula
4. What is the mechanism of the injury?
SER. Supination and external rotation.
The Weber classification describes the fracture, the Lauge Hansen classification describes the mechanism of injury that caused the fracture.

It can be broken down to 4 types;
SA - supination adduction
PA - pronation abduction
SER - supination, external rotation
PER - pronation, external rotation

Pronation

Supination

External Rotation



<http://www.radiologyassistant.nl>

- Supination injuries start at the lateral side and involve the lateral malleolus and collateral ligaments.
- Pronation injuries start at the medial side and involve the deltoid ligament and medial malleolus.⁹
- External rotation injuries depends on which way the ankle is positioned the image above demonstrates the ankle pronating and ER. This position results in a Weber C or Maisonneuve fracture. Supination and ER results in a Weber B.

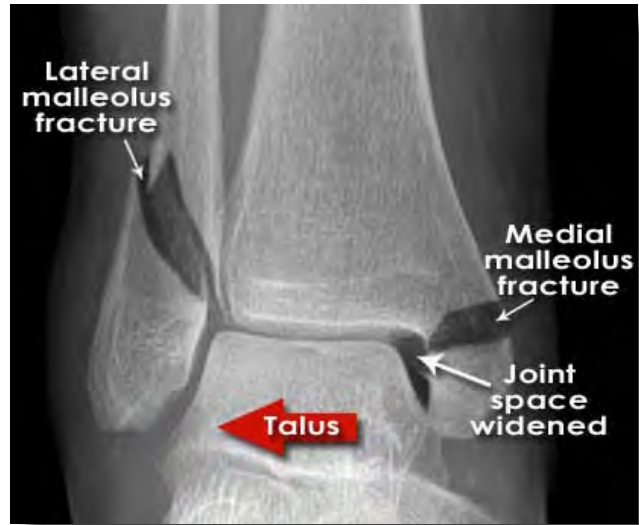
5. Is this considered a stable or unstable fracture?

It depends whether there is any ligamentous disruption or not. Ankle fractures may just involve the bone, or involve the bone and the ligaments.⁸ The x-ray images are perfect examples of this. The image to the left demonstrates a Weber A type fracture. This is an isolated fracture. The image to the right demonstrates a Weber B fracture, with

an avulsion fracture of the medial malleolus, or Bi-malleolar fracture. This fracture involves the bone/s and the ligaments.



<http://radiologymasterclass.co.uk>



<http://radiologymasterclass.co.uk>

Any fractures that is of both bones of the ankle is usually considered unstable.

6. What type of cast or splint is applied to this injury?

B/K 3/4 splint or full b/k cast.

7. What is a diastasis?

Widening or dislocation or separation of two normally attached bones between which there is no true joint. <http://medical-dictionary.thefreedictionary.com>



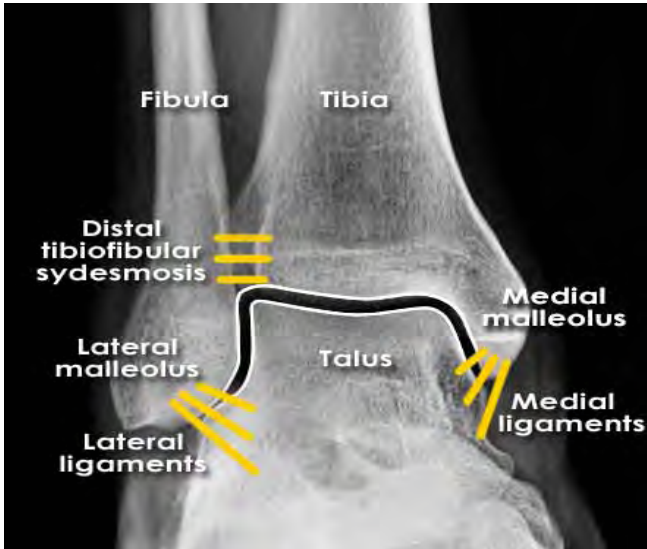
<http://manuetcorde.org>



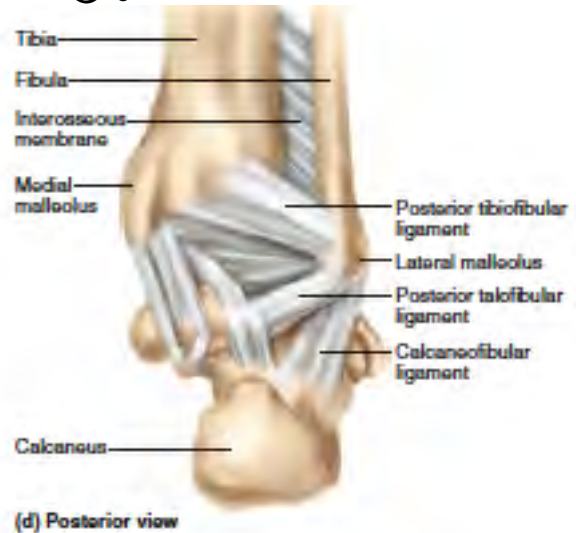
<http://boneandspine.com>

8. Can you name these ligaments around the ankle?

AITFL, ATFL, Deltoid Ligaments are strong connective tissue composed of fibrous tissues. They connect bones to other bones, and are extremely important in stabilizing joints.



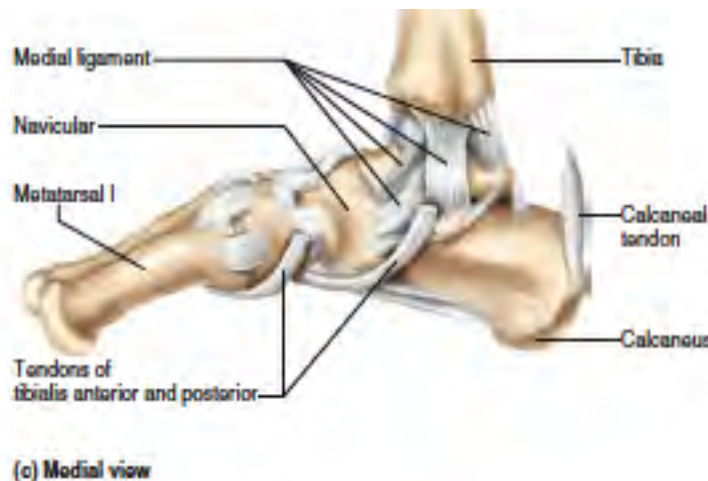
www.radiologyassistant.org



(d) Posterior view
www.heighered.mheducation.com.pdf



(a) Lateral view
www.heighered.mheducation.com.pdf



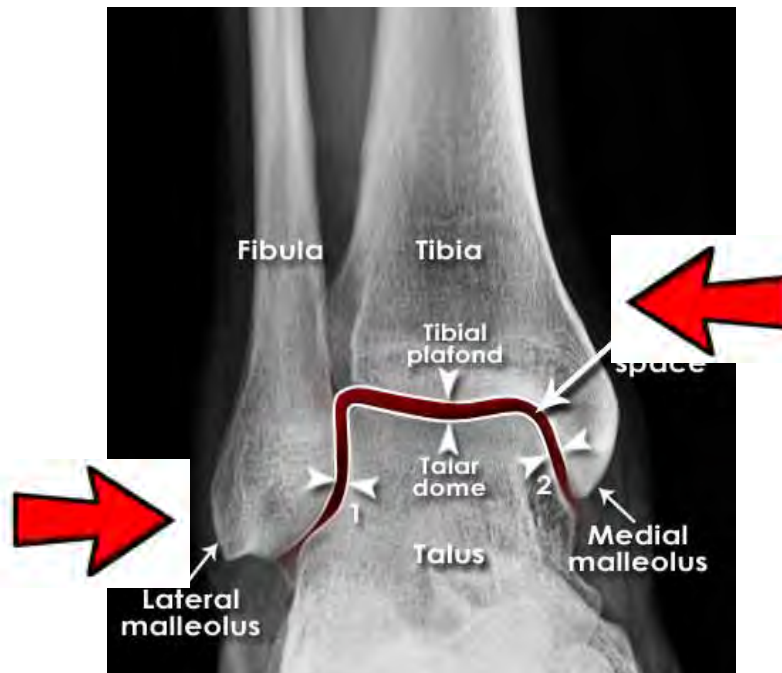
(c) Medial view
www.heighered.mheducation.com.pdf

9. Can you describe Talar shift?
When the Talus has moved from its normal anatomical position



<http://www.radiologyassistant.nl>

10. Is any moulding of the fracture required?
Yes especially if there is a diastasis or Talar shift.



Part Two will be in the next newsletter

A nighttime photograph of the Brisbane city skyline, featuring numerous illuminated skyscrapers and a bridge spanning a river in the foreground. The lights from the buildings and bridge are reflected in the water.

AIOT

National Symposium

2017

Brisbane

Date announced soon

See you there !

<http://www.sydney.com>