

ANKLE FRACTURES – WHEN DO I REFER?

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We would like to acknowledge that we are gathered today on the traditional territories of the Musqueam, Squamish and Tsleil-Waututh peoples.

Source: www.johomaps.net/na/canada/bc/vancouver/firstnations/firstnations.html



LEARNING OBJECTIVES

- Investigation of Ankle Injuries
- Classification of Ankle Fractures
- Assessing Fracture Stability
- When To Refer to Orthopaedics
- Treatment Options
- Associated injuries



CLINICAL ASSESSMENT

- History/mechanism of injury
- Ability to WB?
- Swelling
- Localize points of tenderness
- Ottawa ankle rules



OTTAWA ANKLE RULES

- Acute ankle pain plus **one** of the following
 - Bony tenderness at the distal 6 cm of the posterior edge of the medial malleolus
 - Bony tenderness at the distal 6 cm of the posterior edge of the lateral malleolus
 - Inability to bear weight both immediately and in the ED (4 steps)

INVESTIGATIONS

- Not every ankle injury requires an X-ray
- Mechanism of injury
- Ability to WB?
- Bony tenderness?
- Ottawa ankle rules



If unsure, order an X-ray!!

INVESTIGATIONS

- CT scan
 - Rarely required
- Consider if x-rays negative
 - persistent pain and swelling
 - Inability to WB
 - No clinical improvement
- MRI scan
 - Very little use in acute injury



ASSOCIATED INJURIES

- Examination of the knee
 - Proximal fibular fracture
 - Ligamentous injury
- Foot examination
 - Rule out Lisfranc injury (midfoot)
 - Pronation-abduction test



CLASSIFICATION – WEBER A

- **type A**
 - below the level of the syndesmosis
 - usually transverse
 - Syndesmosis is intact
 - Medial ligaments (deltoid) intact
 - Medial malleolus occasionally fractured
 - usually stable if medial malleolus intact



CLASSIFICATION – WEBER B

- **type B – most common**
- distal extent at the level of the syndesmosis
- may extend proximally
- usually spiral
- syndesmosis usually intact
- widening of the distal tibiofibular joint may indicate syndesmotic injury
- medial malleolus may be fractured
- deltoid ligament may be torn - widening of the space between the medial malleolus and talar dome
- variable stability - depends on the status of medial structures and syndesmosis
- may require operative fixation





CLASSIFICATION – WEBER C

- **type C**

- above the level of the syndesmosis
- syndesmosis disruption - widening of the distal tibiofibular articulation
- medial malleolus fracture or deltoid ligament injury may be present
- Fibular fracture may be ***proximal*** to joint
 - Check the entire leg and knee!
 - May need full length x-ray of leg
- **unstable**: usually requires operative fixation



PILON FRACTURES

- Intra-articular distal tibial fractures
- May be associated with fibular fractures
- Axial load
- Usually surgical if joint displacement



FRACTURE STABILITY

- Stable fractures
 - One malleolus
 - Undisplaced fractures
 - Tiny flakes off bones
 - Able to WB right after injury
 - No medial tenderness



FRACTURE STABILITY

- Unstable fracture
 - Inability to WB
 - More than one malleolus fractured
 - Lateral malleolus with sig. medial tenderness
 - Displaced fractures
 - Stress views



FRACTURE INSTABILITY

- Stress views
 - Gravity test
 - External rotation stress test
 - Standing xrays
- Look for medial clear space



WHEN TO REFER

- Referral not needed
 - Tiny fractures – “flakes” off the bones
 - Ankle sprains
 - Weber A fractures
 - Undisplaced fractures



WHEN TO REFER

- **ANY** unstable fracture
 - More than one malleolus
 - Displaced fractures
 - Inability to WB

- ***If any concerns, refer to orthopaedics!!***





A. DATE OF REFERRAL

B. WSBC INFORMATION (if applicable)

Claim No. Injury Date:

C. PATIENT INFORMATION (or affix label)

Last Name: First Name: DOB: Age: PHN: Gender: Male Email: rod@rodnevis.com Phone 1: (604) 307-8674 Phone 2: (604) 307-8674 City: West Vancouver

D. REFERRING PHYSICIAN

Name: 6 MSP No. Family Physician (if different):

E. BODY REGION

*Spine - please refer to Neurosurgery *Hand/Carpus - please refer to Plastics

- Shoulder / Arm Elbow / Forearm Wrist Hip / Pelvis Knee / Leg Foot / Ankle Laterality Left Right

F. REASON FOR REFERRAL

- Urgent Referral for assessment within 1-2 weeks. Eg. acute fracture, urgent soft-tissue injury, infection or tumour. Follow-up Assessment. Who was the previous treating physician? Non-Urgent Bone or Soft-Tissue Complaint Injection (including ultrasound-guided) Arthritis Bracing Other

G. RELEVANT HISTORY

*Please include HPI, PMHx/surgical Hx, and medications or attach documents

Duration of Symptoms: Severity of Symptoms: Mild Mod Severe

H. X-RAY REQUIREMENT

*X-ray report, obtained within past 6 months, MUST accompany referral

Additional Imaging: Ultrasound CT MRI Nuclear Med

I. REQUESTED CONSULTANT

First Available Appropriate Physician Specific Physician Name:

J. TRIAGE PROCESS

Referral will be triaged within 5 days. Receipt of referral will be confirmed via fax. Prioritization will be based on relative urgency, date of receipt, and resource availability. Unless a specific physician is requested, the referral will be directed to an MSK assessor or to the most appropriate surgeon with the shortest wait time. We will contact the patient directly to schedule a visit once appointment times become available.

TREATMENT

- Splint/backslab
 - Foot should be neutral
- Air cast boot
- Patients can usually self regulate WB
 - If unsure, patient should be non WB until orthopaedics assessment



ORTHOPAEDIC MANAGEMENT

- Operative fixation generally required for:
 - Unstable malleolus fracture
 - More than one malleolus fracture
 - Mortise asymmetry



The ankle has very little tolerance for any displacement

OPERATIVE MANAGEMENT

- Open reduction internal fixation
- Goal: restore joint alignment and mortise symmetry



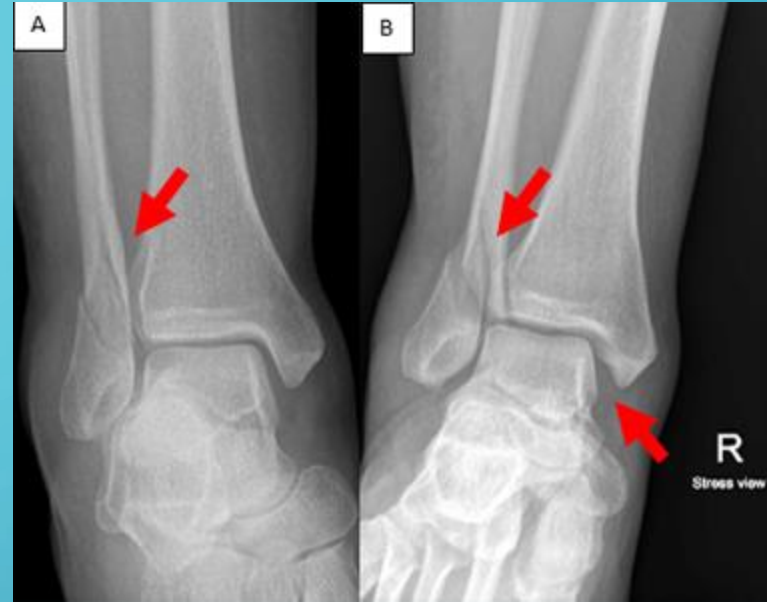
OPERATIVE MANAGEMENT

- Pre-surgical treatment very important!
 - Elevation
 - Edema control
 - Encourage movement of toes
- Splinting is critical
 - Maintenance of temporary reduction
 - Foot should be as neutral as possible



SPLINTING

- Extremely important!
 - Pain control
 - Maintain fracture alignment
 - Control limb swelling





(a)



(b)



(c)



(d)



ASSOCIATED INJURIES

- Always check the knee
- Look for foot injuries!



LISFRANC INJURIES

- Midfoot injuries – you do not want to miss!
- No salvage procedure
 - Particularly 4th and 5th metatarsal dislocation
- Order foot xrays if suspicious





SYNDESMOSIS INJURY

- Damage to ligaments between tibia and fibula
- Can be quite subtle



SYNDESMOSIS INJURY

- *Very few salvage options if injury is missed*
- Palpate along syndesmosis
- Squeeze test
- External rotation stress test
- Look for fibula fracture *proximal* to the joint
- Beware the isolated posterior malleolus fracture!





Thank you!