



*Module:*  
***FRACTURE RECOGNITION***

**MEDICAL EDUCATION  
PACKAGE**

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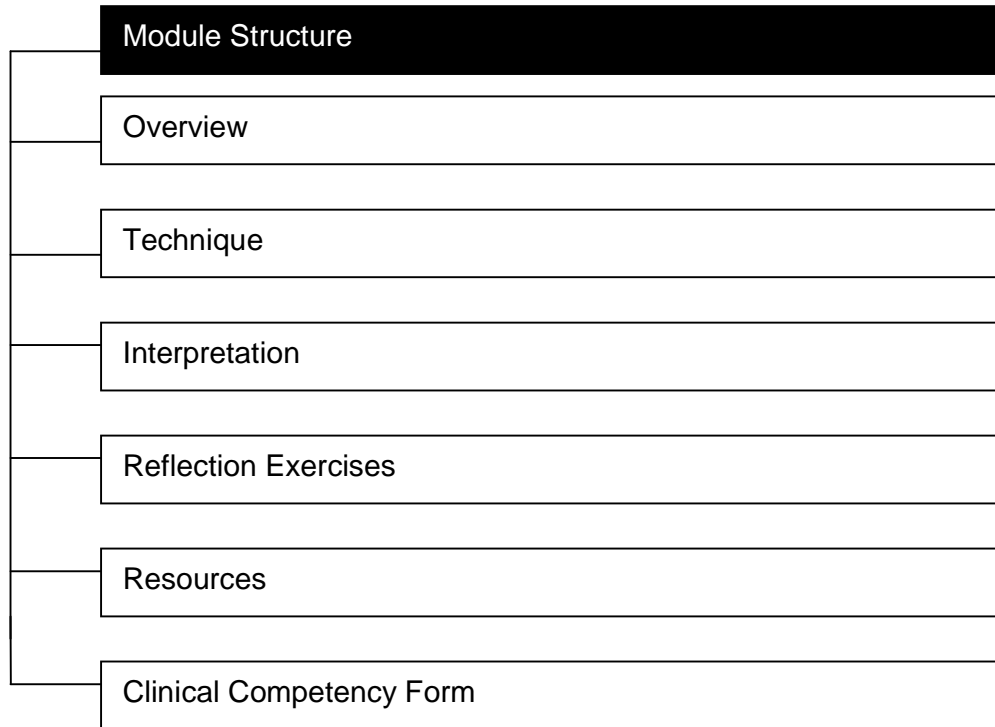
**Reviewed: 2004**

# AIMS & OBJECTIVES

The aim of this learning package is for junior doctors to:

- Correctly describe fractures and dislocations of joints
- To have an understanding of the mechanisms of injury that cause fractures and how this might influence treatment
- To have the ability to correctly describe the anatomic location of a fracture and its deformity
- To understand the significance between open and closed fractures and to have an understanding of the differences between adults and child fracture patterns

# Module Structure



# Overview

A fracture is present when there is loss of continuity in the substance of a bone. The term covers all bony disruptions ranging from the situation when a bone is broken into many fragments (multifragmentary or comminuted) to hairline and even microscopic fractures. To the layman the word fracture implies a more severe injury than a simple break in the bone but in a strict medical sense there is no difference between these terms.

All fractures are either closed or open. In an open fracture there is a wound and continuity with the fracture and the potential exists for organisms to enter the fracture site from the outside. These potentially are more serious injuries and may be limb threatening. In a closed fracture the skin is intact however a closed fracture may be as severe as an open fracture in terms of the ultimate prognosis for the affected body part.

As well as fractures, dislocations and subluxations of joints may occur as well as strains of ligament complexes in respect of joints such as the ankle and knee.

Fractures can be caused by either direct or indirect violence and can also arise as the result of repeated excessive stress to normal bone or may occur through bone that is weakened due to an abnormality or disease (pathological fractures). Fractures can have a relatively simple fracture pattern and be transverse, oblique or spiral. Increasing severity of fractures is often represented by multifragmentary components. Fractures can also occur close to or involving a joint and can also occur in the presence of a dislocation. A complicated fracture may occur such as when neurovascular injury occurs. Some attempt should be made to understand the basic anatomy of a bone to allow accurate description and transfer of information to colleagues and an ability to describe the deformity that occurs at a fracture is also necessary. This is described in terms of displacement, angulation, and rotation of the fracture.

# Technique

## Fracture Recognition



## Outline

- Definitions
- How # occur
- # patterns & significance
- Complicated #
- Description of level of #
- Description of deformity
- Open #

## Fracture recognition

- Definition
- Closed vs Open #
- Dislocation
- Subluxation
- Sprain

## Fracture definition

- Loss of continuity in substance of bone
- Ranges from multifragmentary to hairline #
- Layman definition!



## Closed vs Open #



## Dislocation/subluxation



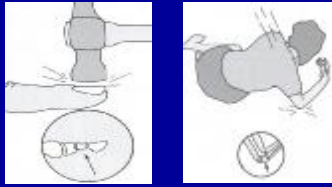
## Sprain



## Fracture recognition Causes of fracture

- Direct violence
- Indirect violence
- Fatigue
- Pathological

### Direct violence



### Indirect violence



### Fatigue #



### Pathological #



### Fracture patterns and their significance

- Hairline #
- Greenstick #
- Simple transverse #
- Simple oblique #
- Spiral #
- Multifragmentary #
- Impacted #

### Fracture patterns and their significance

- Compression #
- Avulsion #
- Depressed #
- Intra-articular #
- # close to joints
- #/dislocation
- Complicated #

### Hairline #



### Hairline #



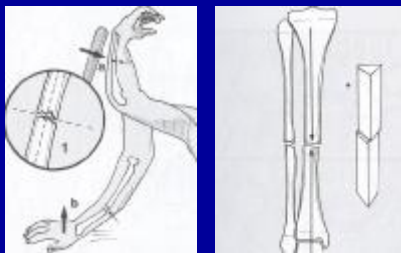
Greenstick #



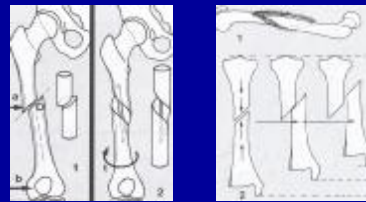
Greenstick #



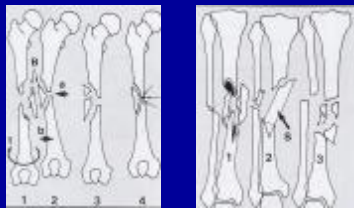
Transverse #



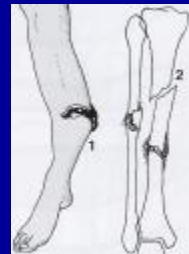
Oblique/spiral #



Multifragmentary #



Multifragmentary #



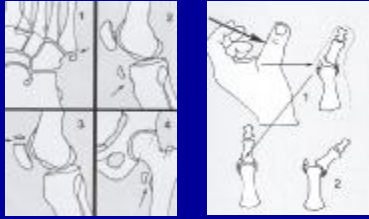
Impacted #



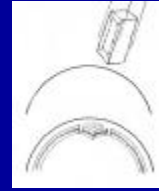
Compression #



Avulsion #



Depressed #



Intra-articular #



Fractures close to joints



# dislocation



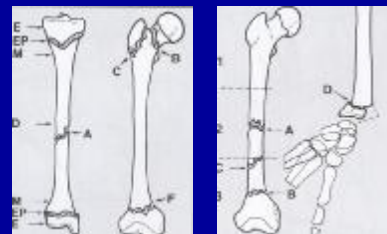
Complicated #



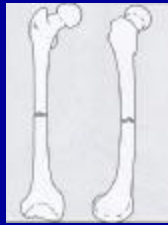
Describing the level of fracture & deformity

- Displacement
- Angulation
- Axial rotation

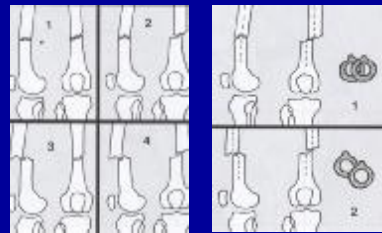
Describing level of #



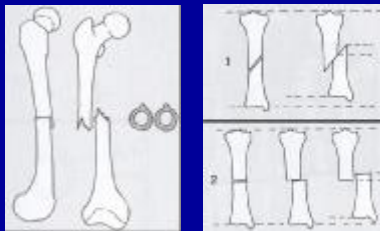
Describing deformity



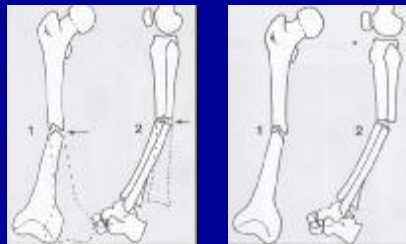
Displacement of #



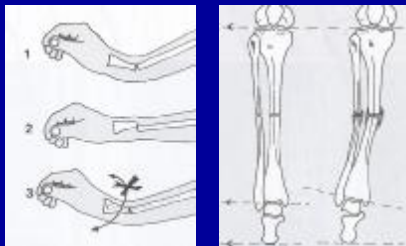
Displacement of #



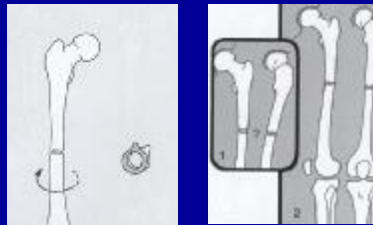
Angulation



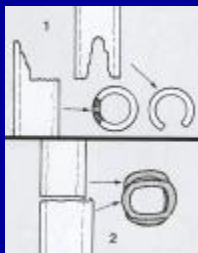
Angulation



Axial rotation



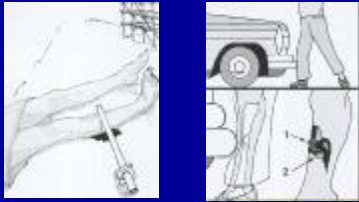
Axial rotation



Open fractures



### Open fractures "Without in"



### Open fractures "Without in"



### Epiphyseal Injuries

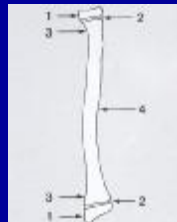
- Need to be aware of two types of epiphyses
  - Traction type
  - Pressure type



### Traction epiphyses



### Pressure epiphyses



### Epiphyseal plate injuries Salter & Harris Classification

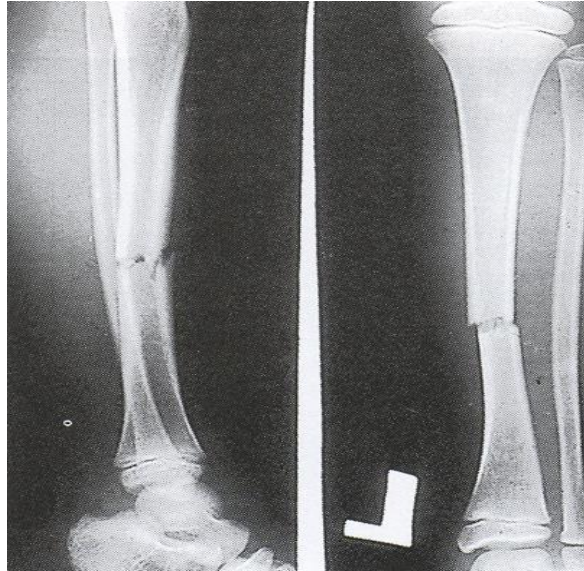


# Reflection Exercise

[A series of questions to assist and develop understanding and revision]

*Complete these at your leisure. These are the types of questions you may be asked by your assessor.*

1. Describe the level and pattern of this fracture:



2. This is a radiograph of the elbow of an adult injured in a fall. There is obvious clinical deformity. What is the injury?



3. What is the pattern of this injury? Can you detect an abnormality in this AP Radiograph of the wrist and forearm of a child?



4. This is a radiograph of a patient who complained of pain in the side of the foot following a sudden inversion injury. Where is the fracture and what is the pattern of injury?



5. This is a radiograph of a hip of an elderly lady who complained of pain after a fall. What deformity is present? Have you any observations to make regarding any factors contributing to the fracture?



6. This injury was sustained in a road traffic accident. Describe the pattern of injury and the deformity.



7. This radiograph is of a child. Describe the deformity and the grade of epiphyseal injury.



# References

Practical Fracture Treatment 4<sup>th</sup> Edition. Ronald McCrae Max Essa.  
Churchill Livingstone.

Dr. Simon F Journeaux. BSc MBBS FRCS (Orth) FRACS  
Consultant Orthopaedic Surgeon.

# Resources

Practical Fracture Treatment 4<sup>th</sup> Edition. Ronald McCrae Max Essa.  
Churchill Livingstone.

# Clinical Competency Form

	Achieved	Not Achieved
• Describes anatomic location of the fracture and fracture Pattern ie: Hairline, Greenstick etc	p	p
• Describes the deformity: <ul style="list-style-type: none"><li>- Displacement</li><li>- Angulation</li><li>- Rotation</li></ul>	p	p
• Describe the differences between adult and child fracture patterns : Hairline, Greenstick etc	p	p

Date : \_\_\_\_\_ ACHIEVED p REASSESS p

Assessee Name : \_\_\_\_\_ Assessee Signature : \_\_\_\_\_

Assessor Name : \_\_\_\_\_ Assessor Signature : \_\_\_\_\_

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Please detach and return to the Director of Clinical Training, Mater Education – Medical for recording of your competency

## Clinical Competency Fracture Recognition

Date: \_\_\_\_\_ ACHIEVED p REASSESS p

Assessee Name: \_\_\_\_\_ Assessee Signature: \_\_\_\_\_

Assessor Name: \_\_\_\_\_ Assessor Signature: \_\_\_\_\_