Common Challenges in Primary Care – Fracture Management

Thursday 11 October 2018

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About me

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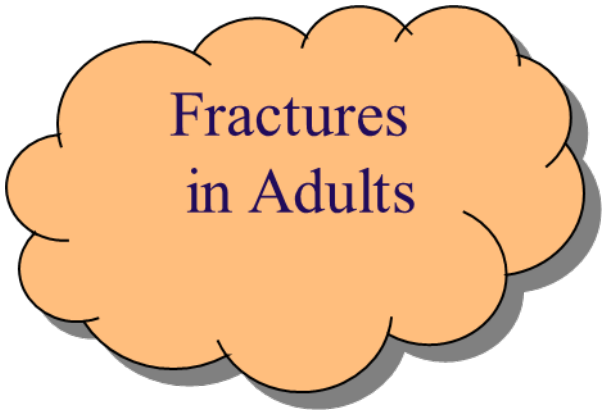
- Fellow of the Royal Australasian college of Surgeons
- Senior Lecturer in Orthopaedics- University of Queensland
- Public appointment- Redcliffe Hospital ,QLD
- VMO- Caboolture Private Hospital, HSNS, Peninsula Pvt, Northwest Pvt., St Andrews war memorial hospital
- Fellow of the Australian Orthopaedic Association
- International Member American Academy of Orthopaedic Surgeons
- Life member Indian Orthopaedic Association
- Certified Independent Medical examiner
- Workcover IME assessor.

Orthopaedics is the specialty of complications

Program

- Why am I doing this presentation?
- Principles of fracture management.
- Individual case studies of each region.
- Common fractures- Management
  - Pitfalls
- Damage control/disaster management.

General Principles of Fracture Management and Bone Healing



The modern holistic approach to orthopaedics.....you don't JUST treat the fracture, you treat the whole bone!

Challenges in fracture management

- Knowledge of anatomy
- Interpretation of x-ray
- Determining which patient needs surgery and which patient can be managed at GP level without specialist referral
- Timeframe for follow-up
- Things to look for in follow-up x-rays
- Specialist referral with adequate information in timely manner.
- Access to healthcare based on private insurance or not.

What I have learned over the years is-

ORTHOPAEDICS IS NOT ROCKET SCIENCE

BUT

IS SCIENCE !

The orthopaedic surgeon -- Strong as an ox, and half as bright!

Common theme to all fractures

Trauma

- Low velocity Vs high velocity
- EMST Principles –ABCDE
- Individual fracture management
  - Open Vs closed
  - Involving the joint Vs not involving the joint surface
  - Neurovascular status of the distal extremity
  - Swelling and skin condition

CHILDREN'S BONES –

- More malleable
- Weaker ,but absorb more energy before breaking
- Can absorb more energy before breaking
- The periosteum is thicker

* Fractures adjacent to joints and angulated in their plane of motion in younger children will remodel.

* Varus and Valgus angulation and rotational malalignment may not correct so readily.

* The long bones of children have epiphyses and physes [the growth plate], the latter of which appear to be the weakest points in the child's skeleton.

- ✓ Fracture management can be divided into
  - nonoperative[*also known as " conservative"!]* and operative techniques.

- ✓ The nonoperative approach consists of a closed reduction if required, followed by a period of immobilization with casting or splinting.

- ✓ Closed reduction is needed if the fracture is significantly displaced or angulated.

- ✓ Paediatric fractures are generally much more tolerant of nonoperative management, owing to their significant remodeling potential.

Indications for surgical intervention include the following:

- ✓ Failed nonoperative (closed) management
- ✓ Unstable fractures that cannot be adequately maintained in a reduced position
- ✓ Displaced intra-articular fractures (>2 mm)
- ✓ Patients with fractures that are known to heal poorly following nonoperative management (eg, femoral neck fractures)
- ✓ Large avulsion fractures that disrupt the muscle-tendon or ligamentous function of an affected joint (eg, patella fracture)
- ✓ Impending pathologic fractures
- ✓ Multiple traumatic injuries with fractures involving the pelvis, femur, or vertebrae
- ✓ Unstable open fractures, any type II or type III open fracture
- ✓ Fractures in individuals who would poorly tolerate prolonged immobilization required for nonoperative management (eg, elderly patients with proximal femur fractures)
- ✓ Fractures in growth areas in skeletally immature individuals that have increased risk for growth arrest (eg, Salter-Harris types III-V)
- ✓ Nonunions or malunions that have failed to respond to nonoperative treatment

The most important factors in fracture healing are-

- Blood supply

and

- Soft-tissue health

The heart, a thoracic organ whose primary function is to pump antibiotics around the body.

The rules for Orthopaedic x-ray requests

- ✓ Two views
- ✓ Two joints
- ✓ Two limbs
- ✓ Two injuries
- ✓ Two occasions

The initial management of fractures consists of :-

- ✓ *Realignment* of the broken limb segment (if grossly deformed) and then *immobilizing* the fractured extremity in a splint.

- ✓ The *distal neurologic and vascular status* must be clinically assessed and documented before and after realignment and splinting.

- ✓ If a patient sustains an open fracture, achieving haemostasis as rapidly as possible at the injury site is essential;
  This can be achieved by placing *a sterile pressure dressing* over the injury site.

- ✓ *Splinting* is critical in providing symptomatic relief for the patient, as well as in preventing potential neurologic and vascular injury and further injury to the local soft tissues.

- ✓ Adequate *analgesics*.

Operative treatment :-

The four AO (Arbeitsgemeinschaft für Osteosynthesefragen) [Association for Osteosynthesis]) principles:-

- ✓ Anatomic reduction of the fracture fragments.
- ✓ Stable fixation, absolute or relative, to fulfill biomechanical demands.
- ✓ Preservation of blood supply to the injured area of the extremity and respect for the soft tissues.
- ✓ Early range of motion (ROM) and rehabilitation.

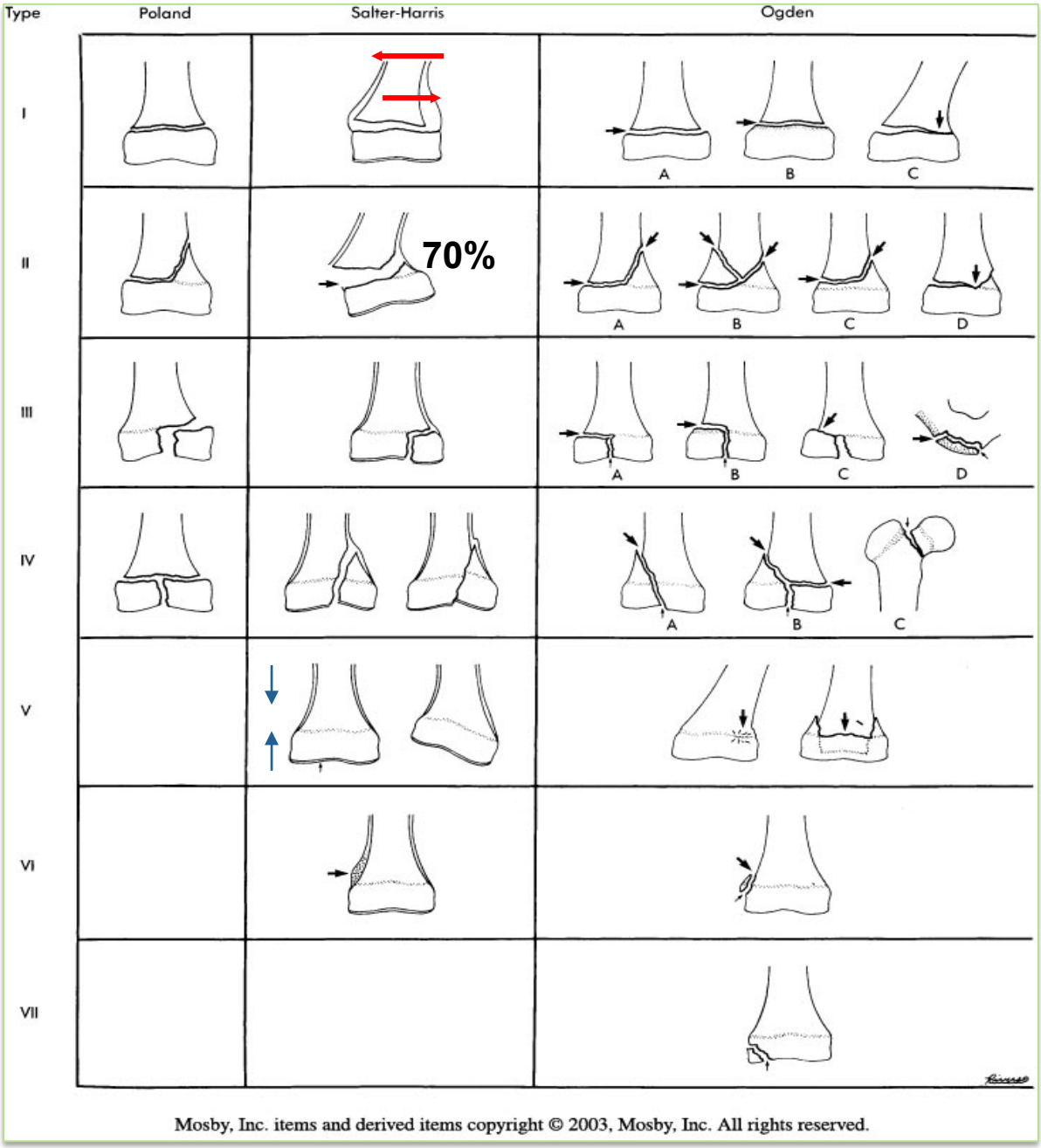
Measure it with a micrometer,
mark it with a chalk,
cut it with an axe !

Fracture classification- Generic

1B - **B**roken

2B – **B**adly **B**roken

3B – **B**loody **B**adly **B**roken



Case Studies Presentations

- Fractures of the Wrist and Elbow
- Fractures of the Hand
- Fractures of the Shoulder Complex
- Fractures of the Ankle
- Fractures of the Foot

Fractures of the Wrist and Elbow

- Supracondylar fractures in children
- Lateral condyle fractures in children
- Clavicle fractures in children
- Clavicle fractures in adults
- Radius and Ulna fractures in children
- Radius and Ulna fractures in adults
- Fracture of the scaphoid.

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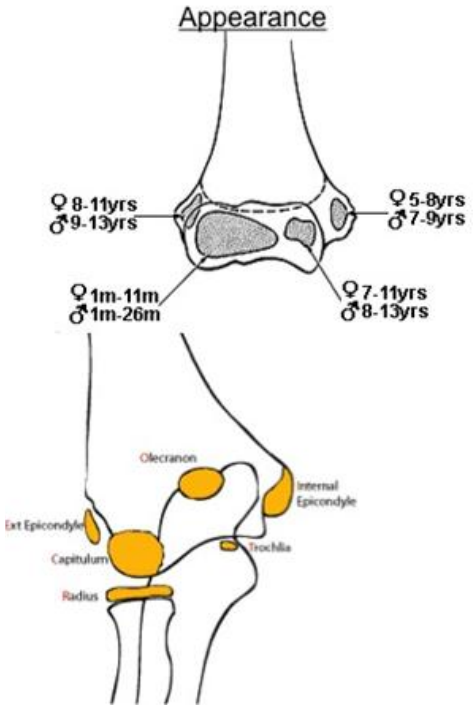
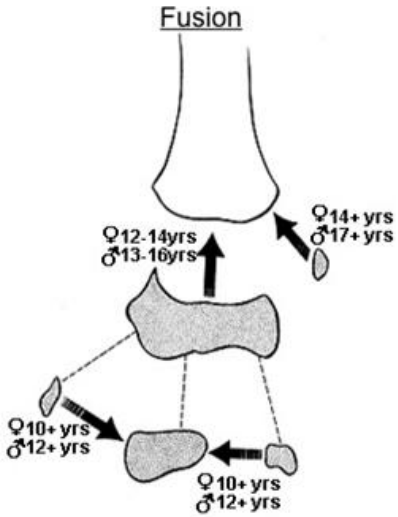
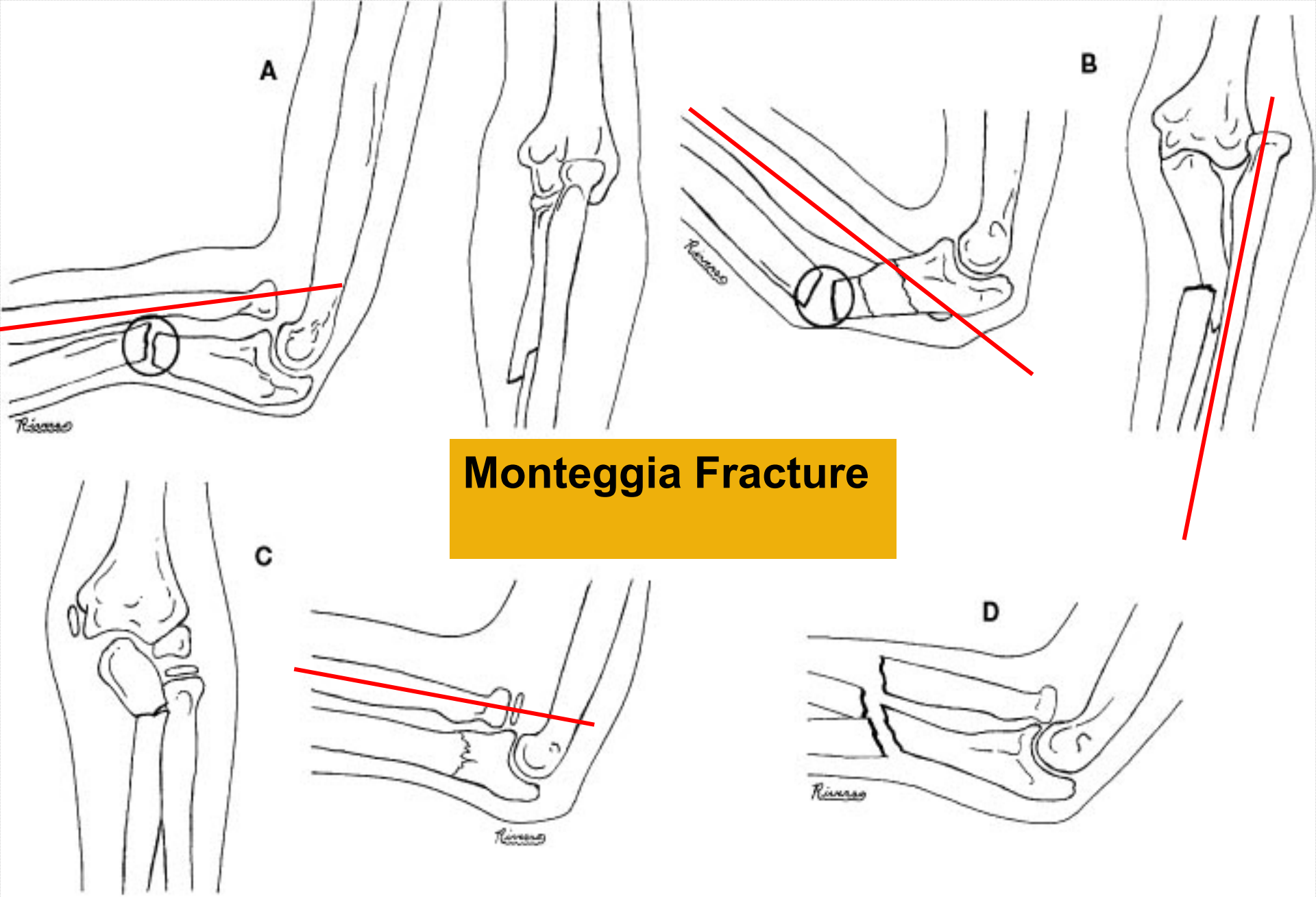
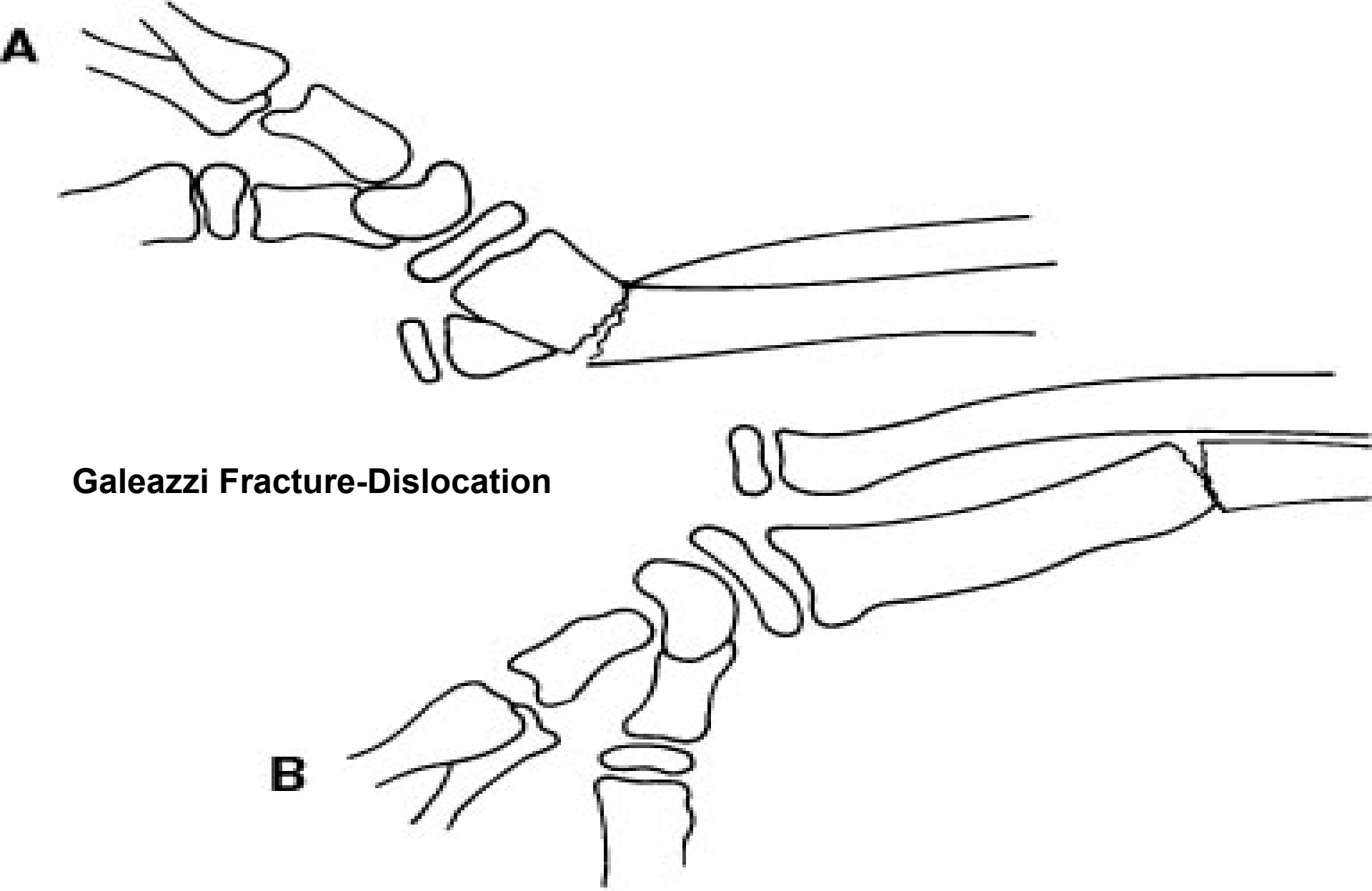






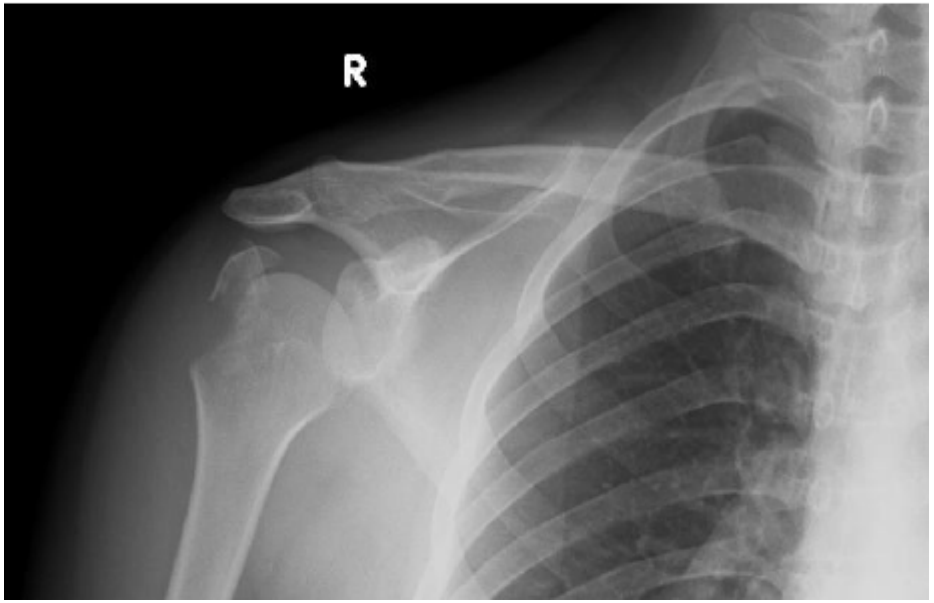
Monteggia Fracture



Galeazzi Fracture-Dislocation

Fractures of the Shoulder Complex

- Fractures in the proximal humerus
- Fractures of the clavicle and AC joint
- Fractures scapula including fractures of the glenoid.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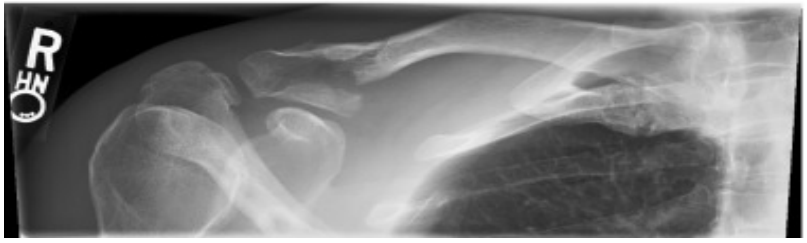
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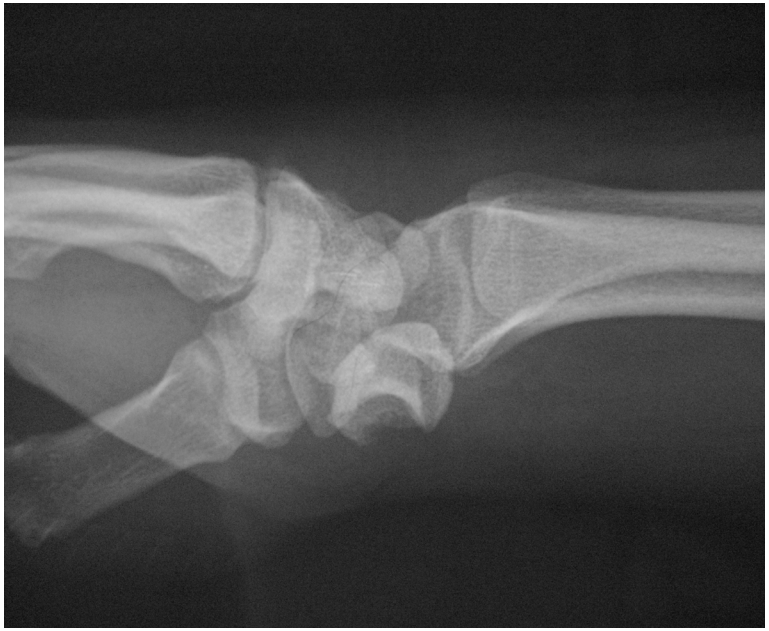


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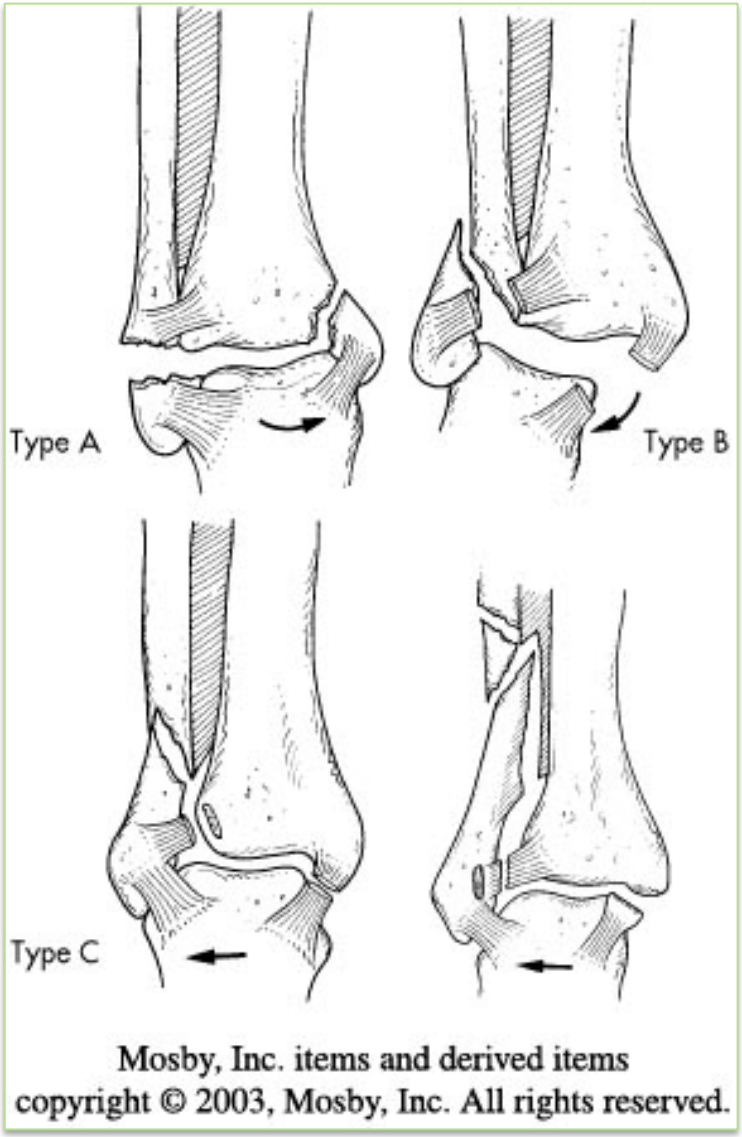
Fractures of the Hand

- Fracture metacarpal - boxers fracture/fifth metacarpal neck
- Fracture phalanges

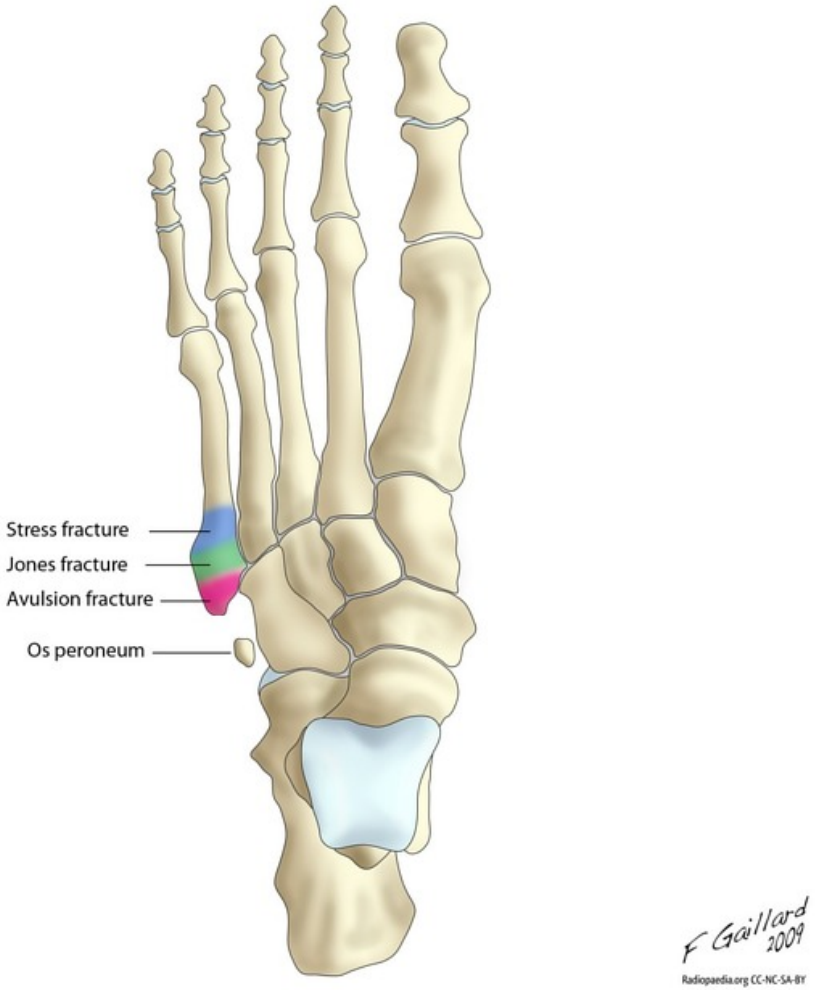
Fractures of the Ankle



Management of Fractures of the Ankle Complex

- A displaced ankle fracture swells were rapidly and needs urgent surgical attention
- Dislocated ankle is a surgical emergency
- Not displaced ankle fractures can be treated nonoperatively depending on patient profile and fracture geometry
- Beware of syndesmotic ankle injuries
- Ligamentous ankle injuries need to be treated differently than fractures[remember Ottawa rules]

Fractures of the Foot



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Management of Foot Fractures

- Most of these don't need urgent surgery
- Some fractures may not be visualised on first x-ray and repeat x-ray in 10 to 14 days time may show the fracture better.
- Keep the patient non-weight bearing if suspecting a fracture and provide a moon boot and repeat x-ray after 10 to 14 days
- Obvious fractures need to be addressed as per the principles of management based on amount of displacement

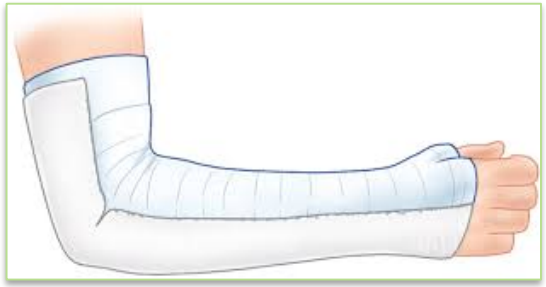
Damage control/disaster management

- Phone a friend [e.g.0415133857]

- Keep the patient fasted if urgent surgery is required

- Immobilise the fracture-Long arm and long leg splints are safer than inadequate immobilisation.

Take home message



Thank you