Common Challenges in Primary Care – Fracture Management

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Dr Mark O’Brien Auditorium, The Prince Charles Hospital

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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”*!][1] 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 (e.g., femoral neck fractures)
- Large avulsion fractures that disrupt the muscle-tendon or ligamentous function of an affected joint (e.g., 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 (e.g., elderly patients with proximal femur fractures)
- Fractures in growth areas in skeletally immature individuals that have increased risk for growth arrest (e.g., Salter-Harris types III-V)
- Nonunions or malunions that have failed to respond to nonoperative treatment
The heart, a thoracic organ whose primary function is to pump antibiotics around the body.

The most important factors in fracture healing are-

- Blood supply

  and

- Soft-tissue health
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 Osteosynthesesfragen) [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 - Broken

2B – Badly Broken

3B – Bloody Badly Broken
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<tr>
<th>Type</th>
<th>Poland</th>
<th>Salter-Harris</th>
<th>Ogden</th>
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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.
Fractures of the Shoulder Complex

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