Approaching a Fracture

Mr Usman Ahmed MBBS PhD FRCS(Orth)

Trauma & Orthopaedic Registrar

Birmingham Orthopaedic Training Programme

Trauma

The true pioneers of the # (hashtag) are T&O surgeons.

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It is short hand for ‘fracture’

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Fractures constitute a large & significant portion of the specialty workload

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Lets start with a case…….

I think this guy has a broken leg…..

…..can you please deal with it…..

Objectives

- There are three key time frames
  - Immediate - Emergency Management
  - Soon - Temporary Stabilisation
  - Planning Definitive Management
- Key skills
  - Rapid Assessment & Management
  - Concise Communication
  - Teamwork

Emergency Management

1. Consider the whole patient
2. Treat life-threatening injuries
3. Assess/Restore Neurovascular Status
4. Pain relief – broken bones hurt
5. Soft tissue protection - dressings
6. Realignment & Splintage
7. Early Communication with seniors!!!!!

Assess the whole patient

- Advanced Trauma Life Support (ATLS)
  - Airway + C-Spine protection + Control Bleeding
  - Breathing
  - Circulation
  - Disability
  - Exposure
- Deal with life threatening head/neck/trunk injuries first
- Don’t be distracted by a bent limb

Assess the Limb

1. Neurovascular Status
   - Is there a pulse? – palpate all distal pulses
   - Is their sensation ok? – check all distal nerves
   - Can the patient move his fingers/toes?
2. Soft tissues
   - Is there a wound near the fracture?
   - How big is the wound?
   - Is it contaminated? (mechanism of injury)

Assess the Limb

3. Articular involvement
   - Is the injury near or involving a joint?
   - Is the joint dislocated?
4. Diaphyseal injury
   - How many pieces?
   - Fracture pattern

- Assess the limb in the given order because…

Neurovascular Compromise

- Needs immediate attention
- Pull the limb out straight, splint and recheck
- If no improvement needs immediate evaluation & management by senior
- May require surgery with T&O and vascular teams
- See Presentation on Neurovascular Injuries

Open Fractures

- Soft tissue injuries with underlying fracture
- Something has either gone into the skin or
- ….Bone has poked out
- Needs surgery
  - Immediately if associated neurovascular injury
  - Next available theatre slot if stable
- Joint case - Orthopaedic and Plastic Surgery
- BOA/BAPRAS guidelines are extensive

Key Immediate Points

- IV Antibiotics +/- tetanus
- Regular Neurovascular checks (especially before and after any intervention)
- Assess for and manage Compartment syndrome
- Orthopaedic and Plastic Surgery combined care.
- Minimal wound handling – Take a photo and then cover it!
- Splint the limb
- Open injuries should be managed in hospitals with Orthopaedics and Plastics on site
  - Transfer if safe to do so
- Initial surgery is performed by senior plastic and orthopaedic surgeons within 24 hours of the injury unless there is marine, agricultural or sewage contamination.

Articular/Juxta-articular injuries

- Dislocated joints – need urgent reduction
  - Especially if neurovascular compromise
- Reduce and splint
- Articular fractures are more complicated
- May need external fixation
- Will need a CT scan to plan for surgery

Immediate Management

- Do the simple things well
- Call the registrar – as soon as you can
- If there is neurovascular compromise or a contaminated soiled open fracture
- Then find a registrar or consultant immedaitely
- When you call….lead with the severest problem…..

Temporary Stabilisation

- Splint or apply traction in ED
- Polytrauma
- Hostile surgical environment
  - Open Fractures
  - Soft tissue compromise (swelling/blisters)
  - Articular fractures that need planning
- Logistical Issues
  - Surgeons (some surgeries require experience)
  - Equipment (having correct devices)

Definitive Management

- AO Principles
  - Stable Fixation
  - Early Range of Movement
- Management with best outcome
- Functional restoration
- Be aware of patient expectations

Management Strategies

- Conservative
  - Splintage
- Surgical
  - External Fixation
  - Internal Fixation
    - Intramedullary
    - Extramedullary
    - Special techniques (K-wires, tension band wire)
  - Joint Replacement
    - Hemiarthroplasty
    - Total replacement
    - Partial replacement

Fracture Manipulation I

- Neurovascular assessment
- Preparation is critical to getting it right first time
- Do a head count – its not a one person job
  - 2 people to reduce and hold fracture
  - 1 person to apply the backslab and secure it
  - 1-2 people giving sedation/pain relief
- Analgesia/Sedation – Ensure you have monitoring
- Prepare your POP slab

Fracture Manipulation II

- Shortening
- Angulation
- Rotation
- Displacement

- In Line Traction
- Exaggerate the deformity
- Apply wool (2 layer)
- Apply backslab
- Crepe
- Gentle pressure

Fracture Manipulation III

- Things to think about….
- The forces acting on the fracture
- E.g Colles Fracture
  - Shortening
  - Dorsal Tilt
  - Dorsal Angulation
  - Radial Tilt
  - Radial angulation
  - Rotation
- Try to correct them – sometimes overcorrection is needed

Special Considerations

- Paediatric patients
  - Can tolerate greater deformity than adults – remodelling
  - Thick periosteum can get stuck in fracture site
- Elderly
  - Crumbly, comminuted fractures may not be easy to reduce
  - But good reduction may avoid the need for surgery
- Irreducible fractures
  - Soft tissue imposition
  - Tense muscles

Post-Manipulation

- Neurovascular Check
- Elevation
- Check X-ray
- Neurovascular obs – Worry about compartment syndrome

Summary

- Assess the whole patient
- Methodological assessment of limb
- Call seniors sooner the more sever the injury
- Do the simple things
  - IvAbx +/- Tetanus
  - Pain relief
  - Wound dressing
  - Splinting the wound
- Reassure patient, maintain good communication

Thank you!

Presentation available on
https://www.bon.ac.uk