

# Common Emergency Medicine orthopaedic presentations

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Orthopaedic injuries are a common presentation within the Emergency Department. It is important for junior doctors to be able to develop the skills necessary to identify and confidently manage the most commonly presenting orthopaedic injuries in the general population.

James talks to Dr Nicholas Maluga, Orthopaedic Registrar, about common emergency medicine orthopaedic presentations.

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## About Dr Nicholas Maluga

Dr Nicholas Maluga graduated from the University of Tasmania in 2009 with a double degree of Bachelor of Medical Science and Bachelor of Surgery. He completed his [internship](#) and resident years at the [Monash Medical Centre](#) in Melbourne and relocated to Sydney to complete his [Masters of Surgery](#) from University of Sydney in 2013. Since then, Nick has been working as an Orthopaedic Registrar at St Vincents Hospital, John Hunter Hospital and is currently at Nepean Hospital. Nick is currently working to complete his second Masters of Clinical Epidemiology from University of Newcastle. His early research interests were in Paediatric Orthopaedics and he completed and presented at the [Australian Orthopaedic Association](#) meeting a large research project which looked into physiotherapist-led screening for Developmental Dysplasia of the Hip in newborns. Nick's current research interest lies in utilising technologies to deliver and streamline healthcare and physiotherapy access to remote areas.

## Common Emergency Medicine orthopaedic Presentations

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*With Dr Nick Maluga, Orthopaedic Registrar at Nepean Hospital, Sydney, Australia*

### Introduction

Orthopaedic injuries are a common presentation within the Emergency Department. It is important for junior doctors to be able to develop the skills necessary to identify and confidently manage the most commonly presenting orthopaedic injuries in the general population.

### Case 1

**A 64-year-old female presents to the emergency department with a deformed left wrist following a fall. You suspect a fracture. The patient is also complaining of numbness and tingling in the first three fingers.**

**1. What are your initial concerns?**

- Median nerve compromise, either due to deformity putting nerve on stretch or because of acute carpal tunnel syndrome, scapholunate dislocation?

**2. What are the key features on the history or exam?**

- X-ray early
- Mechanism of injury
- Fasting status
- PMedHx, allergies, Meds
- Conduct a thorough neurovascular exam
- Examination of the elbow, shoulder and scaphoid

**3. When does a wrist fracture need a CT scan?**

- When it is a comminuted fracture with multiple fragments. X-ray is a two dimensional representation of a three dimensional structure and can have multiple fragments overlie each other, making interpretation complex
- CT allows for evaluation of die punch injuries and assessment of the extent of joint surface compromise

**4. What other injuries are often missed after a fall onto an outstretched hand? How should you assess for these? (scaphoid fracture 'sprained wrist' lasting over one week, elbow dislocations, clavicle fractures)**

- Scaphoid injuries are very commonly missed and require a degree of clinical suspicion
- Scapholunate dislocations are very commonly missed by junior doctors
- Proximal and distal fracture patterns Essex-Lopresti (radial head fracture with Distal Radial Ulnar Joint disruption), Galleazzi (fracture of distal 1/3 radial shaft)

and Distal Radial Ulnar Joint disruption), Monteggia (proximal 1/3 ulna fracture with radial head dislocation) patterns.

## 5. When does a fracture need to be reduced urgently in the emergency department? When is it more appropriate to reduce a fracture in an operating theatre? (neurovascular compromise, failed reduction in emergency department)

- Paediatric fractures involving the growth plate should always be done in the operating theatre. Repeat manipulations confer a poorer outcome and you want to ensure the reduction is as close to perfect as you can achieve.
- All other fractures and dislocations need to be reduced in emergency as it is part of emergency management. It improves pain, reduces ongoing injury and improves outcomes.
- Fractures that cannot be reduced closed due to interposition of soft tissues for example will need to be taken to theatre and reduced via open reduction +/- internal fixation.

## 6. What are the essential elements of a good wrist plaster? (how to cut and size plaster, number of layers of plaster of paris, cold versus warm water, how tight to wrap the crepe)

- This is hard to explain in words and is very much a learned skill. The more you do, the better you become. Some helpful hints include:
  - Plaster for the wrist is best achieved with dorsal and solar slabs. Or the very minimum a gutter slab.
  - Proximally allow enough room for elbow flexion without compression at the elbow crease.
  - Distally, cut out the space for the thumb to allow free movement and do not plaster past the palmar crease to allow for finger movements. Palmar crease is the location of the metatarsophalangeal joints.
  - Minimum of eight layers in the plaster but this depends on the size of the arm. Bigger arms require more layers.
  - Wrap firmly but always check for neurovascular status after the plaster is applied. May need to be released. If you see the patient's hand going purple, you have probably wrapped it too tight.
  - Moulding is important. Moulded in the direction opposite to fracture disposition. So volar for dorsal fractures and dorsal for solar fractures.

## 7. When does a patient require a referral for bone mineral density testing?

- Clinical suspicion and patients with conditions likely to cause more rapid bone loss - such as steroid treatment, eating disorders, overactive thyroid, hypoactive pituitary, severe and prolonged vitamin D deficiency.
- If there is a history of stress fractures and compression fractures in women of menopausal or post-menopausal age group.
- If the patient has recurrent fractures from simple falls.
- If the patient is over the age of 70 with fractures.

## Case 2

**An 80-year-old female has been referred to the Emergency Department from a low-level nursing home with left hip pain following an unwitnessed fall. An X-ray demonstrates a subcapital neck of femur fracture.**

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**1. What is the Emergency Department management of a hip fracture? (X-ray, pre-operative bloods, catheter, pain relief, fascia iliaca block)**

- Most hospitals have a neck of femur protocol in place
- Follow the NICE guidelines that were developed in the UK a few years ago
- XRays +/- CT
- Bloods
  - Full blood examination
  - Urea electrolytes and creatinine
  - Comprehensive metabolic panel
  - Coagulation
  - Liver function tests
  - Group and Hold
- ECG
- Chest Xray
- Fascia iliaca block and analgesia
- Indwelling Urinary Catheter and Urinalysis

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**2. Which other teams need to be involved in the management of an older patient with a fracture? What are the benefits of an orthogeriatrics referral?**

- Emergency Department
- Surgeons
- Anaesthetists
- Geriatrics +/- sub-speciality teams based on history and findings
- Orthogeriatrics:
  - Useful as they manage and optimise the patient for surgery

- Have specialist knowledge in the elderly population but also understand what is involved in surgery and how this affects the patient. They may be able to pre-empt some of the complications post-op.

### 3. When is a hip fracture considered 'pathological'? How does this change the management?

- PHx of cancer always suspect a pathological fracture
- Evident lesions on Xray - get a CT to evaluate
- Simple-subcapital fractures may be managed by hemi- or total arthroplasty. Which may be cemented or press-fit. However, pathological fractures will always be cemented.

### 4. How important is Deep Vein Thrombosis (DVT) prophylaxis for inpatients with lower limb injuries? What are the options for DVT prophylaxis (clexane versus heparin versus oral anticoagulants versus aspirin)

- This is a controversial topic
  - Aspirin is generally insufficient for immobile patients
  - Oral anticoagulants are irreversible
  - Clean or heparin are used pre-op and aspirin or oral anticoagulants are used post-op

## Case 3

**You are in the Emergency department seeing a 7-year-old boy who has swung and fallen from monkey bars onto his left forearm and now has a swollen, painful elbow which he is still able to move a little bit but appears slightly shortened and rotated in comparison to the other side.**

### 1. How would you proceed to examine him?

- Detailed neuromuscular examination, paying particular attention to anterior interosseous (FDP radial half; flexor pollicis longus) and radial nerves (extending wrist and fingers)
- Check radial artery pulse, perfusion in the hand and capillary refill

**2. What would you be most concerned about and want to include as a positive finding early in your examination?**

- Neurovascular status is the immediate concern and then start assessing for movements
- Pronation supination will indicate radial head injury; flexion extension is will indicate the supcondylar
- Neither is suggestive of elbow dislocation

**3. What primary investigation would you order?**

- X-ray of the elbow, forearm and wrist. Specify that the elbow will need to be a true lateral

**4. What are the options for managing a paediatric elbow dislocation?**

- Sedation in the emergency department versus sedation in operating theatre
- Dislocations are generally time critical and sedation in emergency is more readily available

**5. What is the usual treatment for non or minimally displaced stable supracondylar fractures?**

- Hyperflexion and sling or plaster immobilization

**6. What is the usual treatment for displaced supracondylar fractures?**

- Closed +/- open reduction and k-wires in operating theatre

**7. What is the treatment for a pulses hand in this setting?**

- Depends if the hand is well perfused or not
- Inform vascular surgeons of the problem and immediate reduction and pinning in operating theatre. May require exploration if the radial artery by the vascular team. If hand is well perfused, can be observed

## 8. What are the common complications seen post Closed Reduction and Percutaneous Pin Fixation?

- Most common complication is loss of position
- Second most common is pressure stiffens
- Third most common are pressure areas

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- [Falls](#)

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