UPPER LIMB QUEENSLAND

24/7 Hand, Wrist, Elbow + Shoulder Trauma Service

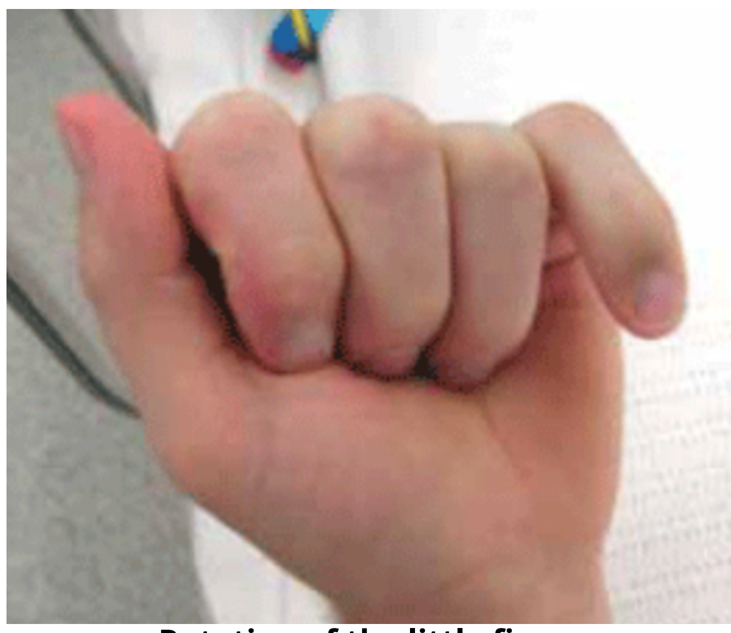
2nd - 5th Metacarpal Fractures: Indications for Operative Management

Mechanism of Injury: Fall onto outstretched hand, direct impact to metacarpals (crush injury) or direct blow to metacarpal heads (i.e punch injury)

Consideration: 4th and 5th MC's are more mobile and therefore more unstable compared to 2nd and 3rd MC's

Associated injuries: Extensor tendon injury

- **Rotation of MC Fractures**
  - No rotation tolerated as it impacts functional use of the fingers (i.e gripping, fine motor and pinch)
  - Difficult to assess on x-ray
  - Assess by having patient make a fist (if tolerable for patient)



Rotation of the little finger with finger flexion

- **Intra-articular MC Head Fractures**
  - Some MC neck fractures impact the MCP joint and require fixation
  - Can be misdiagnosed as a boxers fracture (5th MC neck fracture)

Intra-articular head of MC fracture that requires surgical manamgent

- **Compound MC Fracture**

- **Multiple MC Fractures**
  - Stability of metacarpals is reinforced by adjacent metacarpals and soft tissues
  - Multiple metacarpal fractures reduce stability and increase the risk of fracture migration

Multiple MC fractures

Text/Whatsapp/Call: **0478 299 993** Fax: **07 3811 6423** Email: **ulq@ulq.com.au**

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ULQ

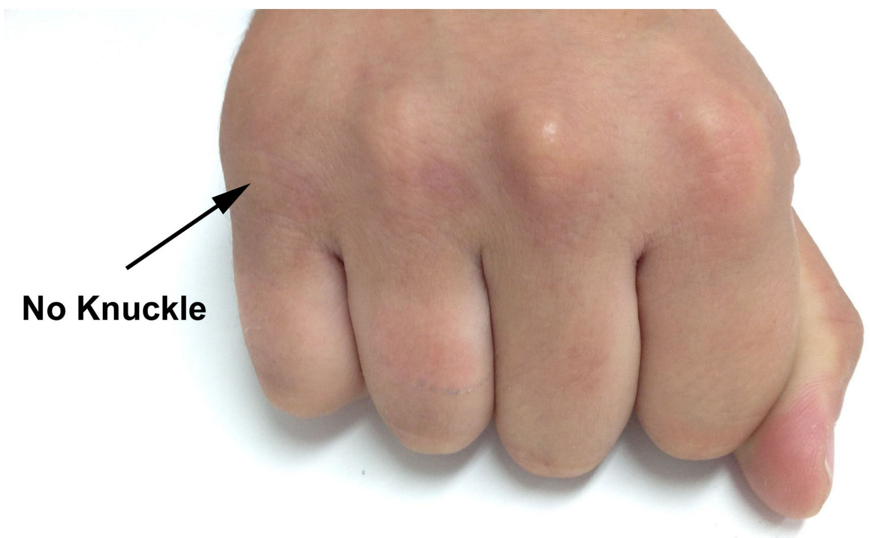
2nd - 5th Metacarpal Fractures
Other Considerations

- **Dorsal Angulation of MC Fracture**
  - 4th and 5th metacarpals are quite mobile compared to 2nd and 3rd metacarpals and can tolerate a higher degree of dorsal angulation with minimal functional impact to patients
  - See table below

Lateral X-ray is best to measure dorsal angulation

	2nd MC	3rd MC	4th MC	5th MC
Degree of angulation tolerated at each MC	< 10°-20°	<20°-30°	< 30°-40°	< 50°–60°

- **Shortening of MC Fractures**
  - Up to 6mm shortening tolerated at all metacarpals
  - Can lead to loss of metacarpal head prominence in a fist
    - consideration for patients who participate in boxing or fighting sports
  - Potential risks include an extensor lag of the MCPJ



ULQ specialists are available to see patients and assess the above.
If patients require non-operative management, we are able to directly refer them to hand therapy for protective splinting.

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U L Q

2nd - 5th Metacarpal Fractures: Case Study

Patient: 29 year old male, no pre-existing conditions, smoker

Mechanism of Injury : Patient punched a wall during an altercation

- The patient presented with an oedematous and painful right hand following a punch injury
- Initial x-rays showed a 5th metacarpal fracture with 65° dorsal angulation
- Rotation was assessed and the patient displayed no rotational deformity or scissoring
- A ULQ specialist discussed both operative and non-operative management with the patient (see below)

Initial xray for 5th metacarpal shaft fracture

Non-operative management:

- 1% chance of non-union
- High chance of mal-union
- 4-6 weeks of immobilisation to allow bone healing
- Can have a prolonged recovery time in adults due to long period of immobilisation

Operative Mangement:

- Reduced chance of mal-union
- Risk of extensor tendon adhesions in scar causing a lag of the MCP joint
- Can often begin early active range of movement immediately post-op
- Risk of GA

Outcome:

- The patient opt-ed for non-operative management.
- He was immobilised in an ulnar gutter POSI:
  - wrist at 20° extension
  - MCPJs at 60° flexion + IPJs free
- He was reviewed weekly for the first fortnight to check fracture position (via x-ray)
- He began active movement exercises at 4 weeks post injury and had full range of movement at 8 weeks post injury
- At 14 weeks post injury, he had regained full movement and strength

12 weeks post 5th metacarpal shaft fracture. Non-operative management

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