Wrist Arthritis & Partial Wrist Fusion

Mr Jason N Harvey MB.BS. FRACS (Orth)

Hand,Wrist & Elbow Surgeon

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Outline

- Clinical Symptoms
- Physical Examination
- Diagnosis
- Differential Diagnosis

Outline

- Non-operative Management
- Operative Management
- What to expect post-operatively

Clinical Symptoms

- Pain
- Loss of Motion, dexterity and function
- Swelling/Deformity

Pain

- Location
- Duration
- Character

Pain

- Exacerbating
- Relieving
- Medications
- Splints

Loss of Motion

- What is lost
- What is needed
- Reduction in motion may lead to improvement in pain

Swelling & Deformity

- Location
- Exacerbating
- Relieving
- Splints

History

- Medical conditions e.g gout, RA
- Other systems e.g skin lesions
- Other joints e.g feet

History

Prior Treatments

- Medications
- Splints
- Therapy
- Injections
- Operations

Physical Examination

- Localised and reproducible tenderness is the most important clinical finding
- Identify swelling
- Compare to the contralateral hand/wrist
- Look, move, feel

Examination-Look

- Swelling
- Deformity
- Skin lesions

"Mummy? Why are your hands so hard and rough?"

Examination - Move

- Decreased motion
- Arc of motion

"Mummy? Why are your hands so hard and rough?"

Examination - Feel

- Point tenderness
- Crepitus
- Swelling
- Instability

"Mummy? Why are your hands so hard and rough?"

Diagnosis Investigations

- X-ray
  - Usually all that is needed
- CT Scan
- Ultrasound
- Bone Scan
- MRI

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SLAC Wrist

- SLAC Wrist
- = ScaphoLunate Advanced Collapse
- Old scapholunate ligament injury
- Predictable pattern of arthritis

SLAC Wrist

- Pain with motion
- Decreased motion
- Usually radial sided

SLAC Wrist

- Stage 1
  - Radial styloid only
  - Can do just styloidectomy
- Stage 2
  - Entire scaphoid fossa

SLAC Wrist

- Stage 3
  - Lunocapitate
- Stage 4
  - Pan carpal

SNAC Wrist

- SNAC Wrist
- Scaphoid Nonunion Advanced Collapse

SNAC Wrist

- Stage 1
  - Radial Styloid
- Stage 2
  - Scaphocapitate

SNAC Wrist

- Stage 3
  - Midcarpal

Mack's Natural History – Scaphoid nonunions

- 5-10 years – scaphoid cysts and resorption
- 10 years – radio-scaphoid arthritis
- 20 years – generalized arthritis
- Recommended reduction and grafting of all displaced ununited fractures irrespective of symptoms, before degenerative changes occur

- Mack GR: The natural history of scaphoid nonunion. JBJSA 1984;66(4):504-509

Non-operative Management

- E = Education
- L = Lifestyle Modification
- P = Pharmocology
- O = Orthoses
- P = Physiotherapy
- I = Injections

Surgical Indications

- PAIN
- Loss of Function
- Cosmesis

Considerations

- A ge
- S everity of disease
- S ex
- E xpectations
- D emands

Wrist

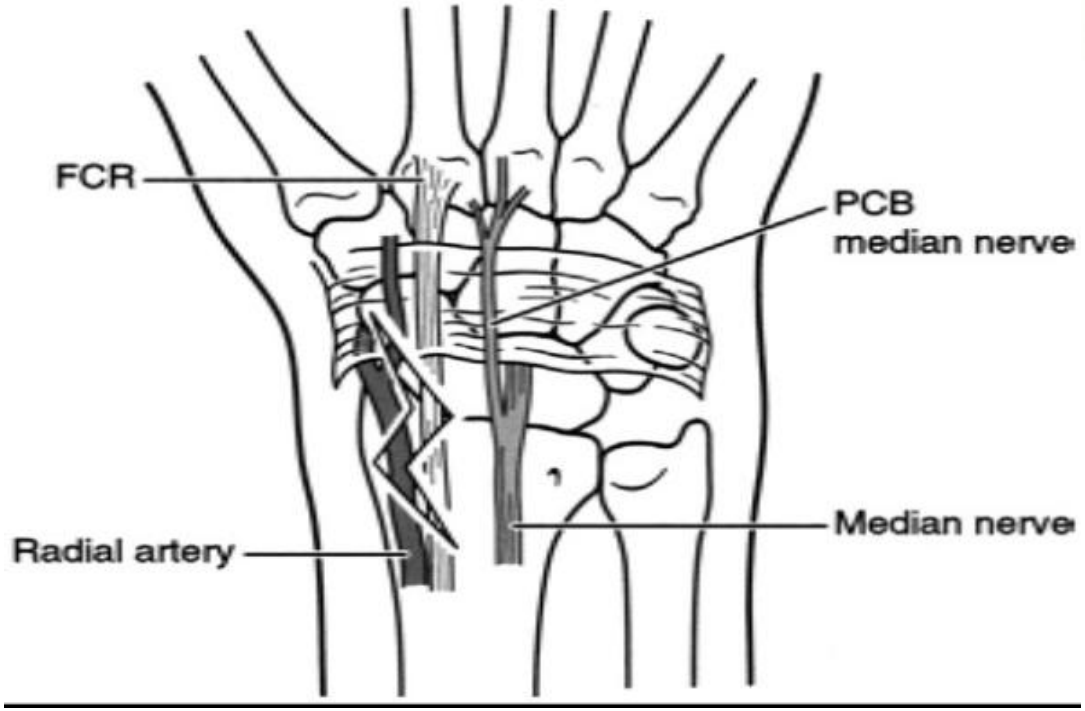
- Primary osteoarthritis of the wrist relatively uncommon
- More commonly associated with SLAC/SNAC wrist or fracture
- Rheumatoid arthritis

Wrist

- Reconstructive Options
  - Early stage disease, more as a preventative measure (e.g scapholunate reco)
  - Only if small isolated cartilage defect
- Osteotomy
  - Distal radius malunion

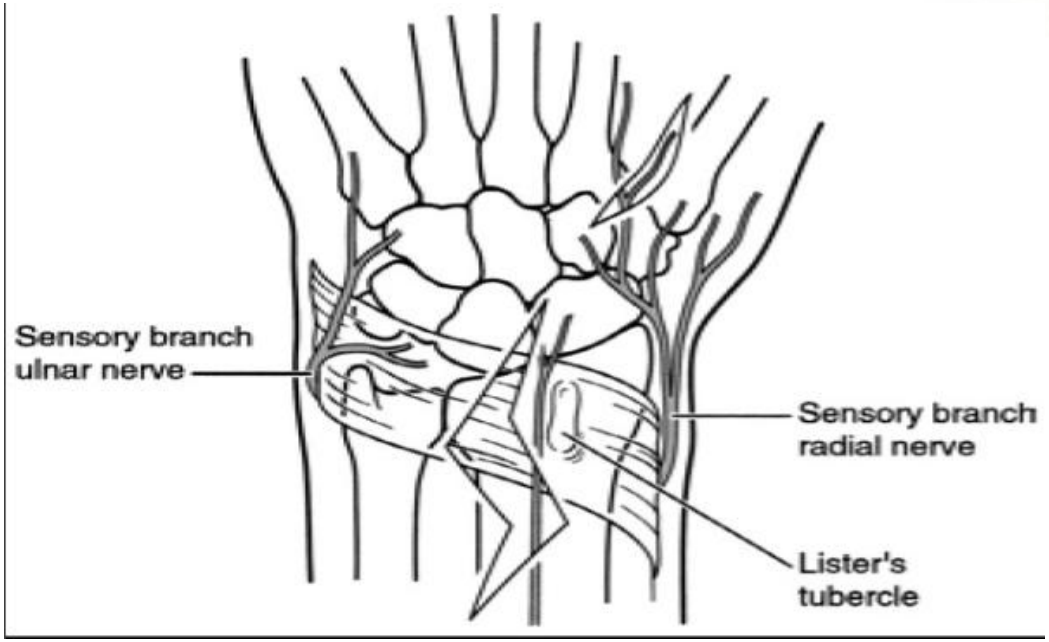
Wrist

- Denervation
  - Pre op injection of PIN and AIN to see if improvement in pain
  - Most people do only these nerves
  - True denervation 5 incisions, 1 volar and 4 dorsal



Wrist

- Denervation
  - PIN, AIN, dorsal br ulna nerve, palmar br median nerve, lateral antebrachial cutaneous, SRN, medial antebrachial cutaneous nerve



Wrist

- Arthroplasty
  - Old low demand
  - Not normal range of motion
  - Long term results not as good as hips and knees

PRC Technique

- Proximal Row Carpectomy
  - Requires intact lunate fossa and proximal capitate cartilage
  - Can use proximal capitate pyrocarbon

PRC Technique

- Dorsal approach
- PIN/AIN neurectomy
- Capsulectomy of choice (ligament sparing)

PRC Technique

- Resect entire proximal row
- Also do radial styloidectomy

PRC Post Op

- Immobilise for 6 weeks
- No need after that as no fusion required

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Limited Wrist Fusions

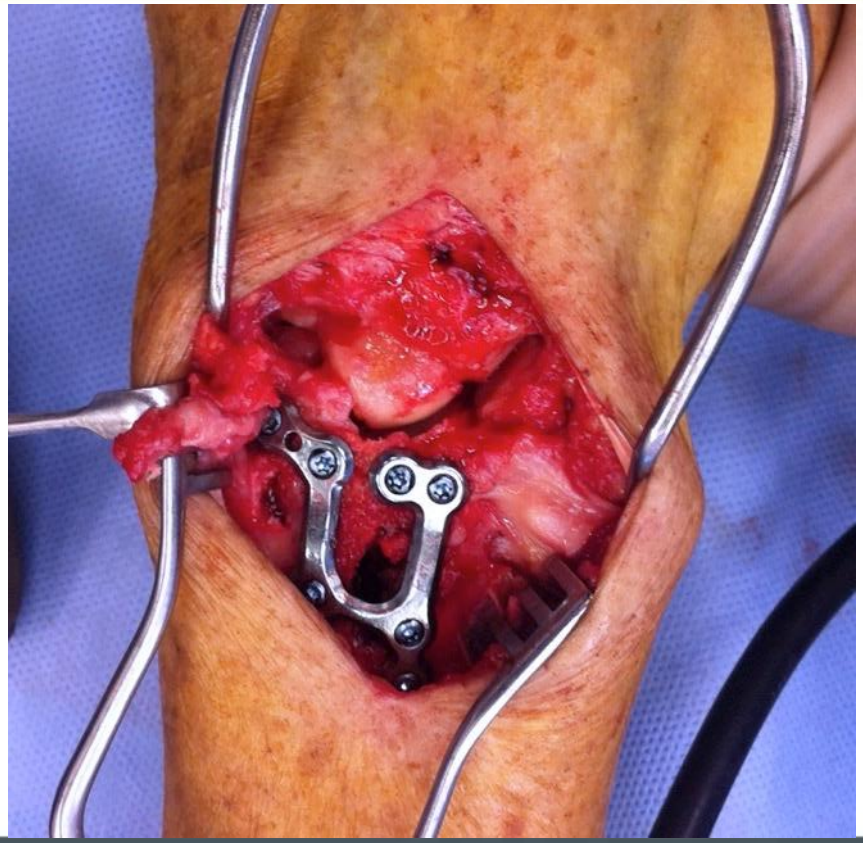
- Radiocarpal Degeneration
  - Radioscapholunate Fusion
  - Dorsal approach
  - Standard joint preparation

Limited Wrist Fusions

- Require intact midcarpal joint
- Scaphoid also has rotational element
- Technically difficult operation

Limited Wrist Fusions

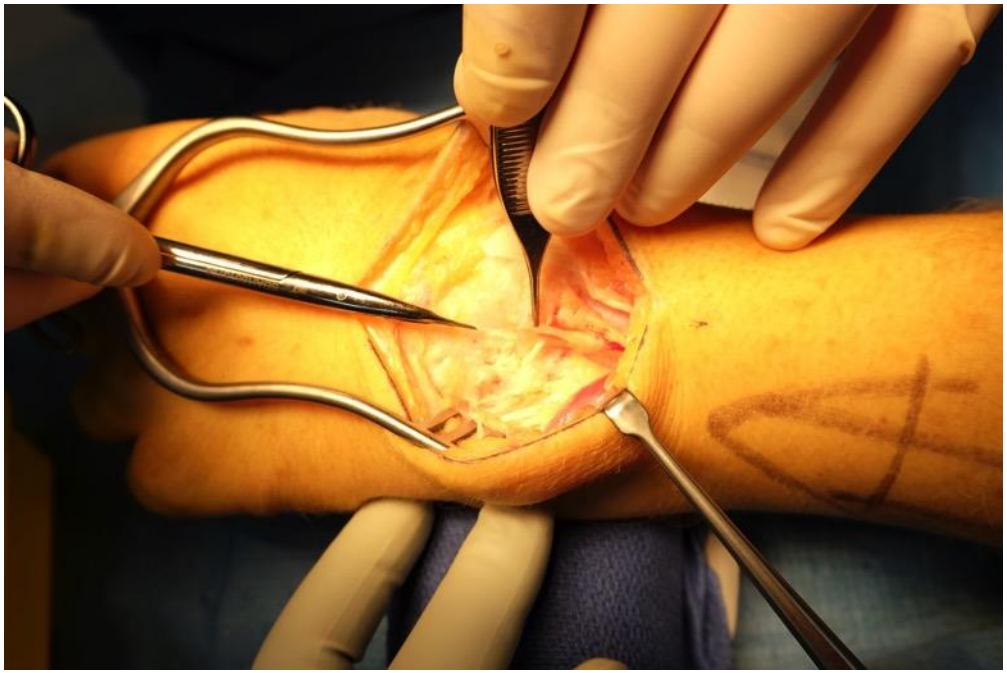
- Maintain midcarpal relationship and "width"
- Distal pole of scaphoid excision to unlock the midcarpal joint
- +/- triquetral excision to increase motion



Scaphoid Excision + midcarpal fusion

- Need intact radiolunate fossa
- Workhorse of SLAC/SNAC salvage
- Dorsal approach
- +/- radial styloidectomy

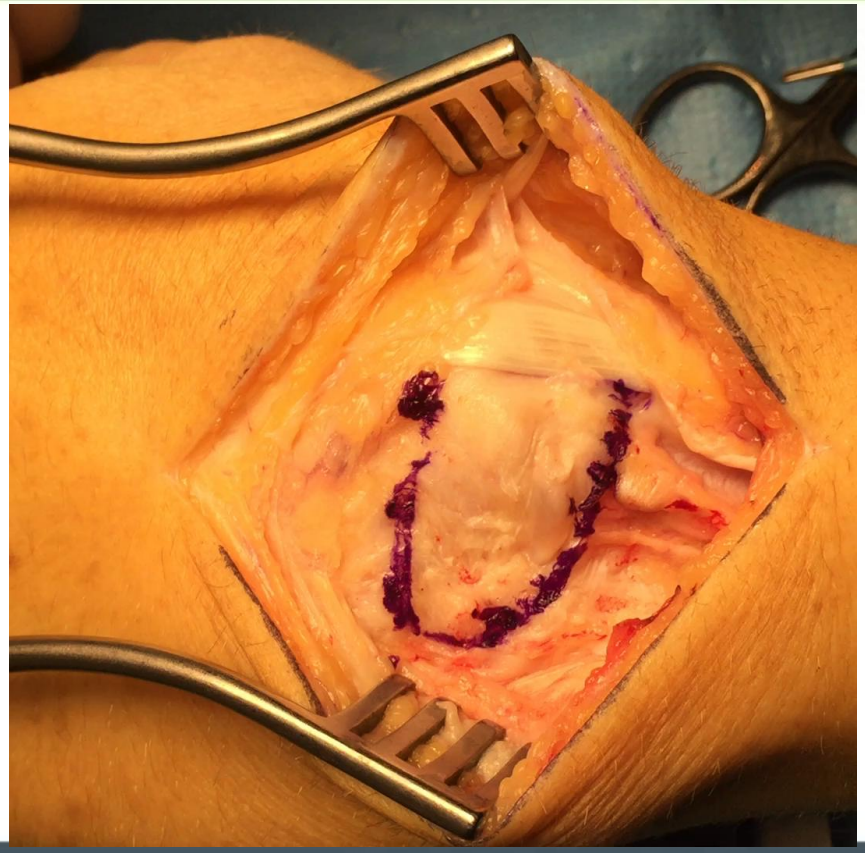
Limited Wrist Fusions



PIN Neurectomy

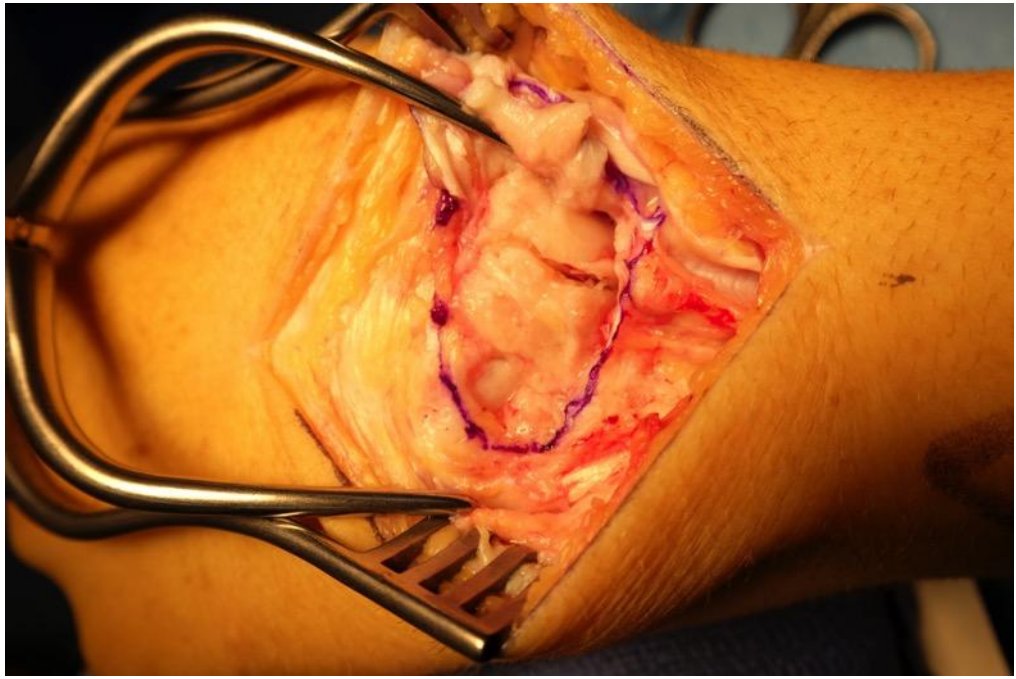
Limited Wrist Fusions

- Ligament sparing capsulotomy
- Along the line of DRC and DIC
- Radially based flap



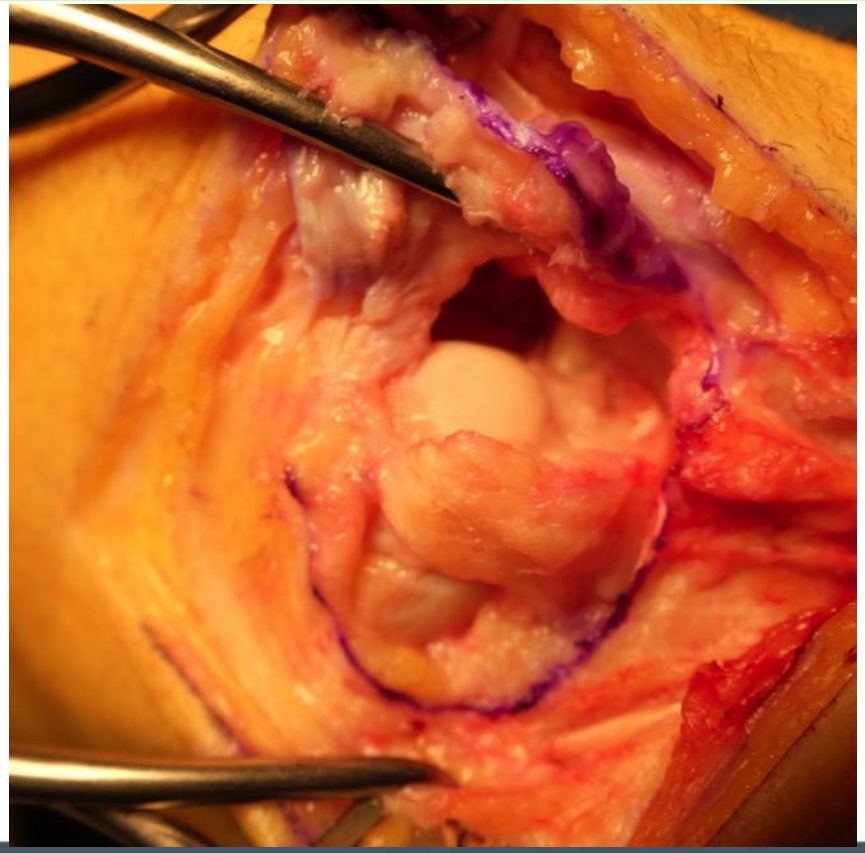
Limited Wrist Fusions

- Expose dorsal aspect of the carpus
- Check cartilage surfaces of bones that are to remain



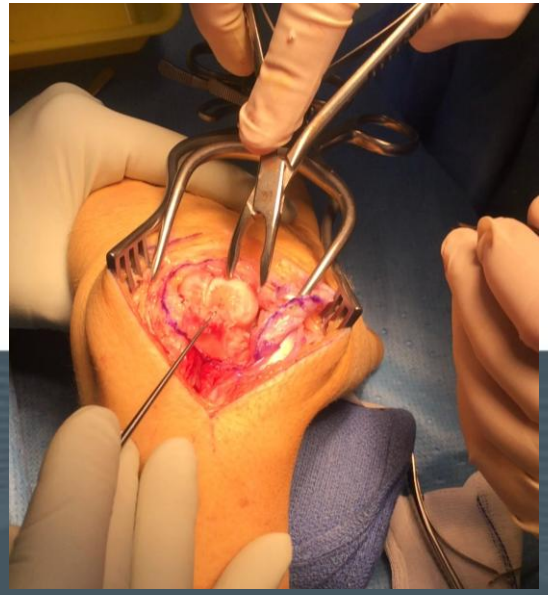
Limited Wrist Fusions

- Scaphoid excised
- Usually done piecemeal
- I also excise triquetrum to improve motion
- Can put a K-wire into it to help joystick around



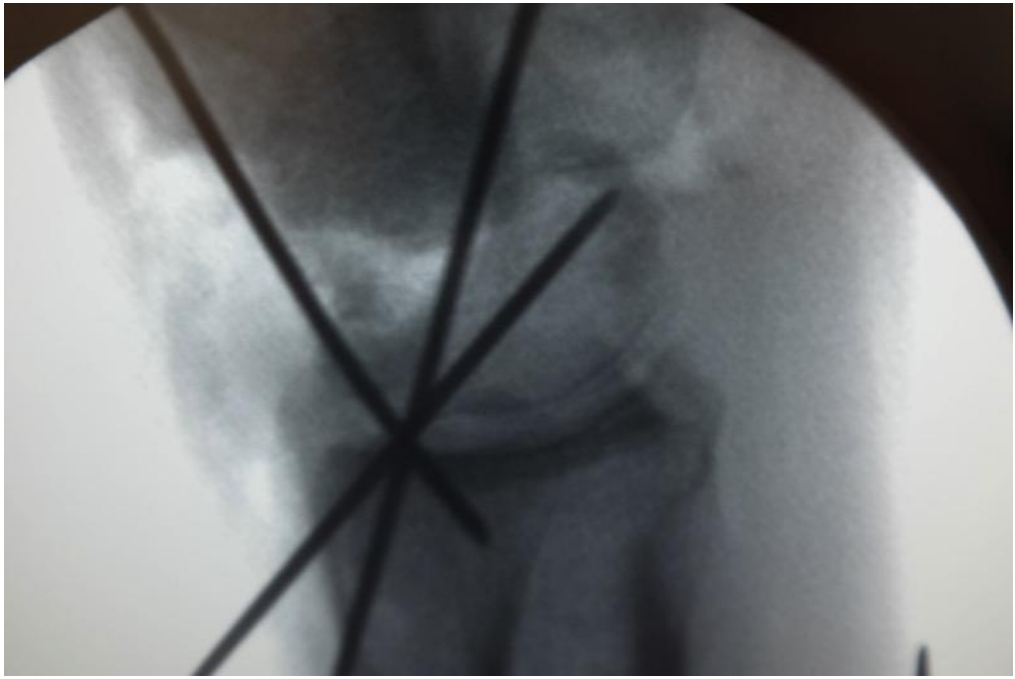
Limited Wrist Fusions

- Decorticate joint surfaces
- Want to see good bleeding cancellous bone



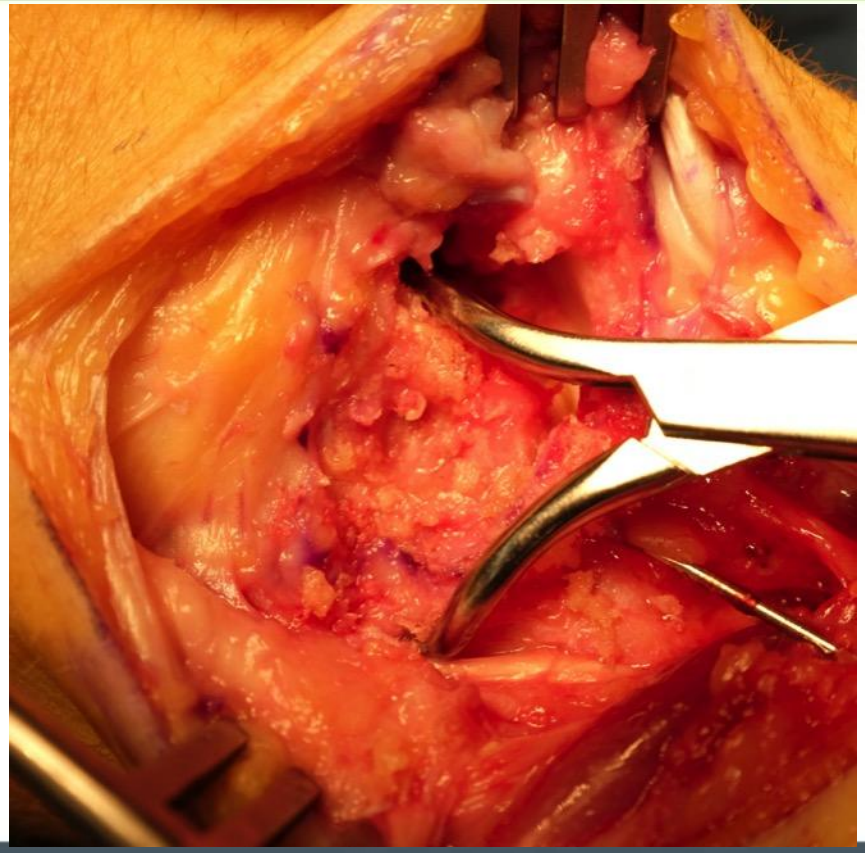
Limited Wrist Fusions

- Set provisional alignment
- Lunate is usually extended so need to de-rotate
- Then line up the capitate so is colinear



Limited Wrist Fusions

- Clamp bones together
- Pack in bone graft
- I harvest from radius metaphyseal region
- Provisional K-wires



Limited Wrist Fusions

- Place plate
- Ensure recessed so no impingement
- Fixation most important in lunate and capitate

Limited Wrist Fusions

- Fill screws
- Can use K-wires only
- Higher rate of non union

Post Op

- Cast x 2 weeks
- Then splint and gentle AROM
- X-ray at 8 weeks and increase range if union starting
- Usually united at around 3 months

Total Wrist Fusion

- Pancarpal Degeneration
  - Total Wrist Fusion
- Good fallback position
- Reliable for pain relief
- There are functional limitations associated with fusion, CMC preserving implants aim to address this

Total Wrist Fusion

- Good fallback position
- Reliable for pain relief
- There are functional limitations associated with fusion especially if considering both sides

Thank You

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Mr. Jason Harvey

Orthopaedic Surgeon
Specialising in Hand, Wrist & Elbow Surgery

Level 5, 89 Bridge Road
Richmond VIC 3121

T: 9038 5200
www.osv.com.au

Case 2

- 47yo RHD male
- Injury “years” ago, never treated
- Progressively increasing pain
- Had styloidectomy, initial relief, now increasing pain

Case 2

- 47yo RHD male
- Wanted to preserve motion, grip strength
- Had 4 corner fusion
- 6 weeks immobilisation
- Began motion
- Strengthening at 3 months

Thank You

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