SCAPHOID FRACTURES AND COMMON WRIST CONDITIONS

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OVERVIEW

- Scaphoid Fractures
- Ligament Injuries
- Distal Radius Fractures
- Wrist Arthritis
- Ulnar Wrist Pain
- Ganglion
- DeQuervain’s Tenosynovitis
SCAPHOID FRACTURES

- ANATOMY
- Blood supply is distal to proximal
- Covered by cartilage
- Shaped like a twisted peanut
- Articulates with radius, lunate, capitate, trapezium and trapezoid
SCAPHOID FRACTURES

• BIOMECHANICS
• Links the proximal and distal carpal rows
• Key to normal wrist motion

www.medicinehack.com
SCAPHOID FRACTURES

• Mechanism of injury is fall on outstretched hand (FOOSH)
• Generally occurs between 15 – 30 y.o.

http://thomasbondphysio.blogspot.ca
SCAPHOID FRACTURES

• IMAGING
• Xrays
  • PA, lat, oblique, PA with ulnar deviation
• CT Scan
• MRI
SCAPHOID FRACTURES

INITIAL MANAGEMENT
- If diagnosis clear, cast immediately
- If x-rays negative, and clinical suspicion exist, cast and reassess at 2 weeks

DEFINITIVE MANAGEMENT
- Cast until fracture line gone on x-ray and clinically improved
- Mid waist fracture – approx. 2 months
- Proximal pole fracture – approx. 3 months
SCAPHOID FRACTURES

• LATE PRESENTATION
  • <2 weeks, proceed with casting
  • >2 weeks, place in cast and refer
  • >3 months, immobilize if painful and refer
SCAPHOID FRACTURES

- SURGICAL INDICATIONS (when to refer)
  - Displaced
  - Proximal pole
  - Comminution
  - Associated injuries (i.e. multitrauma, wrist dislocation)
  - Late presentation
  - Established nonunion
SCAPHOID FRACTURES

• SURGICAL TREATMENT
  • Headless screw fixation or K wires
  • Bone graft if nonunion present
LIGAMENT INJURIES

• WRIST DISLOCATION
  • Rare injury
  • High energy mechanism
  • Capitate dislocates dorsal to lunate
  • Scaphoid fracture may be associated
  • Diagnosed on lateral
  • Urgent referral
  • Surgery is necessary
LIGAMENT INJURIES

• SCAPHOLUNATE LIGAMENT TEAR
  • Critical ligament
  • Comparable to ACL
  • Resists flexion of scaphoid and extension of lunate
  • Can tear partially or fully
  • Treatment is poor
LIGAMENT INJURIES

• SCAPHOLUNATE LIGAMENT TEAR
  • Difficult to diagnose
  • Tenderness distal to Lister’s Tubercle
  • Widened scapholunate gap
  • Scaphoid flexion and lunate extension
  • Early surgery considered if <45 and injury <2 weeks old
  • Most can be casted and reconstructed if symptomatic
LIGAMENT INJURIES

• DORSAL WRIST LIGAMENTS
  • Presents with swollen wrist after FOOSH
  • Xrays initially normal
  • Radiologist reports a triquetral fracture
  • Dorsal triquetral fracture is a ligament avulsion
  • Immobilize 4-6 weeks
DISTAL RADIUS FRACTURES

• EPIDEMIOLOGY
  • High energy injury in young people
  • Low energy injury in elderly

• ANATOMY
  • Articulates with scaphoid and lunate
  • Cancellous bone
  • Excellent blood supply
  • Most people are ulnar negative
DISTAL RADIUS FRACTURES

• ASSESSMENT
  • Swelling
  • Deformity
  • Neurovascular status

• IMAGING
  • PA and lateral images
  • Volar tilt (5-10 deg)
  • Radial inclination (20-25 deg)
  • Ulnar variance (ulnar negative 0-2mm)
DISTAL RADIUS FRACTURES

- **ASSESSMENT**
  - Swelling
  - Deformity
  - Neurovascular status

- **IMAGING**
  - PA and lateral images
  - Volar tilt (5-10 deg)
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DISTAL RADIUS FRACTURES

- ASSESSMENT
  - Swelling
  - Deformity
  - Neurovascular status

- IMAGING (Normal)
  - PA and lateral images
  - Volar tilt (5-10 deg)
  - Radial inclination (20-25 deg)
  - Ulnar variance (ulnar negative 0-2mm)
DISTAL RADIUS FRACTURES

• CLOSED REDUCTION
  • Anesthesia – Hematoma block, Bier block, sedation
  • Traction – Finger traps with 10 lbs, manual traction
  • Correction of deformity
  • Casting with 3 point molding
  • End cast at distal palmer crease (no fingers)
  • Split cast if too tight

• REDUCTION PARAMETERS
  • PA and lateral images
  • Volar tilt (<10 deg of dorsal tilt)
  • Radial inclination (>15 deg)
  • Ulnar variance (ulnar negative)
DISTAL RADIUS FRACTURES

• FOLLOW UP
  • Do xray and clinical assessment at 1, 2, 3, 6 weeks
  • Cast off at 6 weeks

• SURGICAL INDICATIONS
  • Less stable fracture pattern (i.e. volar angulation)
  • Displacement after closed reduction
  • Young patient with comminution
  • Multitrauma
  • Elderly RARELY need surgery, moderate displacement well tolerated
WRIST ARTHRITIS

• Four most common forms
  • Scapholunate Advanced Collapse (SLAC)
  • Scaphoid Nonunion Advanced Collapse (SNAC)
  • Scapho-trapezio-trapezoid arthritis (STT)
  • Inflammatory (i.e. rheumatoid)
WRIST ARTHRITIS

• Pathology
  • SLAC
    • Scapholunate gap widens
    • Scaphoid flexes and lunate extends
    • Radioscaphoid joint becomes arthritic
    • Midcarpal joint becomes arthritic
WRIST ARTHRITIS

• Pathology
  • SNAC
    • Similar to SLAC
    • Collapse occurs at nonunion instead of scapholunate joint
WRIST ARTHRITIS

- **Nonoperative Treatment**
  - Activity modification, NSAIDs, Bracing, Cortisone injections

- **Operative Treatment**
  - Partial wrist fusion
    - Good pain control
    - Loss of motion
WRIST ARTHRITIS

• STT
  • Cause
    • Can be primary osteoarthritis or CPPD
  • Commonly asymptomatic or minimally symptomatic
  • Treatment
    • Activity modification, NSAIDs, Bracing, Cortisone injections
    • Fusion of the STT joint controls pain and decreases motion
WRIST ARTHRITIS

- Inflammatory
  - Causes
    - Rheumatoid, Gout, CPPD, Seronegative (i.e. psoriatic)
  - Presentation
    - Diffuse swelling, redness, decreased ROM
    - Symmetrical in rheumatoid
    - DRUJ, hand and thumb often involved
  - Imaging
    - Osteopenia, diffuse joint loss
  - Treatment
    - Splinting, NSAIDs, Steroids (Oral and injections), DMARDs
    - Refer to Rheumatology
    - Refer urgently if sudden loss of finger extension
    - Surgery indicated if symptoms not controlled medically
ULNAR WRIST PAIN

- Anatomy
  - Distal radio-ulnar joint
  - Radio-ulnar ligaments
  - Ulnocarpal ligaments
  - Triangular fibrocartilage complex
  - Lunotriquetral ligament
  - Ulnar impaction
  - ECU tendonitis/subluxation
  - Pisiform
  - Ulnar nerve & artery
ULNAR WRIST PAIN

• Assessment
  • Tenderness
  • Ulnar grind test
  • Xrays

• Management
  • Reassurance
  • Activity modification
  • Taping and Bracing
  • Physiotherapy
  • Cortisone injection
ULNAR WRIST PAIN

• Reason for referral
  • 6-12 months of symptoms that cause functional problem
  • Suspicion of dislocated or subluxed DRUJ

• Surgical management
  • Moderately successful
  • Type of surgery is dependent on cause
  • Ulnar shortening indicated for ulnar impaction
GANGLION

- Dorsal wrist
  - Usually at scapholunate joint
  - Typical nonop treatment
  - Aspiration has poor success
  - Surgical removal if symptomatic

- Volar wrist
  - Usually radial near artery
  - Typical nonop treatment
  - Avoid aspiration
  - Surgery has risk of arterial injury
DE QUERVAIN’S TENOSYNOVITIS

• Anatomy
  • 1st dorsal compartment
    • Abductor pollicis longus
    • Extensor pollicis brevis

• Causes
  • Idiopathic
  • Aberrant anatomy of the compartment
  • Overuse

http://www.ericksonhandsurgery.com
DE QUERVAIN’S TENOSYNOVITIS

• Presentation
  • Radial wrist pain with grasping
  • Pain with thumb extension
  • Occasionally swelling will be present

• Diagnosis
  • This is a clinical diagnosis
  • Tenderness at first dorsal compartment
  • Swelling may be present
  • Positive Finkelstein’s Test
  • X-rays are negative
DE QUERVAIN’S TENOSYNOVITIS

• Natural History
  • Most will resolve
  • Often lasts for months

• Treatment
  • Vast majority are treated nonoperatively
  • Activity modification
  • NSAIDs – oral or local
  • Physiotherapy
  • Bracing or taping
  • Corticosteroid Injection (0.5 to 2cc fluid)
  • Surgery (compartment release) moderately successful
CONCLUSION

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- Distal Radius Fractures
- Wrist Arthritis
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APRIL 12, 2016