ORTHOPEDICS FOR PRIMARY CARE
THE WHIRLWIND TOUR

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Coastal Orthopedics
Location Based diagnosis and treatment

- **Shoulder**
  - Fractures/trauma
  - Overuse injuries
  - Aging
- **Elbow**
  - Fractures/trauma
  - Overuse injuries
  - Aging
- **Wrist/hand**
  - Fractures/trauma
  - Overuse injuries
  - Aging
- **Hip**
  - Fractures/trauma
  - Overuse injuries
  - Aging
- **Knee**
  - Fractures/trauma
  - Overuse injuries
  - Aging
- **Ankle/foot**
  - Fractures/trauma
  - Overuse injuries
  - Aging
Fractures in General

- Open – skin is broken over the fracture to any extent
  - Graded based on mechanism and location
  - Most open fractures are urgencies
    - should be handled within 8 hours
    - Require wash out and stabilization
  - Not all treatment requires the surgical suite
    - Finger tip, toe and grade 1 fractures can be washed out in the ED or office with secondary follow up
    - Stabilization can be in many forms
      - Brace, splint, cast, external fixation, plates & screws and rods
Fractures in General

- Closed – skin and soft tissue envelope remain closed around the fracture

  - Reduction
    - Depends on several factors
      - Patient comfort
      - Provider comfort
      - Ease or availability of referral
      - Experience and training

  - Immobilization
    - Temporizing or definitive treatment
    - Depends on type of fracture and deformity
      - Brace, splint, cast, surgical referral
Dislocations in General

- Dislocations are urgencies
  - Rapid reduction improves outcomes
  - One of 5 general orthopedic urgency/emergency
    - Compartment syndrome
    - Dislocation
    - Open fracture
    - Advancing myelopathy
    - Pelvic fracture with hemodynamic compromise
  - Once reduced is no longer an urgency
    - Should be immobilized
    - Follow up referral to assess for surgical stabilization is recommended.
Fracture

- Humerus
  - Common fractures in the surgical neck
  - More common in the elderly
  - Can usually be treated with short immobilization and progressive PT
  - X-ray utilized for diagnosis most commonly

- Clavicle
  - Vary in location along clavicle
  - Vary in age distribution
  - Fixation is more commonly recommended
    - Certain types and age groups still treated with immobilization
  - X-ray utilized for diagnosis most commonly
Fracture
- Scapula
  - Associated with high energy injuries
    - Associated with pulmonary contusion and fractured ribs
  - Occurs at all ages
  - Usually treated conservatively
  - CT necessary to assess for type of fracture and associated injuries

Overuse
- Subacromial bursitis
  - Diagnosed by clinical exam and x-ray
  - Conservative treatment
    - Topical NSAID/oral NSAID
    - Corticosteroid injection
debridement
  - Physical Therapy
  - Surgical treatment
    - arthroscopy
    - open
Overuse – continued

- **Rotator cuff strain**
  - Diagnosed by clinical exam and x-ray
  - Treatment with rest, ice, NSAID and possible injection
  - No surgical treatment for acute strain alone

- **Bicep tendonitis**
  - Diagnosed by physical exam
  - NSAID and corticosteroid both effective in treatment

- **Rotator cuff tear**
  - Diagnosed by physical exam and confirmed by MRI
  - Physical therapy will improve pain but not strength
  - Surgical repair of the cuff is recommended to avoid long term sequelae
Aging
- Arthritis becoming more prevalent with aging population.
- Acromioclavicular arthritis
  - Can lead to rotator cuff tear in late stages
  - Pain with cross chest test
  - Diagnosed by physical exam and x-ray
  - Treated with NSAIDs and injection initially, surgery in recalcitrant cases
- Gleno-humeral arthrosis
  - Pain with ROM of shoulder
  - Diagnosed by physical exam and x-ray
  - Treated with NSAIDs and injection initially, surgery in recalcitrant cases
Elbow

- Fractures
  - Humeral
    - Diagnosed with physical exam and x-ray
    - Shaft fractures usually treated with Sarmiento brace
      - Rod is also an option for early mobilization
    - Distal humeral fractures can be treated closed with immobilization if non-displaced; otherwise they almost always require surgical fixation
  - Radial head fractures
    - Diagnosed with physical exam and x-ray
    - Impacted fractures are treated with early ROM
    - Displaced fractures treated with surgical fixation or replacement
Elbow

- **Ulna**
  - Usually olecranon fracture
    - Diagnosed with physical exam and x-ray
    - Displacement requires surgical fixation
      - Non-displaced fractures can be treated with immobilization

- **Overuse**
  - Medial/lateral epicondylitis
    - Medial = golfers elbow
    - Lateral = tennis elbow
    - Comes from straining of the tendon origin of the muscle wad at the elbow
    - Diagnosed with physical exam and x-ray
    - Treatment with RICE therapy, bracing, injection, therapy and surgery
Olecranon bursitis
- Comes from pressure placed on the elbow
- Diagnosed with physical exam and x-ray
- Treatment includes activity modification, NSAIDs, elbow pads, aspiration +/- corticosteroid and surgical resection

Ulnar nerve neuritis (Cubital tunnel syndrome)
- Compression neuropathy of the ulnar nerve
- Positive tinels at the elbow
- Diagnosed by physical exam and confirmed by EMG
- Treatment includes bracing (especially at night), B-vitamins, NSAIDs and surgical release +/- transposition
Elbow

- Aging
  - Arthritis
    - Radial – Capitellar
      - Treat with NSAIDs, injections and radial head arthroplasty if necessary
    - Ulnar – Humeral
      - Treat with NSAIDs, injections and total elbow arthroplasty if necessary depending on function
      - Fusion of the elbow is treatment in high demand individuals who fail conservative treatment
Fractures

- Radius
  - Extra-articular
    - Amenable to a trial of closed reduction
    - Recheck at 2 weeks regardless of pattern to assure no loss of position
      - *Any* position changes then refer
  - Intra-articular
    - Likely will need referral for definitive treatment
    - Recheck at 2 weeks regardless of pattern to assure no loss of position
      - *Any* position changes then refer
Fractures

- Ulna
  - Styloid fractures
    - Usually benign
    - Associated with other fractures
    - Often treated conservatively
      - Splint
      - Early ROM
  - Shaft
    - Look for additional injury
      - Pay attention to elbow – any pain then refer!
Fracture

- Carpals
  - Usually require referral for management
  - Displaced fractures require fixation
  - Low index of suspicion for concomitant injury
    - Scapho-lunate ligament
    - Perilunate dislocation
    - Acute carpal tunnel

- Metacarpals
  - Usually treat with a splint if alignment is acceptable
  - Can be pinned or plated if position is not acceptable
Fracture

Phalanges

- Proximal and middle usually treatable with any form of stabilization for a short period with ROM
- Distal simply require immobilization
- Open fractures of the fingertip need to be cleaned and oral antibiotics but are NOT emergencies
- Watch for associated injuries
  - Tendon laceration
  - Nail bed laceration
  - Joint dislocation
Overuse

- Trigger finger
  - Stenosis of the A1 pulley to any digit
    - Treat with NSAIDS and corticosteroid injection first
    - Release when conservative treatment fails
      - Percutaneous
      - Open

- Dequervain’s tenosynovitis
  - Stenosis of the 1st dorsal compartment (thumb)
    - Treat with NSAIDS and corticosteroid injection first
    - Release when conservative treatment fails
Overuse

- Carpal tunnel syndrome
  - Positive Tinel's
  - Positive Phalens at <1 minute
  - +/- EMG
  - Treat initially with wrist splint
    - Should be at neutral not “cocked up”
  - Use B-Complex supplements
  - +/- NSAIDs
  - Check concomitant disease states
    - Thyroid  Myxedema  Rheumatoid  Heart failure
    - DM  Lupus  Renal disease  etc.
Overuse

- Carpal tunnel syndrome
  - Corticosteroid injection
    - May have limited benefit
    - Difficult to ensure delivered correctly
    - DO NOT inject nerve!
  - Release
    - Open – traditional, reliable, no contraindications based on disease state.
    - Limited open/percutaneous – more modern, contraindicated in many disease states.
Aging
  - 1st CMC arthritis
    - Base of the thumb
    - Women > Men
    - Positive grind test
    - Treatment with topical NSAIDs, oral NSAIDs, injection, bracing and arthroplasty of the CMC joint

Arthritis of the carpals
  - Throughout the wrist/hand
  - Treatment with topical NSAIDs, oral NSAIDs, injection, bracing
  - Fusion (limited or full) is surgical treatment of choice except in extremely low demand patients
Aging

- MCP, PIP and DIP
  - Treatment with topical NSAIDs, oral NSAIDs, injection
  - Fusion as last resort for recalcitrant cases
    - Arthroplasty of the MCP and PIP are possible if low demand patient
The Half Way Point!
Fracture

Pelvis
- Rami – usually not emergent but painful
  - Treat symptomatically
  - Evaluate for osteoporosis
- Acetabulum
  - Non-displaced treat non-weight bearing
  - Displaced require surgical evaluation

Femur
- Head fracture
  - Non-displaced treat non-weight bearing
  - Displaced require surgical evaluation
Fractures

Femur

- Neck
  - Usually require some form of fixation depending on the neck
  - Mobilization of the patient is key
  - Arthroplasty recommended over 75 yo to allow full WB

- Intertrochanteric/Subtrochanteric
  - Usually treated with open reduction internal fixation (ORIF)
    - Can be plate or rod fixation
    - Mobilization of the patient is key
Overuse

- Trochanteric bursitis
  - Lateral hip pain from greater trochanter to the knee
  - Worse with pressure
    - Wakes from sleep or when patient rolls on their side.
  - Treat with topical NSAIDs, oral NSAIDs, corticosteroid injection and physical therapy
  - Bursoscopy (Arthroscopy) and resection is restricted for recalcitrant cases
- **Overuse injuries**
  - **Hip pointer/Groin strain**
    - Straining of the fibers attaching the muscle to bone
      - May result in an avulsion type fracture
    - Usually diagnosed clinically after x-rays are negative
    - Treated with RICE therapy and gentle stretching with activity modification.
  - **Piriformis syndrome**
    - Can mimic sciatica
    - Posterior hip pain
    - Aggravated by certain positions (driving)
    - Treat with NSAIDs and a stretching program
    - Injection in recalcitrant cases
Aging

- Hip arthritis
  - Limited ROM
  - Groin or buttock pain
  - Morning stiffness or after periods of rest
  - Diagnosis confirmed by x-ray
  - MRI of little value if arthritis is seen on x-ray
  - Treatment with NSAIDs and/or injection of corticosteroid
  - Total hip for patients that have persistent symptoms
    - Variety of approaches
    - Variety of implants
    - Variety of venues
Knee

- Fractures
  - Femur
    - Condyles
      - Non-displaced fracture may be treated by non-weight bearing
      - Displaced fractures require surgical repair
    - Avulsion
      - From collateral attachment
      - May render the knee unstable
      - Usually treated conservatively unless a high level athlete
        - RICE and ROM bracing
Fractures

Tibia

- Plateau
  - Nondisplaced treated conservatively up to 5-10 mm displacement
  - RICE
  - Immobilizer or casting
  - Displaced fracture usually treated surgically

- Tibial spine
  - May indicate an ACL tear
  - May be repairable and warrants urgent referral
  - Limit activity and non-weight bearing
Fractures

Fibula
- Common fracture with compression
- Watch out for associated ankle pain
  - If the patient has ankle pain in addition to the fibula fracture then refer for evaluation
- Usually treated conservatively

Patella
- Non-displaced treated with immobilization
- Displaced require surgical intervention
Overuse
- Patellar tendonitis
  - Runner’s knee
  - Painful during and immediately following exercise
  - Diagnosed clinically
  - Treated with PT, activity modification, NSAIDs, topical medications and bracing
    - Should not be injected as this may lead to tendon rupture

- Pes Bursitis
  - Inflammation of the bursa medial inferior to knee
  - Aggravated by repeat knee twisting
  - Treat with NSAIDs, PT, bracing and injection
Overuse

- Patellofemoral syndrome
  - Symptoms include pain beneath the patella, crepitus, feeling unstable, difficulty climbing stairs, pain when first rising from a seated position
  - Caused by motor imbalance in the extensor mechanism or mechanical problems in the patellofemoral articulation
  - Diagnosed clinically but MRI may confirm severe cases
  - Treated with therapy mostly
    - May use NSAIDs and/or injection to alleviate severe symptoms
    - Surgery may be needed if all conservative treatment fails
Knee

- Overuse
  - Meniscal tear
    - Pain along joint line
    - Instability
      - Buckling
      - Giving way
    - Diagnosed clinically but confirmed on MRI
  - Healing is age dependent with a higher probability in younger patients
    - Acute tears in younger patients should be operated quickly to preserve function
    - Degenerative tears often associated with arthritis and overloading of repair is common
Aging

Arthritis

- Patellofemoral
  - Similar to patellofemoral syndrome
  - Isolated PF arthritis is rare

- Tibiofemoral
  - Can be from many causes
    - Osteoarthritis (70%)
      - Usually medial but can affect the entire knee
      - Stiffness with first rising
      - Aching
      - Loss of ROM slow and insidious
    - Treat with NSAIDs, injection, bracing and surgery is always the last option
Aging
  Arthritis
    Tibiofemoral
      Osteoarthritis
      Surgical options
        High tibial osteotomy
        Unicompartmental knee arthroplasty
        Total knee arthroplasty
      Tibiofibular
        The forgotten joint of the knee
        Can be painful either due to arthritis or impact
        Diagnosed clinically and confirmed on either CT or MRI
        Treated with NSAID, topicals or injection
Fracture

- Tibia
  - Distal tibia
    - Plafond
      - Difficult to treat
      - Usually involve joint
      - Nondisplaced fractures treat closed
      - Displaced fractures require fixation
    - Malleolus
      - Isolated medial malleolar may be treated conservatively
      - Displacement of $> 5$mm should be cause for surgical referral
Fracture

Fibula
- Nondisplaced fracture can be treated with immobilization
- Displaced fractures usually should be fixed
- Beware of medial pain as this can indicate instability

Syndesmosis
- This is a special case.
- Ligament that holds the fibula to the tibia giving the ankle its stability
- If the ankle looks shifted in the least refer for surgical evaluation
Fracture

- Talus
  - Poor blood supply
  - Fracture bears a bad prognosis
  - Should be seen by ortho
  - Diagnosed by CT as x-ray is usually difficult to see

- Calcaneus
  - Common fracture with a fall landing on foot
  - Extent of fracture does not predict the outcome of the injury
  - Equivocal evidence that fixation is better than conservative treatment
  - Long term outcome of intra-articular fractures is usually fusion
Fracture
  - Remaining tarsals
    - Nondisplaced fractures can be treated conservatively
    - Beware of compartment syndrome
    - Use CT to establish the extent of injury
      - These are ALWAYS worse than the x-ray suggests
    - Treatment for displaced fracture is usually pinning but often leads to later fusion
  - Metatarsals
    - Similar to tarsals
    - Can treat most fractures conservatively as long as the foot remains planta grade
    - Large angular deformities should be referred
Fracture

- Phalanges
  - Usually treated with conservative management
  - Great to can be pinned or plated if displaced
Ankle and Foot

- **Overuse**
  - Achilles tendonitis
    - Diagnosed clinically
    - Can be confirmed and/or staged with MRI
    - Treat with NSAIDs, splinting (specifically at night), topicals and therapy
    - Activity modification will be beneficial to prevent recurrence or rupture
  - Plantar fascitis
    - Diagnosed clinically
    - X-ray usually shows calcaneal spur
      - NOT the cause of pain
Ankle and Foot

- **Overuse**
  - Plantar fascitis
    - Calcaneal spur
      - Is a result of the traction of the fascia on the calcaneus
      - Treat with NSAID, Injection, therapy and night splints

- **Aging**
  - Arthritis in the ankle can be treated with arthroplasty in low demand patients
  - Initial treatment with NSAIDs, injection and topical
  - Bracing may decrease symptoms
Aging

- Definitive treatment of arthritis of the ankle and foot us usually by fusion of the painful joints
  - This results in a cascade of overload on the surrounding joints necessitating further surgery in time
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