Common Ambulatory Orthopedic Complaints

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Disclosures

- Bioventus
- Flexion Therapeutics, Inc
- Ossur

Objectives

- Upon completion, participation should be able to:
  - Identify common orthopedic conditions seen in PC office
  - Expand history taking & physical exam skills when evaluating a patient with a musculoskeletal complaint
  - Identify when additional imaging and treatment is needed of common orthopedic conditions
  - Assess when to treat and when to refer

Counseling our patients

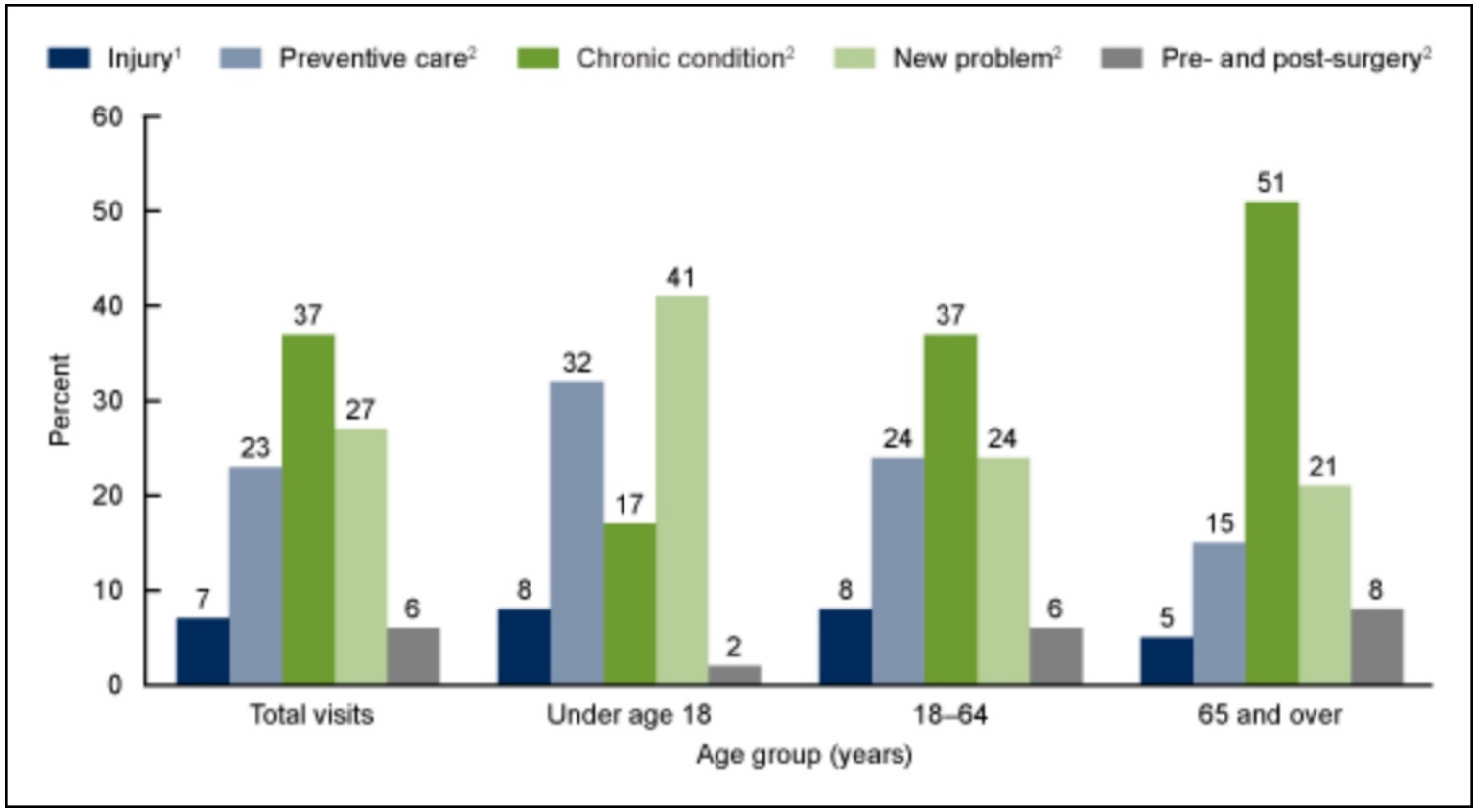
- The public health benefits of increasing physical activity within the general population are potentially enormous due to:
  - The high prevalence of sedentary lifestyles, obesity, and diabetes
  - The impact increased physical activity has on disease risk
  - The morbidity and mortality related to falls
  - Financial burden
  - It is important as health care providers that we encourage our patients to be active but need to help guide them in the general principles of exercise
  - With exercise and in life injuries happen and we must be equipped with some knowledge in MS medicine

National Health Statistics Reports

- Sheu, et al reported on sports and recreation-related injury episode in the US, 2011-2014
- Average annual estimate of **8.6 million sports- & recreation-related injury** age adjusted rate of 34.1 per 1,000 population
- Males – 61.3% & 5-24 yrs. 64.9 % of more that ½ of injury episodes
- Injury rates higher among males, children 5-14 yrs old, Non-Hispanic white persons
- **50%** of the injury episodes resulted in **treatment at doctor's office or other health clinic** without ER or hospitalization
- **General exercise most frequent activity** but varied across sex and age groups
- Body regions injured: Lower extremity (42.0%), upper extremity (30.3%), and head and neck (16.4%)

National Health Statistics Reports
Number 99, November 18, 2016

Major reason for office-base physician visit, by age: US, 2016



Ashman, JJ,Rui P, Okeyoda,T. Characteristics of Office-based Physician Visits, 2016. **NCHS Data Brief ■ No. 331 ■ January 2019**

Mayo Top 10 Common Conditions

- Skin disorders
- Osteoarthritis and joint disorders (33.6%)
- Back Pain (23.9%)
- Cholesterol problems
- Upper respiratory conditions, excluding asthma
- Anxiety, depression, and bipolar disorder
- Chronic neurologic disorders
- High blood pressure
- Headaches and migraines
- Diabetes

Common Orthopedic Conditions

- Arthritis
- Bursitis
- Fibromyalgia
- Foot Pain and Problems
- Fractures
- Hip Fracture
- Low Back Pain
- Hand Pain and Problems
- Knee Pain and Problems
- Kyphosis
- Neck Pain and Problems
- Osteoporosis
- Paget's Disease of the Bone
- Scoliosis
- Shoulder Pain and Problems
- Soft-Tissue Injuries

JOHNS HOPKINS MEDICINE

Musculoskeletal Training

- John Hopkins Bayview Medical Center residents identified MS medicine as a gap in their IM training & reported barriers to training in MS medicine
  - Lack of general internal medicine preceptors with sufficient skills in MS procedures
  - Lack of concentrated MS clinic experience
- Established a PC MS curriculum
- Compared 1 month MS Clinic experience with that experienced by residents throughout the year in their hospital-based ambulatory house staff clinic

Houston, TK, Connors, RL, Cultler, N, Nidiry MA. A Primary Care Musculoskeletal Clinic for Residents – Success and Sustainability. J GEN INTERN MED 2004;19:524–529.

CV

- Most common diagnoses in MS clinic: knee, back, shoulder, and hip pain
- Most common diagnoses in house staff clinic was nonspecific arthralgia and most diagnoses were rarely recorded

Basic Principles

- Musculoskeletal Pain:
  - Acute/Traumatic Injury
    - Fracture
    - Muscle Strain
    - Ligament Sprain
  - Repetitive Stress
    - Tendinitis/Tendinopathy
    - Nerve entrapment
  - Medical Condition
    - Joint inflammation
    - Muscle inflammation
    - Infection

History

- History is high yield
  - MOI – Atraumatic vs Traumatic, repetitive stress, or medical condition
  - Acute or chronic
  - How did injury occur?
  - How long have symptoms been present?
  - Swelling, locking, or instability
- What makes it better/worse?
- What activity/movement makes it hurt?
- Able to ambulate, raise your arm…
- Pain – constant, only with activity, night pain, able to sleep
- Prior history of similar symptoms
- Red flags

Differential Diagnosis

- Common is common

Physical Examination

- Confirms or at very least narrows the diagnosis
- The power of observation
  - Watch the patient get up and out of chair
  - How do they ambulate
  - Assistive devices
  - Compensatory movements

Physical Exam

GOAL: Find out WHERE it hurts and WHAT makes it worse

- Inspect
  - Visible abnormality, deformity
  - Redness, swelling
- Palpate
  - Tenderness over bone, soft tissue
  - Evidence of inflammation/infection:
    - Warmth, redness, effusion, edema
- Maneuvers
  - Range of Motion
    - Active/Passive
  - Strength
  - Resisted contraction

Imaging – When & What type

- Plain radiographs – weightbearing!!
- MRI/CT – depends on the situation
  - Should not be your GO TO TEST

Shoulder Pain

- Anatomy
- Specific conditions
- Treatment
- Prevention

ANATOMY

Dynamic interplay

- Joints
- Muscles
- Ligaments

Shoulder mobility

Shoulder Pain

- **History**
  - Acute or chronic
    - Activity
  - Traumatic or atraumatic
    - MOI
  - Weakness, radiation of pain, neck pain
  - Swelling, locking, or instability
  - Pain – constant, only with activity, night pain, able to sleep

MOI

- Fall
  - On outstretched hand
  - On to the shoulder
  - Over the handle bars
- Repetitive activity
  - Sports
  - Painting
- No specific injury

Falls =

- Contusions
- Fractures
- Acute tendinitis
- RTC tears
- Labral tears

Repetitive Activities =

- Tendonitis/tendinopathy
- Bursitis

No specific injury =

- Age – overuse
- Tendinopathy
- OA

Fractures

- Refer

Exam

- Observe
  - Deformities
  - Shoulder hike
  - Atrophy
- Cervical & Shoulder ROM
- Palpate the joints

EXam

- Check RTC strength
- Biceps - Speeds
- Impingement

Rotator Cuff Injuries

- Common sports: overhead activity
- Continuum: strain → tear
- Mechanism
  - Acute
  - Chronic: repetitive trauma - overhead, internal, external rotation
- Symptoms – continuum
  - Initially – minimal pain with activity
  - Without tx – pain with ADLs, overhead, lifting movement away from body, **NIGHT PAIN**
  - Eventually – loss of ROM & nocturnal symptoms
- Weakness

OA

- GH, AC

IMaging

- When and what kind?
- Clinical situation
  - Concern for fracture
  - OA
  - RTC tear

General Principals of Management

- **Treatment**
  - Activity modification
    - Reduce aggravating factors
  - Physical therapy
    - ROM
    - Strength: SITS + scapular stabilizers
  - Pain relief
    - Ice, anti-inflammatory meds
  - Injections
    - Diagnosis

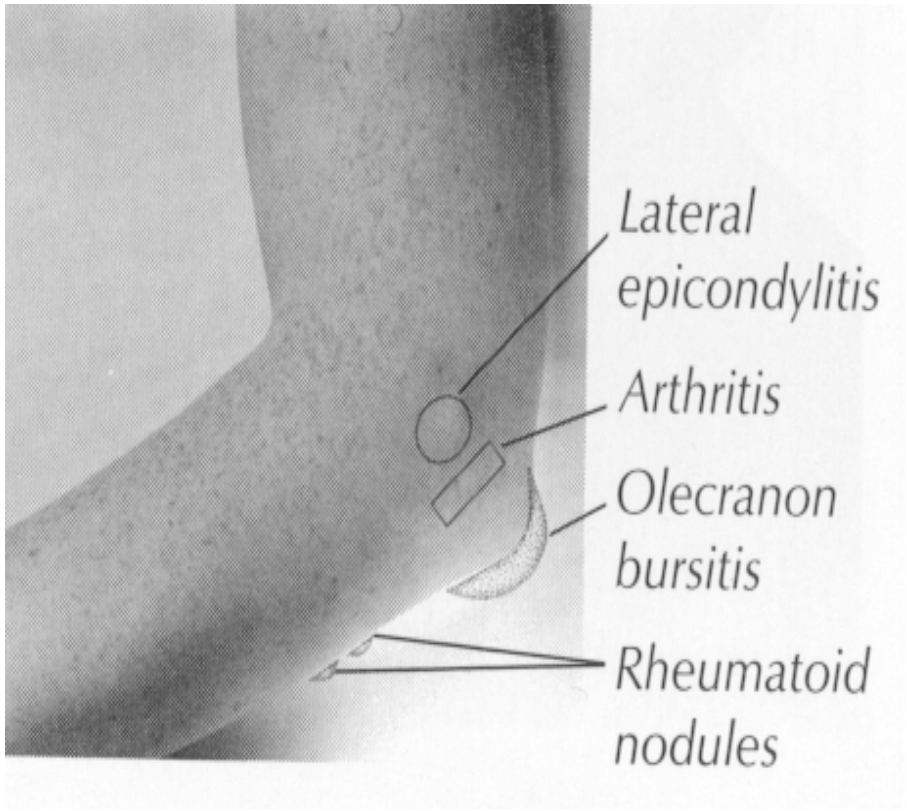
- **When to refer**

Treatment of Shoulder Pain

- Goals
  - Control pain
  - Improve function
  - Enhance quality of life

ELBOW

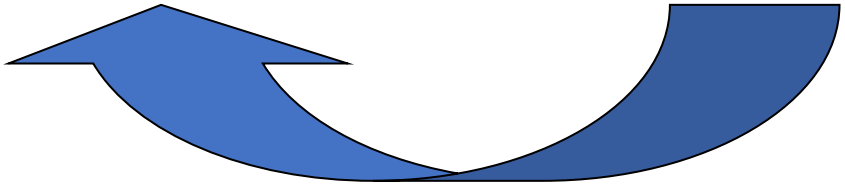
Elbow Pathology



Mechanism of Injury

- Traumatic vs Atraumatic
- Poor tendon blood supply
- Insufficient healing

Injury → Microtear → Rupture



Falls =

- Contusions
- Fractures
- Bursitis

Exercise / Repetitive Activities =

- Tendonitis/tendinopathy
- Tears

Epicondylitis

- Repetitive stress/overuse tendinosis
  - “Tennis elbow” on lateral side
  - “Golfer’s elbow on medial side

“Tennis Elbow”

- #1 elbow affliction
- 35-60 y.o.
- Men >> Women
- Dominant arm 75%
- 50% of tennis players > 30

History & Exam

- History
  - Pain is typically dull ache, gradual in onset
  - Repetitive activity
  - Worse with grasping, opening jar
- Exam
  - Point of maximum tenderness well localized by pressure over tendon origin
  - Swelling may be present
  - ROM
    - Painful wrist flexion/extension
      - Painful resisted extension/flexion
    - Decrease grip strength
    - **

Nonoperative Treatment

- Modified Activity
- NSAIDs
- Counterforce Brace
- OT
- Injection
- U/S
- Shock wave
- Botox

75-90% Success

Rehabilitation

- Work/home modifications
- Functional progression

Olecranon Bursitis

- Fluctuant mass over olecranon (point of elbow)
- May result from repetitive or acute trauma
- May become infected (red, tender, swelling in arm)

- Treatment:
  - Avoid irritation
  - Compression
  - Antibiotics if infected
  - Aspiration may be helpful

Hip Pain

MOI

- Fall
  - On lateral hip - contusion/bursitis
  - Twisted and fell on hip – fracture
    - Pelvis
    - Hip
    - Femur

- Exercise/Repetitive activity
  - Bursitis
  - Tendonitis/tendinopathy
  - Stress fracture

Hip Pain – Intra-articular

- Arthritis
- Femoroacetabular impingement
- Labral tears
- Avascular necrosis

Alternative diagnoses

- Alternative diagnoses
  - Lumbar spine
  - Pelvis / SI joint
  - Other
    - AVN
    - Inflammatory
    - Infectious
    - Neoplastic

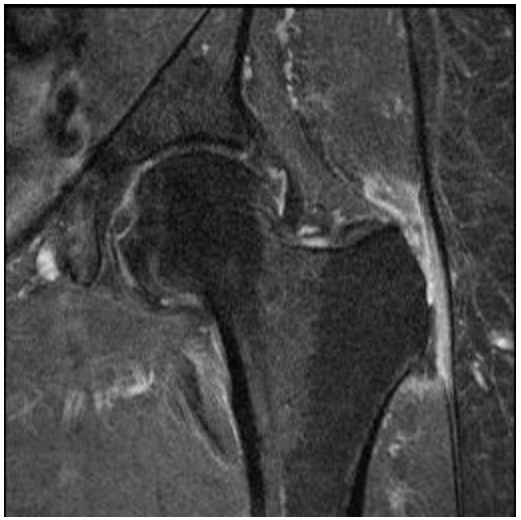
Greater Trochanteric Bursitis

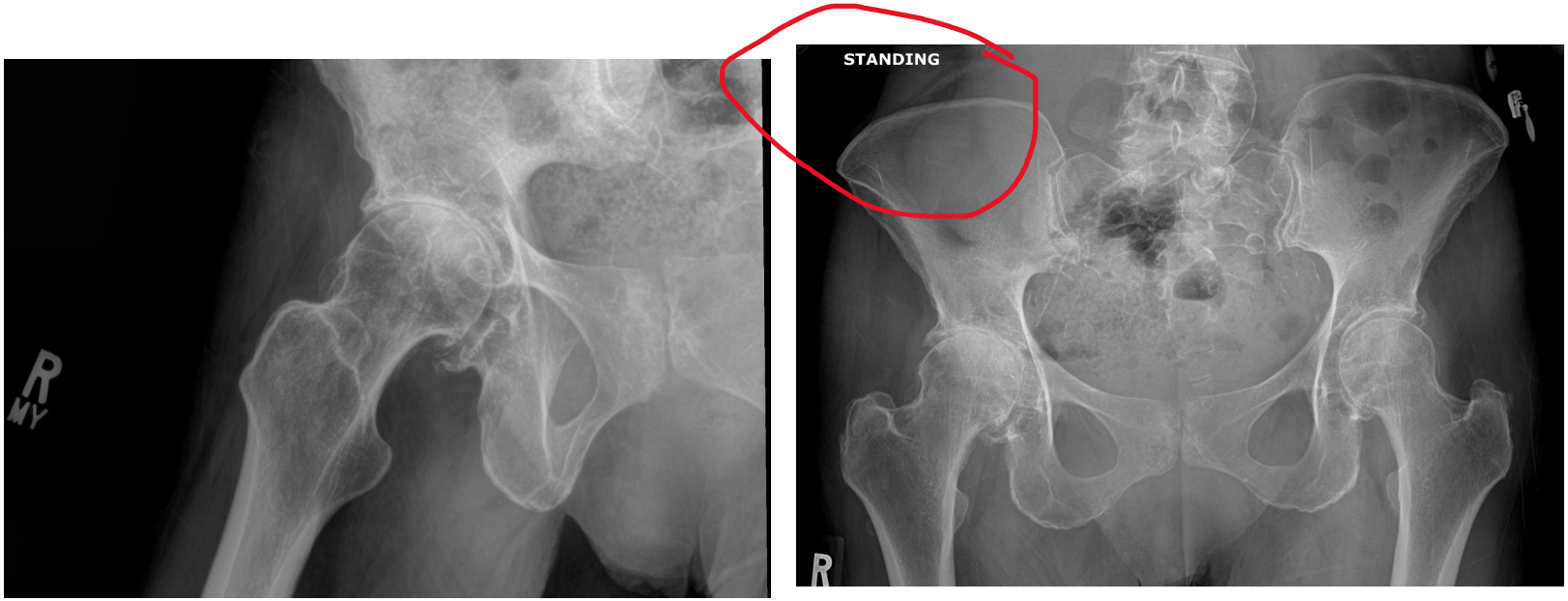
- Acute or Chronic
- Lateral hip pain
- Pain over the greater trochanter
- Refers lateral hip & thigh
- Women > Men 4:1
- Difficulty with transitional movements
- Sleeping

Greater Trochanteric Bursitis

- Examination
  - TTP at greater trochanter
  - Tight ITB
  - Weak side-lining hip abduction
- Treatment
  - PT/HEP
    - Stretching
    - Strengthening
    - Icing
  - Medication
    - Oral, topical, Injection
- Refractory or recurrent symptoms
  - Imaging

Gluteus Medius Tendinopathy





HIP OA

OA

- History
  - Acute or chronic
  - Stiffness, limp, loss ROM
- Examination
  - Loss of ROM
  - Pain with hip flexion, IR, ER

Treatment

- Activity modification
- Physical therapy
- Meds
- Bracing
- Surgery

Knee Pain

“The knees are the first thing to go!”

History

- Acute or chronic
- Atraumatic or traumatic
  - MOI
- Did they hear a “pop”
- Swelling, locking, or instability
- Able to ambulate, raise your arm…
- Pain – constant, only with activity, night pain, able to sleep
- What activity/movement makes it hurt?

Patellofemoral Pain

- History
  - Anterior knee pain often after recent change in activity or training program
  - Pain drawing
    - Pain usually difficult to pinpoint
    - Localization
    - Often felt “under knee cap”
    - “Clicking” or “Popping”
  - Swelling +/-
  - “Giving Way”
  - Often bilateral symptoms
  - Stair/sitting stiffness
    - Symptoms worse after prolonged sitting (“theatre sign”) or with hills/stairs

Physical Examination

- P.E.
  - Patella facet tenderness
  - May have anteromedial or anterolateral joint line pain
  - Crepitation
  - McMurray negative
  - Pain with squatting
  - Flat footed, VMO atrophy
  - Positive compression / grind test

Treatment

- 95% plus patients treated never require surgery
- Activity Modification
- Ice & Anti-inflammatory medication
- Therapeutic exercises
  - Home exercise program vs. physical therapy

Patellofemoral: Rehabilitation

- Pain free exercise arc (avoid terminal extensions)
- Manual stretching of tight structures
- Low impact closed chain programs - pool programs
- Centralize patella (taping, bracing)
- VMO strengthening, hip adductors and external rotators

Patellofemoral Pain

- Most common problem in the sports medicine office
- 10-15% high school athletes anterior knee pain
- 30-70% runners c/o anterior knee pain

KNEE OA

History & Exam

- Acute or chronic
- Stiffness, loss ROM, recurrent swelling
- Diminishing quality of life

- Xrays show tricompartment OA with loss of joint space
- MRI ordered with the following results…

MRI

FINDINGS:

Maceration of the posterior horn of the medial meniscus is seen.
Mild knee joint effusion is seen.
Chondromalacia patella is seen as subchondral cyst formation along the lateral articular facet of patella.
Kissing contusion seen at the medial tibiofemoral joint.
Subchondral cyst formation measuring 0.5 cm seen at the posterior aspect of the medial femoral condyle.
Mild edema noted within the subcutaneous tissues of the anterior knee along the patellar tendon.
Osteophytic loose bodies also seen within the tibiofemoral joint.
Sprain of the medial collateral ligament is also seen.
Anterior and posterior cruciate ligament, lateral collateral ligament and lateral meniscus appear normal.
Normal appearing quadriceps tendon.
Normal Hoffa's fat.
Other visualized bones appear normal.

Beware of Barf and patients who Vomit

BARF

Brainless Application of Radiological Findings

VOMIT

Victim of Modern Imaging Technology

Richard Hayward, BMJ, 2003

Treatment

- HEP vs PT
  - ROM/Strengthening
  - Focus on hip
- Weight loss or maintenance of normal weight
- Medications
- Oral, topical, injectables
- Failed conservative treatment
  - TKA

Weight Loss

- AAOS Guideline: any patient with symptomatic OA of the knee and BMI > 25 should be encouraged to lose weight

- Level of Evidence: 1
- Functional improvements are greater than pain score improvements

Surgical Interventions

Arthroscopy

- Only for unstable meniscal tears, cartilage flaps with mechanical symptoms and joint space
- AAOS Guideline: against arthroscopy with debridement/ lavage for primary OA of the knee

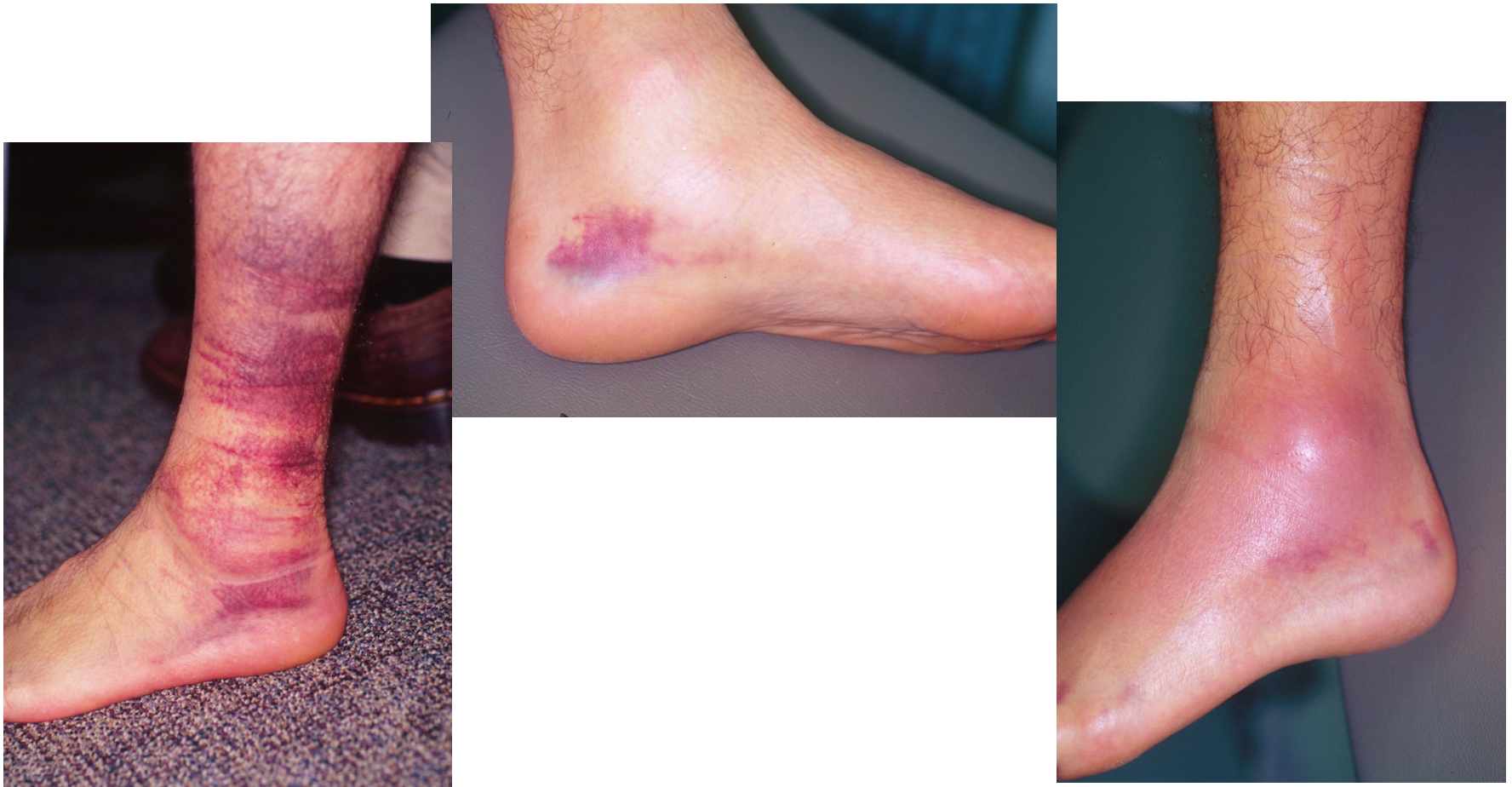
- 50-75% will have initial benefit, however, 15% progress to TKA within 1 year of surgery

Meniscus

- MOI
  - Twisting
  - Squatting
- Swelling
- Catching or locking
- Imaging
  - X-rays *
  - MRI
- Refer

Ankle Sprains

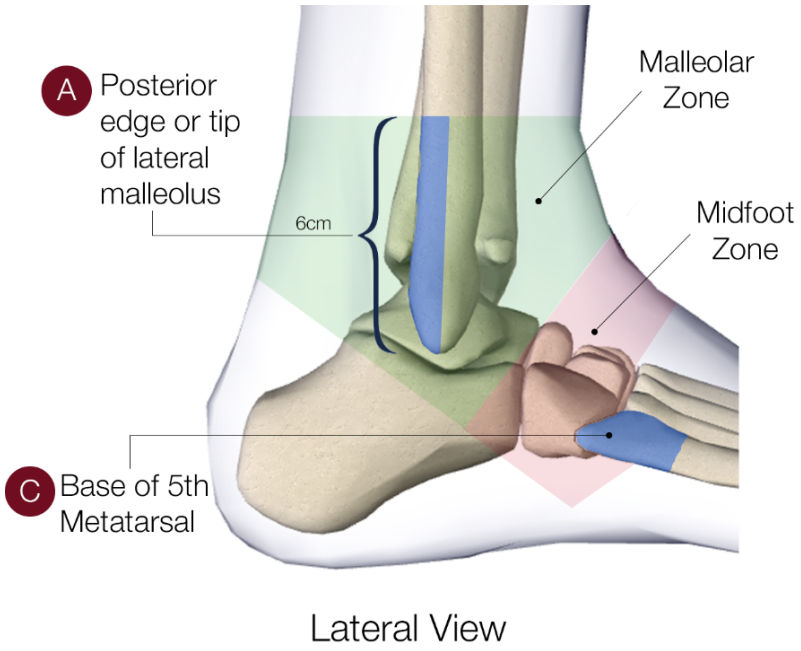
Swelling & Ecchymosis



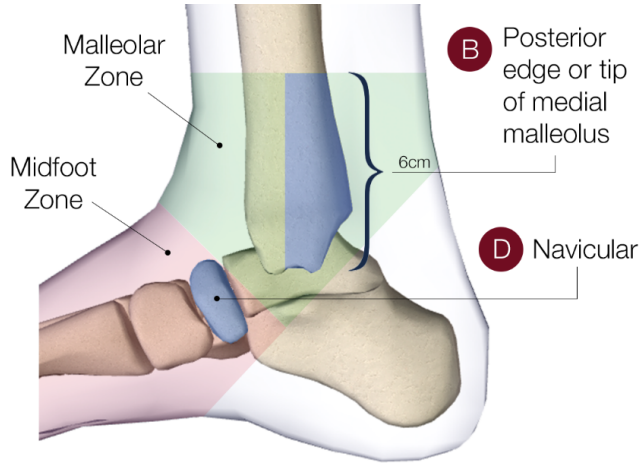
History

- Inversion or eversion of the ankle
- Pain, swelling, inability or difficulty with ambulation

Ottawa Ankle Rules



Lateral View



Medial View

Stiell IG, Greenberg GH, McKnight RD, Nair RC, McDowell I, Worthington JR. A study to develop clinical decision rules for the use of radiography in acute ankle injuries. Ann Emerg Med. 1992; 21:384–90.

Injury Classification

- Grade I: Minimal Laxity
- Grade II: Moderate Laxity with Endpoint
- Grade III: Laxity without Endpoint

Lateral Ankle Sprain: Treatment

- Isolated Injury: Non-Surgical
- Grade II: Air Stirrup / Brace
- Grade III: Occasional Cast
- Crutches for Comfort

Ankle Sprain Rehab

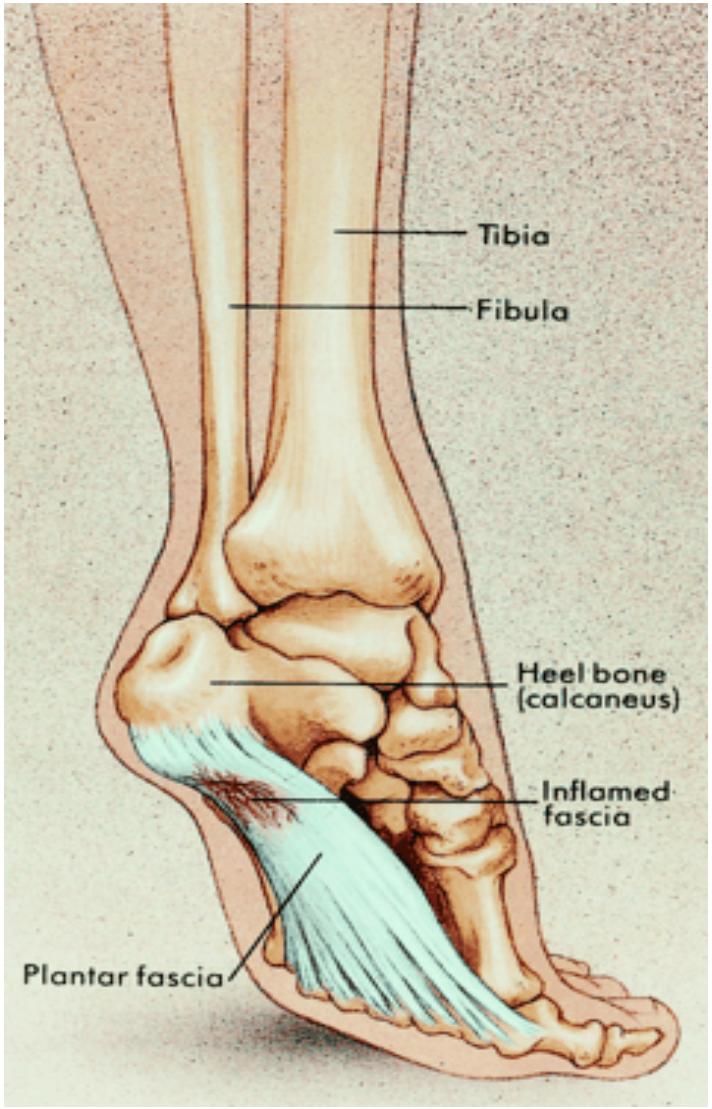
- Restore ROM
- Eliminate Swelling
- Restore Strength & Proprioception
- Consider Brace

Foot pain

History & Physical Exam

- Runner or walker presents with heel pain
  - Worse with first few steps out of bed in the morning or after prolonged sitting
  - No trauma
- Examination
  - Pain located insertion of medial cord of the plantar fascia heel but may radiate to sole or lateral foot
  - Tight heel cords
- Diagnosis?

Heel Pain – Plantar Fasciitis



Plantar fasciitis

- Origin: medial calcaneus
- Insertion: bases of prox phalanges of digits, plantar plates of MTP jts
- Etiology: tight achilles; forced turn out (foot pronation); center of gravity over plantar aspect of foot
- Pain on passive extension of toes and direct tenderness over plantar fascia (central midfoot)

Symptoms

- Pain most severe after rest, especially after just getting up in the morning
- Lessens with activity

Plantar Fasciitis

- Commonest cause of plantar heel pain
- Approximately 10% of distance runners
- Common in obese middle age or elderly patients with excessive standing or walking or change in shoes
- Overuse

Surgical treatment

- Surgery for this disorder is very rare

Treatment

- Reduce pain & inflammation
  - Ice & anti-inflammatories
  - Stretch & strengthening programs
    - Achilles tendon and gastroc-soleus complex
    - 15-30 secs w/o bouncing to avoid triggering reflex
- Massage (golf ball, roller)
- Arch supports, orthotics
- Cross train—avoid aggravating activities

Treatment

- Night Splints for plantar fasciitis
  - Used to hold the plantar fascia and achilles tendon in stretch during the night

Summary

- MS injuries are common
- It is important as physicians that we have a good understanding of the presentation/MOI/evaluation and management of MS injuries
- Understanding when and when not to order imaging
- Common injuries typical respond to appropriate treatment – if that is not the case, re-evaluate, further imaging or referral may be needed

QUESTIONS!

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