


Sports Medicine for Primary Care  
Providers:  
*What you can feel comfortable with*

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11/9/11

Overview - Objectives

- Provide a basic understanding of musculoskeletal evaluation
- Raise comfort level in management of sports injuries
- Know when to fold.....refer

Introduction

- Musculoskeletal Injuries 
  - Google
  - “musculoskeletal complaints primary care”
  - >68,000 hits

Introduction

- Musculoskeletal (MS) Injuries/Disorders
  - >40 million Americans have them
    - Mahowald ML. *High Impact Rheumatology for Primary Care Physicians*. Atlanta Ga: American College of Rheumatology; 1999
  - 10-15% of all primary care visits are MS related
    - Lawry GV, II, Schuldt SS, Kreiter CD, Densen P, Albanese MA. Teaching a screening musculoskeletal examination: a randomized, controlled trial of different instructional methods. *Acad Med*. 1999;74:199–201
  - 70% of all new MS injuries are seen first by a primary care physician
    - Praemer A, Furner S, Rice DP. *Musculoskeletal Conditions in the United States*. Rosemont Ill: American Academy of Orthopedic Surgeons; 1992.

Introduction

**A Primary Care Musculoskeletal Clinic  
for Residents**

***Success and Sustainability***

Thomas K Houston, MD, MPH,1,2 Robert L Connors, MD,3 Naomi Cutler, MD,3 and Mary Anne Nidiry, MD3

*J Gen Intern Med*. 2004 May; 19(5 Pt 2): 524–529.

Introduction

- Johns Hopkins Internal Medical Residency
  - Assessed and eventually modified curriculum
    - “they had some knowledge but were lacking most procedural and diagnostic skills related to musculoskeletal medicine”
    - “ortho and rheum clinics were too specialized”
    - Created a primary care musculoskeletal clinic and it worked

## Introduction

- **The inadequacy of musculoskeletal knowledge after foundation training in the United Kingdom**  
Al-Nammari SS, James BK, Ramachandran M.  
*J Bone Joint Surg Br.* 2009 Nov;91(11):1413-8.
- **More evidence of educational inadequacies in musculoskeletal medicine**  
Schmale GA  
*Clin Orthop Relat Res.* 2005 Aug;(437):251-9.
- **Musculoskeletal medicine: an assessment of the attitudes and knowledge of medical students at Harvard Medical School.**  
Day CS, Yeh AC, Franko O, Ramirez M, Krupat E.  
*Acad Med.* 2007 May;82(5):452-7.

## Introduction

- **Summary:**
  - Only 50% of U of W 4<sup>th</sup> year medical students passed a basic MS assessment of knowledge
    - 78% passed if they had taken elective
  - Only 13% of 'junior doctors' felt they had adequate MS training

## Introduction

- Even Orthopaedic Surgeon is at fault
- They failed at a higher rate than PCP in basic management of low back pain
- **Orthopaedists' and family practitioners' knowledge of simple low back pain management.**  
Finestone AS, Raveh A, Mirovsky Y, Lahad A, Milgrom C.  
*Spine (Phila Pa 1976).* 2009 Jul 1;34(15):1600-3.

## Introduction

- **Evaluation and Management**
  - Shoulder
  - Elbow
  - Knee
  - Ankle

## Shoulder

- RTC Disease
- Calcific Tendonitis
- Long Head Biceps Tendon Rupture
- Adhesive Capsulitis (Frozen Shoulder)
- Arthritis
- Dislocation
- Acromio-Clavicular (AC) Separation

## Diagnosis

- **History**
  - Most shoulder problems are non-traumatic
    - RTC Disease
    - Adhesive Capsulitis
    - Arthritis
  - **Injury Involved**
    - Dislocation – arm got caught out and above
    - AC Separation – arm was tucked to the side
    - Fracture – fell onto hand/elbow or side of shoulder
    - Traumatic RTC Rupture – fell grasped something



- Injury Involved
  - Dislocation – arm got caught out and above
  - AC Separation – arm was tucked to the side
  - Fracture – fell onto hand/elbow or side of shoulder
  - Traumatic RTC Rupture – fell grasped something

## Diagnosis

- History
  - Age <30
    - Young people do not get RTC disease
    - Think Labral tear or instability!
  - Age 35-60
    - RTC Disease
    - Frozen Shoulder
    - Degenerative Labral Tear
  - Age >60
    - RTC Disease
    - Arthritis

## Diagnosis

- History
  - Pain – often a poor localizing factor
    - Where does it hurt?
      - AC joint – separation or Arthritis of the AC
      - Proximal Humeral Area or Arm – RTC Disease
    - Is it worse at night?
      - RTC Disease – “When I lie down.”
      - AC Joint Arthritis – “When I roll over on that side.”

## Diagnosis


- History
  - Pain – often a poor localizing factor
    - It does not hurt except.....
      - When I sleep – Bursitis or RTC Tendonitis
      - When I do overhead activities – RTC Disease
      - When I throw – labral pathology or instability
      - When it pops out - Instability

## Exam

- Do it the same every time!
  - Inspect for atrophy or deformation
  - Check for neck pathology
  - Check the AC joint
  - ROM (Active and Passive)
  - Strength Testing
  - Neuro Check
  - Special Tests



## Diagnosis

- Exam
  - Always nice to have the shoulder exposed
    - Will not miss:
      - AC Separation
      - GH Dislocation
      - Biceps Rupture
  - Neck ROM
    - Does this cause your shoulder to hurt?
  - Press on the AC joint
    - Is this your main source of pain?



## Diagnosis


- Exam
  - Shoulder ROM
    - Active – what can they do alone?
  
- Passive – can you push them further?
  - Yes or Yes with pain = RTC Disease
  - No = Frozen Shoulder or Arthritis


## Diagnosis

- Exam
  - Strength – a poor predictor!
    - Tears are not always weak
    - Weakness does not always equal tear


Empty Can Position -  
Supraspinatus



Lift-Off or Belly Press –  
Subscapularis





External rotation –  
Infraspinatus






## Diagnosis

- Exam
  - Impingement Tests
    - Neer
    - Hawkins



## Diagnosis

- Exam
  - Instability Tests
    - Apprehension
    - Relocation
    - Surprise

## Diagnosis

- Exam
  - Specialty Tests
    - O'Brien's
      - Superior Labral Pathology
      - RTC Disease
    - Speed's
      - Biceps Tendon Pathology

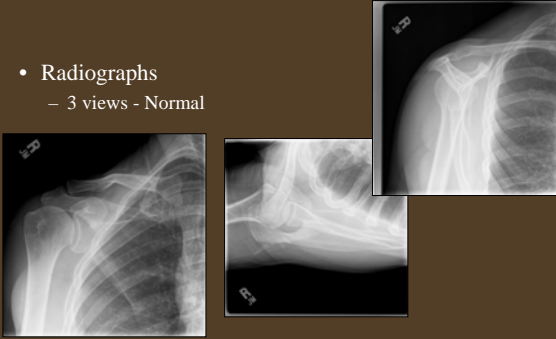



## Diagnosis

- Shoulder Exam Video.....


### Imaging

- Radiographs
  - 3 views - Normal




### Imaging

- Radiographs
  - 3 views
  - Abnormal



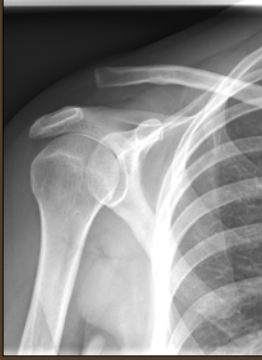
### Imaging

- Radiographs
  - 3 views
  - Abnormal



### Imaging

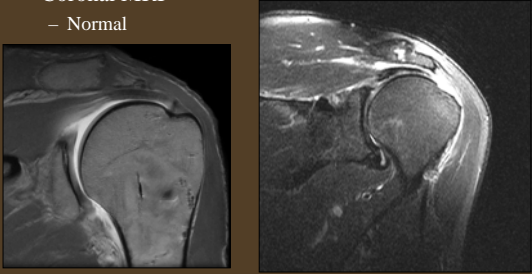
- Radiographs
  - 3 views
  - Abnormal



### Imaging

- Coronal MRI
  - Normal

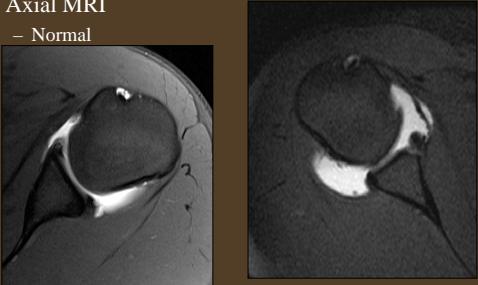
RTC Tear



### Imaging

- Axial MRI
  - Normal

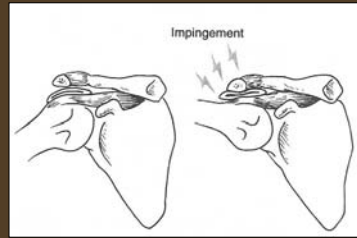
Anterior Labral Tear



### RTC Disease

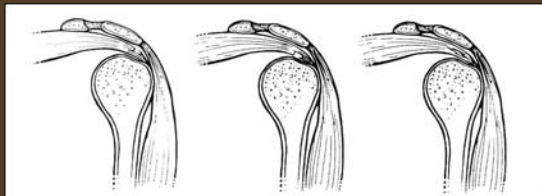
- Impingement
- RTC Tendonitis
- Sub-Acromial Bursitis
- All the same entity
- Inflammation in and around the RTC and bursa
- Swelling in tendon and bursa causes pain
- Aggravated by abnormal motion of the shoulder

### RTC Disease



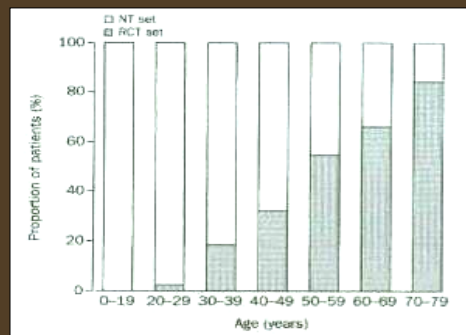
- Impingement/ RTC Tendonitis/Sub-Acromial Bursitis
  - The most common entity and rarely requires surgery

### RTC Disease



- Partial Thickness Rotator Cuff Tear
- Also common as patients age and again does not require surgery

### Rate of cuff tear with age



### Rotator Cuff Disease


- 52 yo male with proximal humeral pain
  - Gradual onset
  - Dull Ache
  - Worse with overhead activity
  - Sleeping poorly due to pain
  - Does not need to play sports.....
  - May have had an inciting event

### Rotator Cuff Disease

- Exam
  - Pain and limited AROM
  - Near full passive ROM
  - Positive Impingement
  - Possible weakness

### Rotator Cuff Disease


- Imaging
  - Radiographs to rule out fracture
    - A must if there is a history of trauma



- MRI should be ordered if .....
  - Patient cannot raise the arm
  - There is significant weakness on stress testing
  - There is any suspicion?

### Rotator Cuff Disease


- Imaging
  - Radiograph
    - A must if



- MRI should
  - Patient c
  - There is
  - There is




### Rotator Cuff Disease

- Treatment
  - Short period of active rest
    - No overhead use
    - Avoid aggravating activity
  - Maintain Motion!!!
    - Do not use a sling
    - Wall Walking
    - ROM exercises
  - NSAID's




### Rotator Cuff Disease

- Physical Therapy
  - 1-2 x week for 8 weeks
  - Personal Trainers do not count!

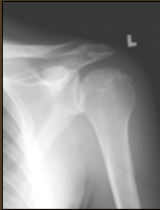

### Rotator Cuff Disease

- Injections
  - Work to reduce inflammation in the sub-acromial bursa
  - A “jump-start” to allow the body and therapy to break the cycle of injury
  - No more than 4 times a year
  - Not Recommended for those with confirmed or suspected rotator cuff tear
  - (Some consider MRI a must!)



### Rotator Cuff Disease

- Early Surgical Intervention
  - Full thickness RTC Tear in young individual
  - RTC Tear with arthritis
  - RTC Tear with dislocation
  - Any bone avulsion

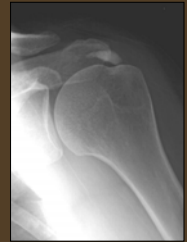
- Patient that does not tolerate conservative management

## Rotator Cuff Disease

- Prolonged conservative management
  - Continued use of NSAID's
  - Therapy (Medicare only allows 19 visits/yr)
  - Injections (3-4 per year)
  - Appropriate if:
    - Getting benefit
    - Those with no full tear on MRI
    - Non-surgical candidates
    - End Stage disease awaiting replacement

## Calcific Tendonitis

- Slightly younger than RTC population
- Severe pain
- Non-Traumatic
- Unable to lift arm
- Cannot get comfortable
- X-rays will confirm diagnosis



## Calcific Tendonitis

- Treatment
  - Early MRI not necessary
  - Similar to bursitis, just more aggressive
  - Early Injection
  - Aggressive NSAID and pain management
  - Refer if not making any progress
    - Options
      - Needle aspiration
      - Lithotripsy
      - Operative Excision

## Biceps Tendon Injuries

- Same Population as RTC
- Tendonitis/Partial Tear/Full Tear
- Similar Presentation but more anterior pain
- Can have an acute injury or “pop”
- Ruptures can be traumatic or spontaneous

## Biceps Tendon Injuries

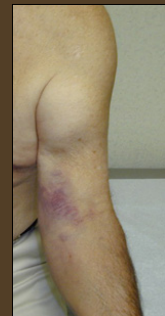
- Will notice a change in arm contour
- Eccymosis
- Short period of pain
- Some will feel better overall
- No limitations on function



## Biceps Tendon Injuries

- Treatment
  - **Ruptures of the Long Head of the Biceps Tendon are not an emergency and DO NOT NEED to be fixed!**

*DO NOT be confused with distal biceps tendon ruptures!!!!*





### Biceps Tendon Injuries

- Treatment
  - NSAID's
  - Early PT
  - Consider MRI
    - to rule out RTC tear

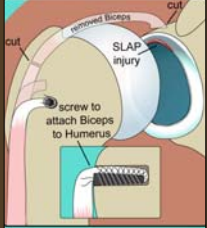
*A must in anyone less than 70!!!!*

- Injection into biceps groove may reduce pain in tendonitis (anterior pain)
- Injection into Sub-Acromial Bursa - if symptoms exist



### Biceps Tendon Injuries

- Treatment
  - **Refer Early: (less than 4 weeks to surgery)**
    - Anyone with RTC Tear
    - Anyone pushing to get it fixed
    - Throwers
    - Aggressive overhead worker



### Adhesive Capsulitis

- 40-60 yo female with acute onset pain
  - @50% with pre-existing trauma
  - Possible period of immobilization
  - Proximal Humeral Pain
  - Constant Ache, sharp pain with any motion
  - Debilitated
    - Can't sleep
    - Can't dress
    - Can't live

### Adhesive Capsulitis

- Exam
  - Limited AROM
  - Limited PROM
  - Will not want you to move the arm at all
- Radiographs will be negative
  - Arthritis
  - Calcific Tendonitis



### Adhesive Capsulitis

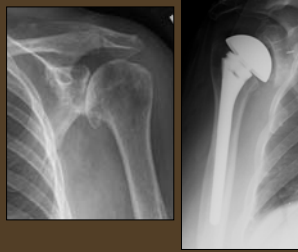
- Treatment
  - Aggressive pain management
  - Physical Therapy early on
  - Will not hurt the arm by using it
  - Consider sub-acromial injection
  - Failure to improve – send to specialist
    - Intra-articular Injection
    - Manipulation
    - Scope – Lysis of Adhesions
- Fact: FROZEN SHOULDER GETS BETTER WITH TIME

### Glenohumeral Arthritis

- 72 year old male with progressive shoulder pain and loss of motion
  - “Hurts all over.”
  - Loss of both passive and active motion
  - May be weak due to pain
  - “Crunching” or popping
  - May have injury or acute onset
    - “I never had any pain.”

## Shoulder Arthritis

- Imaging – xrays will show narrowing and flattening of humeral head



- Treatment
  - Rest
  - NSAID's
  - PT with gentle ROM
    - don't push too hard
  - Injection
  - If no better – referral for intra-articular injection or surgery

## Acromial Clavicular Arthritis

- 45-50 year old male weightlifter or overhead worker
  - Pain with overhead activities
  - Sharp pain on top of the shoulder
  - Tender over the AC joint
  - Pain with cross body adduction



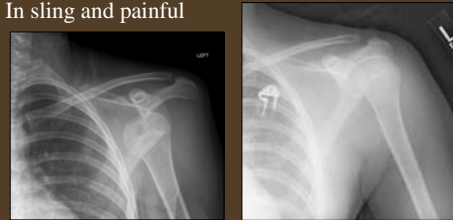
## Acromial Clavicular Arthritis

- Imaging – degenerative changes at the AC joint
- Injection – directly into AC joint
- Referral for Surgical Resection



## Shoulder Instability

- 17yo female with traumatic shoulder injury
  - Fell onto abducted arm
  - Seen and reduced in ER
  - In sling and painful



## Shoulder Instability

- Treatment
  - Sling in External Rotation for 4 weeks?
    - Probably not necessary
  - Mobilization with PT
  - NSAID's
  - Anterior RTC strengthening



- If not significantly better in 2 weeks then MRI!

## Shoulder Instability

- Early MRI and referral.....
  - The young athletic male with 1<sup>st</sup> time dislocation
  - The older patient with weakness
  - Any patient that does not get significantly better after 2 weeks
- We are getting more aggressive about treating early!

## Shoulder Instability

- 58 yo female s/p fall onto arm
  - Dislocation seen in ER
  - Reduced without complication
  - Cannot lift arm
    - Pain?
    - RTC Tear?



## Shoulder Instability

- 58 yo female s/p fall onto arm



- MRI Early to eval RTC
- Refer early for surgical repair

## Shoulder Instability

- 28 yo male volleyball player with pain during serve and spike motion
  - Normal motion
  - Hurts in Abducted External Rotation
  - Pain with stressing of supraspinatus
- Normal xrays

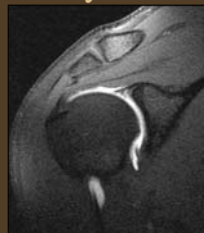


## Shoulder Instability

- Consider Anterior or Superior Labral Tear
- Treatment
  - Patients with shoulder instability/labral tears can be treated without surgery as long as they are tolerating conservative management and not re-dislocating
  - NSAID's
  - Active Rest
  - Physical Therapy
    - Stabilization Exercises

## Shoulder Instability

- Failure to improve
- MRI with Arthrogram
  - Looking for Labral Tear
    - Anterior
    - Superior/ SLAP
- Not common for SLAP tear to be main problem in the middle aged patient




## Elbow

- Evaluation and Management
  - Epicondylitis
  - Cubital Tunnel Syndrome
  - Radial Head Fracture

### Physical Examination


- Inspection
  - Resting position and Carrying Angle
    - » Females: @13 degrees
    - » Males: @11 degrees



### Physical Examination

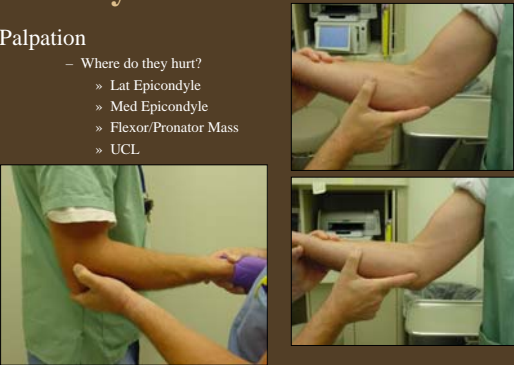
- Range Of Motion
  - Normal: 0-3 degrees extension  
145 degrees flexion  
75 degrees pronation/ 85 degrees supination
  - Roughly 50% of throwers have flexion contracture (10-20 deg)

King et al. Clin Orthop 1969



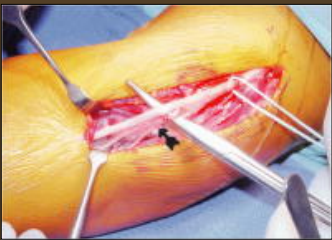
### Physical Examination

- Palpation
  - Where do they hurt?
    - » Lat Epicondyle
    - » Med Epicondyle
    - » Flexor/Pronator Mass
    - » UCL





### Physical Examination

- Neurologic and Vascular Status



### Physical Examination

- Stress Testing
  - Valgus Stress
    - » 30 degrees flexion
  - Valgus Extension Overload Test
    - » "Bounce Test"

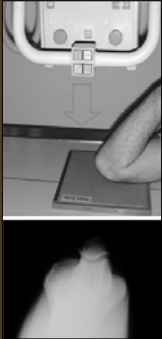



### Elbow

- Exam

## Imaging


- X-Rays
  - » AP, Lateral, Oblique,
  - » Oblique view in 110 degrees of flexion
  - » Stress Radiographs
  - » Comparison views
- Bone Scan
  - » Stress Fracture
  - » OCD



## Imaging

- MRI
  - Imaging modality of choice
    - Loose Bodies
    - Articular Cartilage Injuries
    - Osteochondritis Desiccans
    - Recalcitrant Tendonitis
    - Ligament Injury
  - Add Arthrogram as needed
    - 95-100% sensitive for complete tears of UCL

Schwartz et al: Radiology, 1995  
 Hill et al: J Shoulder Elbow Surg, 2000

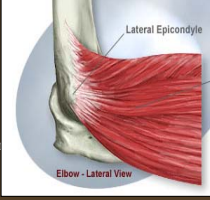


## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - “Lawn Tennis Elbow”
- Repetitive overuse problem
  - Wrist extension, supination, finger extension
    - Tennis
    - Hand Shaking
    - Painting
- Extensor Carpi Radialis Brevis

Majors HM: Br Med J, 1883

Nirschl and Pettrone: J Bone Joint Surg, 1979



## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - Pathology
    - Angiofibroblastic Tendinosis
      - » Lack of inflammatory cells
      - » Tensile overload, fatigue failure, avascular change

Nirschl and Pettrone: J Bone Joint Surg, 1979





## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - Diagnosis
    - Activity related pain (anything that stresses ECRB)
    - Pain at epicondyle, up arm, or down to wrist
    - R/O Neuropraxia of Posterior Interosseous Nerve
  - Imaging
    - X-Rays: about 20% with calcification of tendon
    - MRI in recalcitrant cases
    - EMG if neurologic symptoms

## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - Treatment
    - Basic principles
      - Rest
      - Ice (Bag and Massage)
      - Anti-inflammatories
    - Protection
      - Correct Grip Size
      - Counterforce Bracing

## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - Treatment
    - Therapy
      - Stretching
      - Deep tissue work
      - Ionto/phonophoresis
      - E-stim
      - Strengthening



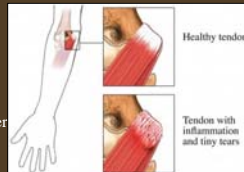
## Tendonitis/Epicondylitis

- Lateral - Tennis Elbow
  - Treatment
    - Injection
    - Newer Modalities
      - ECSW
      - Ossatron
    - Surgical Intervention
      - Arthroscopic
      - Open



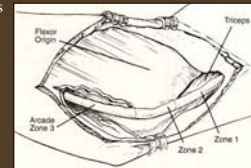
## Tendonitis/Epicondylitis

- Medial – Golfers Elbow
  - Overuse problem
    - Wrist flexion, pronation, finger flexion
      - Golf
      - Tennis
      - Baseball
      - Javelin
  - Pronator Teres and Flexor Carpi Radialis
  - Similar physiology as lateral



## Tendonitis/Epicondylitis

- Medial – Golfers Elbow
  - Diagnosis
    - Medial Epicondyle/Flexor mass pain and tenderness
    - Aggravated by wrist flexion and pronation
    - 40% with associated ulnar neuritis
  - Imaging
    - Xrays
    - MRI
    - EMG if associated neurologic findings



## Tendonitis/Epicondylitis

- Medial – Golfers Elbow
  - Treatment
    - Basic principles
      - Rest
      - Ice (Bag and Massage)
      - Anti-inflammatories
    - Protection
      - Counterforce Bracing
    - Therapy
      - Stretching
      - Deep tissue work
      - Ionto/phonophoresis
      - E-stim
      - Strengthening
    - Injection
    - Surgical Intervention
      - Debridement with/without Ulnar Nerve Transposition





## Cubital Tunnel Syndrome

- Aka "Ulnar Neuritis"
- Compression of the ulnar nerve @ elbow
- Often associated with medial epicondylitis
- Medial Elbow pain and possible radiation
- Numbness of the 4-5<sup>th</sup> finger
- Worse on waking in the AM



### Cubital Tunnel Syndrome

- Exam
  - Tender Medially
  - Tinel's Sign @ Cubital Tunnel
  - Elbow Flexion Test
  - May feel a subluxing nerve
- EMG – questionable benefit
- Treatment
  - NSAID's, PT, Padding
  - Nite Splinting in extension

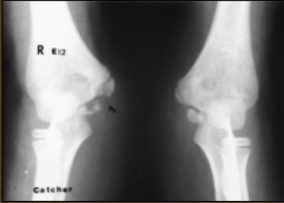



### Medial Epicondyle Apophysitis

- “Little Leaguer’s Elbow”
- The weakest link of the elbow in the young thrower
- Two forces work on the weak medial epicondyle physis
  - Valgus forces associated with late cocking and acceleration
  - Tensile forces from the contraction of the flexor mass at ball release

### Medial Epicondyle Apophysitis

- Symptoms
  - Pain over epicondyle and distally
  - Worse with throwing
- Radiographs
  - Fragmentation of the medial apophysis
- Preventative Treatment
  - Limit number of pitches/innings
  - At least three days rest
  - No curveballs
- Treatment
  - First and Only Line of treatment
    - Rest, Ice, Splinting, NSAID's
    - **THERE IS NO NEED FOR SURGICAL INTERVENTION!**




### Radial Head Fracture

- Any Age
- Fall onto hand with axial load to arm
- Sore and swollen elbow
- Lateral pain and tenderness
- Limited ROM



### Radial Head Fracture

- Xrays – may show fracture or just ‘fat pad sign’
- Treatment:
  - Sling for comfort
  - May remove as needed
- Refer:
  - Any displacement
  - Any significant loss of ROM




### Knee

- Evaluation and Management
  - MCL
  - Meniscal Tear
  - Chondromalacia Patella
  - Patella Subluxation/Dislocation
  - ACL Injury




### Medial Collateral Ligament Injury

- 18 year old football player
- Tackled from outside
- Felt “pop”
- Mild Medial Swelling
- Difficulty weight bearing

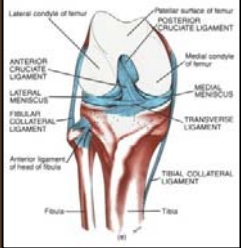


- Also:
  - 37 year old first time skier
  - “body went one way ski went another”




### Medial Collateral Ligament Injury

- Most Common Contact Knee Injury
- Valgus Load Injury
  - Blow to outside of knee
  - Slip with valgus load on knee
- Medial Pain And Swelling
- Can have a “pop”



### Medial Collateral Ligament Injury

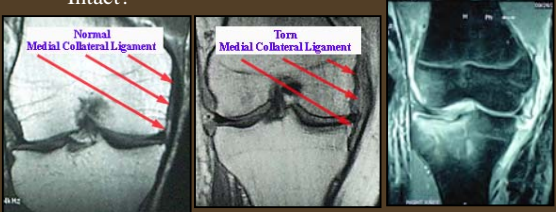
- Exam
  - Tender Medial over MCL
    - Femoral
    - Tibial
  - Range of Motion likely restricted
  - Valgus Stress
    - 0 deg
    - 30 deg



- Any real laxity.....MRI
- Make sure you check ACL.....any issues MRI

### Medial Collateral Ligament Injury

- MRI
  - Fluid Over MCL
  - Intact?



### Medial Collateral Ligament Injury

- Treatment
  - NSAID's
  - Short-Term Bracing
  - Therapy



- Playmaker Brace for Sport

### Meniscal Injury

- 46 year old female
- Hyperflexion and twisting injury
- Squatting down
- Feels a pop or tear
- Mild swelling
- Clicking and popping
- Improving after 1-2 weeks



## Meniscal Injury

- Exam
  - Tender over joint line
  - Pain with flexion
  - McMurray's or Apley's



## Meniscal Injury

- Treatment
  - NSAID's
  - Relative Rest
  - Therapy
  
- Bike/Elliptical OK
- MRI as needed

## Chondromalacia Patella

- History
  - 14-30 year old female with bilateral anterior pain
  - Poorly localized worse with stairs, sitting, even sleeping
  - Associated symptoms numbness, nite pain

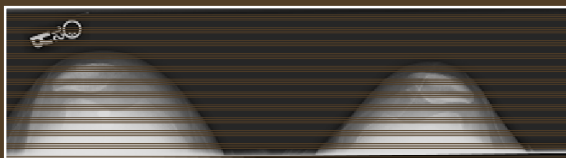
## Chondromalacia Patella

- Exam
  - Valgus Knee
  - Patella Crepitation
  - Atrophic Quad
  
- Weak hip abductors
- Unstable single leg squat



## Chondromalacia Patella

- Imaging
  - Merchant Radiograph




## Chondromalacia Patella

- Treatment
  - Education!
  - NSAID's
  - Therapy (Hip>>>>Knee)
  
- McConnell Taping
- Bracing
- Injection
  - Cortisone
  - Lubricant




### ACL

- History
  - Most are non-contact injuries
  - Twist and deceleration
  - Associated with a “pop”
    - @50% will feel/hear a pop
  - Immediate swelling
  - Able to walk off the field
  - Not able to continue to play




### ACL



*Bottom Line: “Pop” and immediate swelling is an ACL injury until proven otherwise*

### ACL


- Examination
  - Early on field examination is the best
  - Later exam limited due to pain and spasm
  - Observation
    - Limited ROM
    - Pain
    - Hemarthrosis
      - 72% of acute knee injuries with hemarthrosis had ACL rupture



Noyes et al. JBJS 1980


### Initial Assessment

- Examination
  - Lachman Test
    - Most sensitive test of ACL function

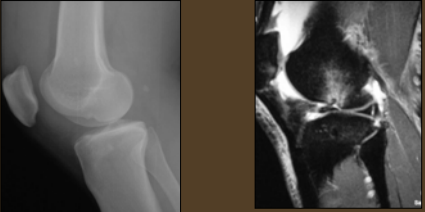


### Initial Assessment

- Examination – Lachman Test





### Associated Injuries



*Associated injuries appear to be the most important predictor of long term outcome following ACL injury/surgery*

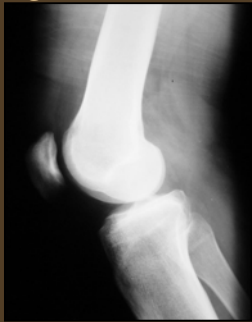
Shelbourn and Gray: Am J Sports Med 2000

### Associated Injuries



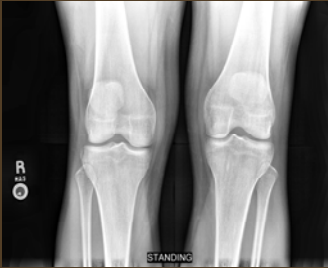
- Associated Injuries requiring acute care
  - Osteochondral Fracture
  - ACL Avulsion

### Imaging




- Radiographs
  - AP and Lateral
  - Hemarthrosis
  - Osteochondral Injuries

### Imaging



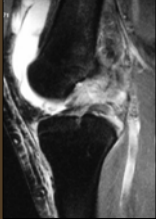

- Radiographs
  - Second Fracture “Lateral capsular sign”

### Imaging





- Radiographs
  - Second Fracture “Lateral capsular sign”

### Imaging



- ACL Injuries – Imaging
  - MRI
    - Modality of choice
    - Document/Diagnose associated injury
  - MRA (Arthrogram) should not be used in the acute setting

### Initial Treatment



- Control Pain
- Reduce Swelling
  - Ice/Elevation
  - Compression
  - NSAID's
  - Aspiration as needed

### Initial Treatment

- Weight Bearing is OK – unless painful
- Brace – DO NOT Immobilize!
  - Maintain full extension
  - ROM Brace as needed
  - Move knee as tolerated
  - Associated injuries may require modifications



### Initial Treatment

- Physical Therapy
  - Modalities (Ice, E-stim, etc....)
  - Rapid recovery of ROM
  - Limits atrophy






### Non-Operative Management


- Candidates
  - Everyone!!!!
  - Sedentary
  - Older
  - Lack of desire to return to cutting/jumping sports

### Conservative Management

- Physical Therapy
  - Primarily Hamstring strengthening
  - Quadriceps work later
- Bracing
  - ACL Brace
    - Custom
    - Off the shelf
  - Efficacy is not clear
  - Best for:
    - Older/Sporadic/Recreational athlete
    - In season athlete (NOT RECOMMENDED)



### Surgical Interventi



- ACL Injuries – Who needs surgery?
  - Current recommendations
    - Active patient wishing to continue cutting, jumping and pivoting sports
    - Active patients with associated reparable meniscus tear or articular cartilage injury
    - Other major ligamentous injury
    - Patients experiencing instability with activities of daily living

*Fu and Schulte: Clin Ortho Rel Research, 1996*

### Ankle

- Evaluation and Management
  - Sprain
  - Achilles Tendonitis
  - Plantar Fasciitis

## Ankle Sprain

- 25 year old male basket ball player
- Came down from rebound and rolled ankle
- Inversion injury most common
- Difficulty weight bearing and cannot continue playing



## Ankle Sprain

- Exam
  - Swelling and ecchymosis laterally
  - Tender over ATFL and CFL
  - Pain with ROM
  - Palpate fibula proximally
- Radiographs
  - Ankle and Foot

## Ankle Sprain

- Treatment
  - R.I.C.E (Rest, Ice, Compression, Elevation)
  - NSAID's
  - Early ROM
  - Therapy
  - Early Rigid Bracing
  - Later Functional Bracing



## Achilles Tendonitis

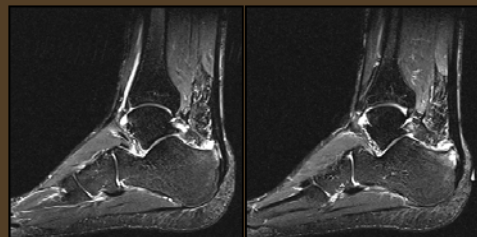
- 46 year old runner with progressive posterior ankle pain
- No one injury
- Worse with activity - - running!
- Swelling of the tendon
- Tender on the swollen area or at the insertion
- Able to stand on tip toes, but it hurts

## Achilles Tendonitis

- Treatment
  - Stretching, Stretching, Stretching.....
  - NSAID's
  - Direct Ice Massage
  - Heel Lift
  - Physical Therapy
  - Night splint
  - MRI eventually



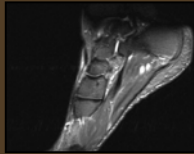
## Achilles Tendonitis



- Partial Tears
  - Seen On MRI
  - Treat the same as tendonitis

## Plantar Fasciitis

- 55 year old male
- Bottom of heel pain without trauma
- Worst with first steps in the morning
- Radiates out to toes
- Pain with heel rise



## Plantar Fasciitis

- Treatment
  - Stretching at night and in morning
  - NSAID's
  - Heel Lift/Heel Cup
  - Tennis Ball
  - Physical Therapy
  - Nite splints
- Inject as needed (It hurts!)

