Orthopaedic Management of Shoulder Pathology

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Opening Statements

- IBJI
  - Began fall 2007
  - 9000 Waukegan Rd, Morton Grove
  - 900 Rand Rd, Des Plaines

- DuPage Medical Group
  - 2001 – Summer 2007
  - General Orthopaedics with Sports Medicine focus

- General Orthopaedics

- Fellowship Trained
  - Sports Medicine and Arthroscopy

- Primary Interest in Shoulder and Knee
Opening Statements

How many code for Orthopaedists?

- How many don’t have good understanding of what we do in OR?
Introduction

- Dramatic increase in activity level of today’s population
- Median age is increased with baby boomers
- People staying active longer
- Increase in females and older population of labor force
- With these increases, expected rise in number of injuries

Introduction

- Shoulder has largest range of motion of all joints in the body
- Most physical work, hobbies and sport activities involve use of upper extremity
- Places shoulder at risk
- Traumatic and overuse injuries
Introduction

- Plan for today is to discuss management of shoulder aches and pains

- As we get older, much shoulder pain is related to tendon and muscle strains

- Realize there are differences among how different health care professionals manage these issues

- Be sure to communicate with your health care professional in regards to their preferences

Introduction

- Anatomy
- Pathology (Disease)
- History
- Physical Exam
- Imaging
- Treatment
- Return to Activities
- Prevention
Anatomy

- The Bones
  - Provide structure and support

Anatomy

- The Bones
  - Humerus
    - Greater tuberosity
    - Lesser tuberosity
    - Surgical neck
    - Anatomic neck
    - Bicipital groove
Anatomy

- The Bones
  - Clavicle
  - Scapula
    - Body
    - Spine
    - Acromion
    - Coracoid
    - Glenoid
Anatomy

- **Superficial Muscles**
  - Move bones in space by pulling on tendons that connect to bone
  - Deltoid
  - Pectoralis Major
  - Trapezius
  - Latissimus Dorsi

Anatomy

- **Ligaments**
  - Connect bone to bone

- **Tendons**
  - Connect muscles to bone
Anatomy

- Rotator Cuff
  - Tendons of four separate muscles
  - Assists in raising arm
  - Keeps the ball tightly in the socket
  - Supraspinatus
  - Infraspinatus
  - Subscapularis
  - Teres Minor

Anatomy

- The Supporting Soft Tissues
  - Cartilage
    - Labrum
    - Joint surfaces
  - Joint Capsule
    - Ligaments connecting ball to socket
  - Biceps Brachii
    - Long head
Anatomy

- Arch overlying the rotator cuff
  - Protects structures
  - Cause of pain
  - Acromion (top of shoulder blade)
  - Ligaments
  - Clavicle (collar bone)

Anatomy

- Bursa
  - Lubricated sac of tissue
  - Cuts down on the friction between the acromion and the rotator cuff
Mechanism of Injury

- Traumatic
  - Fall
  - Catching something
  - Throwing/pulling
  - Lifting
- Repetitive activities
  - Cleaning
  - Painting
  - Waxing car
  - Overhead sports
- Direct injury
- Indirect injury

Causes of Pain

- Sprain
- Strain
- Impingement
- Bursitis
- Tendonitis
- Spurs
- Tear
- Dislocation
- Calcium deposits
- Arthritis
Pathology

- **Strain**
  - Injury to muscle or tendon

- **Sprain**
  - Injury to ligament
  - ICD-9 → 840.9
  - No code for “tear”?

- Inflammation from over use →
  - Over stretching → Partial tearing → Complete tearing

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Pathology

- **Impingement Syndrome** - ICD-9 - 726.10
  - “Impingement, bursitis, tendonitis, spurs”

  - Rotator cuff subject to repeated mechanical trauma by the overlying bones and ligaments with elevation of the arm (over head activities)

  - Inflamed Bursa “...itis”
  - Spur or hook off shoulder blade
  - Spurs off end of collar bone from arthritis
Pathology

- Rotator Cuff problems
  - a spectrum of disease
    - ICD-9 → chronic 727.61, acute 840.4
  - Inflammation →
  - Degeneration →
  - Partial tear →
  - Full thickness tear →
  - Massive tear

Pathology

- Rotator Cuff tear
  - “Timing”
    - Acute (trauma)
    - Chronic (wear and tear)
    - Acute on chronic
  - “Size”
    - Small → less than 1 cm
    - Medium → 1 - 3 cm
    - Large → 3 - 5 cm
    - Massive → > 5 cm
  - “Thickness”
    - Full-thickness Tear
    - Partial-thickness Tear
  - “Symptomatic vs Silent”
**Pathology**

- **“Pattern”**
  - Crescent
  - U shaped
  - L shaped
  - Massive

- Healing of tear does not occur
  - Fibers retract (pull away from bone)
  - Torn cuff bathed in synovial (joint) fluid
  - Poor vascularity (blood supply) (needed for healing)

- Disuse muscle atrophy

- Don’t wait too long to repair if symptomatic
Pathology

- Shoulder (Glenohumeral) Dislocation
  - ICD-9 \( \Rightarrow 831.0(1,2,3) \)
  - Ball and socket
  - Fall onto forward elevated hand
  - Sliding or diving
  - Fall on ice, grabbing railing

Pathology

- Shoulder (AC/acromioclavicular) Separation
  - ICD \( \Rightarrow 831.04 \)
  - Collar bone from shoulder blade
  - Falling onto top of shoulder
  - Checking in hockey
Pathology

- Calcium Deposits – calcific tendonitis
  - ICD-9 → 726.11
  - Post injury
  - Bleeding into tendon
  - Body makes bone
  - Very painful

Pathology

- Shoulder Arthritis
  - ICD-9 → 715.11
  - Wearing away of surface cartilage on ball and socket
  - Post injury
  - Lots of “miles” with wear and tear
  - Can be asymptomatic
Pathology

- Arthritis at end of collar bone
  - Acromioclavicular joint
  - Between collar bone and top of shoulder blade
    - Hurts on top of shoulder
    - Worse when leaning on that side or reaching across body
  - Spur pinches on cuff and bursa

Pathology

- Labral tear (Cartilage tear)
  - SLAP
  - Bankart
  - Reverse Bankart
Pathology

- **SLAP**
  - Superior labrum anterior posterior
  - ICD-9 → 840.7

Pathology

- **Bankart lesion**
  - ICD-9 → 840.7 (no code, must use SLAP)
Pathology

- **Bony Bankart**
  - Coded as glenoid/scapula fx
  - ICD-9 → 811.03

- **Hill Sachs**
  - Coded as proximal humerus fx
  - ICD-9 → 812.09

- **Reverse lesions**

Pathology

- **ALPSA**
  - Anterior labral periosteal sleeve avulsion
  - Use bankart code
Pathology

- HAGL
  - Humeral avulsion glenohumeral ligament
  - No code exists use instability

Pathology

- Intrasubstance capsular tears or stretch
  - Plastic deformation of capsule
  - Global increase in capsular volume
  - ICD-9 → shoulder instability 718.81
History

- Where doctor talks to the patient

- Learn about patient
  - Issue at hand
  - Past history
    - Medical
    - Surgical
  - Medication list
  - Allergies
  - How has the problem been addressed so far
  - There may be questions you think are unrelated but may have relevance

History

- Symptoms
  - Pain
  - Looseness
  - Stiffness
  - Popping
  - Locking and catching
  - Weakness
  - Numbness
  - Pain at night/sleeping
  - Difficulty with overhead activities
  - Cannot perform job
  - Difficulties with Sports, Hobbies and activities of daily living
History

- Not all shoulder pain is shoulder pain!

Physical Exam

- Physician actually touches the patient to evaluate their symptoms
- Attempt to reproduce symptoms
- No reason to cause terrible pain!
Physical Exam

- Inspection
  - Simply looking
  - Bruising
  - Atrophy (wasting)
  - Different heights
  - Comfort level
- Sensation
  - May be complaints of numbness
- Vascular
  - Evaluate pulses
  - Almost never problematic

Physical Exam

- Palpation
  - Push on the shoulder
  - Can actually identify structures
  - See where painful
- Muscle function
  - Profound weakness
  - Weakness with repetitive overhead activities
  - Where is the weakness
- Range of motion
  - Lack of motion
  - Excessive motion
  - Active vs. passive
Imaging

- **X-ray**
  - Most patients need

- **Ultrasound**

- **MRI**
  - Not always necessary

- **MRI Arthrogram**

- **CT scan**

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Imaging

- Not all images are made equal
  - Closed vs. open MRI
  - Power of magnet
  - May still need X-ray even if have MRI
Treatment

- **Rest/immobilization**
  - Avoid painful activities
  - Sling

- **Modalities**
  - Heat
    - To loosen up prior to activity
  - Ice
    - For the acute injury
    - After painful activity
Treatment

- Pain Medication
  - Oral
    - OTC
      - Tylenol (acetaminophen)
      - Ibuprofen (advil, motrin)
      - Alive
    - Prescription
      - NSAIDS
      - Medrol Dose Pack
  - Narcotics
    - Typically not needed
    - Fractures, post surgical

Treatment

- Injections of Corticosteroids
  - The Myths
    - Bad for you
    - Can only get so many in a lifetime
    - Destroy your bones
    - Painful
  - The Truth
    - They help
    - The meds stay and work locally
    - How many you can get depends where and why
    - Needle hurts not the medicine (MD dependant)
    - Don’t destroy, they decrease inflammation → decrease pain
Treatment

- Injections of Corticosteroids
  - Five places to inject the shoulder
    - Ball and socket
    - AC joint
    - Subacromial Bursa
    - Bicipital Groove
    - Subscap Bursa

Treatment

- Physical Therapy
  - Purpose
    - Education
    - Treatment
    - Motivation
    - Home program
  - Methods
    - Decrease inflammation
    - Improve motion
    - Increase strength and health of shoulder
  - Should not be extremely painful
Treatment

- Activity modification
  - Decrease inciting activities
  - Raise level of Chair
  - Use a ladder
  - Decrease weight of item being lifted
  - Be more aware of lifting technique
  - Use two hands or opposite side
  - Typically overhead and behind the back are the worst

Surgical Treatment

- Patients who are compliant with nonsurgical treatment, but remain symptomatic
Surgical Treatment

- Surgical goals
  - Pain relief
  - Regain full motion
  - Management of all problem areas
  - Reproduce close to normal anatomy
  - Immediate strength of repair
  - Efficient/effective outpatient surgery
  - Return patient to preinjury level of activity
  - Give reproducible results

Surgical Treatment

- Variability in Surgical technique and procedures
- Open (larger incision)
- Arthroscopic (through little poke holes)
Surgical Treatment

- Anesthesia
  - General
    - Go to sleep
  - Regional
    - Injections near nerves
    - Allows for less general
    - Numbs shoulder
    - Lasts 7 – 12 hours
  - Injections into shoulder
  - Pain pump (no longer use)

Surgical Treatment

- Positioning
  - Beach chair
  - Lateral position
Surgical Treatment

- What is addressed during surgery
  - Impingement/bursitis
  - Arthritis
  - Cartilage (labral/SLAP) tears
  - Rotator Cuff Tear

Surgical Treatment

- Decompression
  - Remove spur
  - Remove inflamed bursal tissue
Surgical Treatment

- Subacromial Decompression
  - Open
  - CPT → acute 23410, chronic 23412

Surgical Treatment

- Subacromial Decompression
  - Arthroscopic
  - CPT → 29826
  - Need to work on bone???? Or 29823 debride
  - No longer a stand alone code
Surgical Treatment

- Distal clavicle resection
  - Remove arthritic end of collar bone
  - Widen the space to prevent irregular surfaces from contacting
  - Preserve 2 of the AC ligaments

Surgical Treatment

- Distal clavicle resection
  - Open
  - CPT → 23120
    - Deltoid takedown
    - Remove anterior and superior AC ligaments
    - Repair deltotrapezial fascia
Surgical Treatment

- Distal clavicle resection
  - Arthroscopic
  - CPT → 29824
    - Remove anterior and inferior AC ligaments

Surgical Treatment

- Labrum (Cartilage) repair
  - Secure labrum and biceps to bone
Surgical Treatment

- Open Bankart
  - CPT $\rightarrow$ 23455

Surgical Treatment

- Open Capsular Shift
  - CPT $\rightarrow$ 23450
Surgical Treatment

- Arthroscopic Bankart Repair
  - CPT → no code, use SLAP
    29807/can use 29806
  - Suture anchor
    - Anchors with sutures attached
    - Metal vs bioabsorbable
    - Any type of instability with or without capsular laxity
    - Precise approximation of tissues

Surgical Treatment

- Arthroscopic Bankart Repair
  - Knotless anchor
    - No need for tying skills
    - Eliminates weakness of knots
    - Metal and bio
    - Faster
Surgical Treatment

- **Arthroscopic Capsulorrhaphy**
  - Radiofrequency/Thermal Shrinkage
    - CPT → 29999
    - Using heat to alter collagen structure
    - If no bankart or bony involvement
    - Adjunct to labral repair
    - For those who can’t tie
    - No agreement on delivery system or technique
  - Capsular necrosis, axillary nerve injury, capsulitis

Surgical Treatment

- **Arthroscopic Capsulorrhaphy**
  - CPT → 29806
  - Suture plication
    - Capsular tucks
    - Multidirectional instability
    - Adjunct to bankart or SLAP
Surgical Treatment

- Arthroscopic SLAP repair
  - CPT → 29807
  - Can only be performed via scope
  - Anchors, tacks, knotless

Surgical Treatment

- Rotator cuff repair
  - Close the hole
  - Repair tendon back to bone
Surgical Treatment

- Rotator Cuff Repair
  - Open
  - CPT → acute 23410, chronic 23412
  - Size and complexity not taken into account

Surgical Treatment

- Rotator Cuff Repair
  - Open
    - Saber type incision
    - Deltoid detachment
    - Combined with open SAD and DCR
    - Use anchors or bone tunnels
    - Cannot manage glenohumeral pathology
    - SLAP cannot be seen or repaired
    - Tear pattern not easily appreciated
    - Cannot mobilize massive retracted tears
    - Increased % of irreparable tears
    - Increased % of partial repairs
Surgical Treatment

- Rotator Cuff Repair
  - Mini open
  - Must bill open CPT

Surgical Treatment

- Rotator Cuff Repair
  - Mini open
    - Requires some arthroscopic skills
    - Scope first to manage Glenohumeral pathology
    - Perform SAD and DCR via scope
    - For more advanced surgeons can perform rotator cuff releases
    - Deltoid split instead of takedown
    - Still larger scar with lots of tension on deltoid
    - Useful for those trying to transition
    - I believe more difficult than open
Surgical Treatment

- Rotator Cuff Repair
  - Arthroscopic
  - CPT → 29827

Surgical Treatment

- Rotator Cuff Repair
  - Arthroscopic – Margin Convergence
Surgical Treatment

- Rotator cuff repair
  - Double row vs single row vs suture bridge

Surgical Treatment

- Shoulder replacement for arthritis
- CPT → 23472
Arthroscopy Advantages

- Trend of surgical management toward more minimally invasive techniques
- Less traumatic to normal tissues
- Less pain
- Smaller scars
- Better visualization/diagnostic accuracy
- Improved ability to reach/evaluate pathology

Arthroscopy Advantages

- Less loss of motion with arthroscopy
- Better return to full function
- Outcome equals open and mini open with improved techniques
- Outpatient surgery
- Cutting edge, “wave of the future”

- Beware arthroscopic tunnel vision!
Return to Work/Sports/Life

- Variables
  - Type of occupation/sport
    - Sedentary vs heavy labor
    - Ability to protect shoulder
    - One handed work available
    - Temporary change in position work or sport
  - Pain control
    - Comfortable enough to work/play
    - Type of job where can work on pain meds
  - Commute
    - Confidence in driving
    - Ability to protect self and others

- Ultimate treatment outcome
  - Surgeon
    - Skill level
    - Involvement/guidance
  - Patient
    - Pain tolerance
    - Motivation
    - Compliance
  - Physical Therapist
    - Skill level
    - Ability to motivate
  - Biology
    - Size of tear
    - Quality of tissues
Return to Work/Sports/Life

- Constants
  - One to 2 wks off minimum
    - Due to pain control
  - Brace for up to 6 wks
  - Physical Therapy
    - Start time depends on procedure
    - Duration 2 – 3 months
  - Driving
    - 8 – 12 wks before can use arm to drive
  - Return to full activity 6 – 9 months

Prevention

- Things to do
  - Stretch/Maintain flexibility
  - Strengthen
    - High reps/low weights
    - Light weights or therabands
    - Maintain cardiovascular fitness
    - Core strengthening
  - Lift with two hands and legs, close to body
Prevention

- Things to avoid
  - Lifting behind the back
  - Heavy overhead lifting
  - Holding heavy objects away from the body
  - Repetitive overhead activities
  - Prolonged overhead work
  - Working through painful activities

Conclusion

- Many causes of shoulder pain
- Most do not require surgery to make better
Conclusion

- Remember there is no one “cookie cutter” answer
- Read . . . Study . . . Communicate!
- We are PRACTICING medicine
- Evolve with the times

Conclusion

- Feel free to call your friendly neighborhood orthopaedist with questions or concerns
- Contrary to rumors, we don’t bite
?????? QUESTIONS  ?????

Thanks For Listening

The Brez Boyz