

# 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?

## Opening Statements

- 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



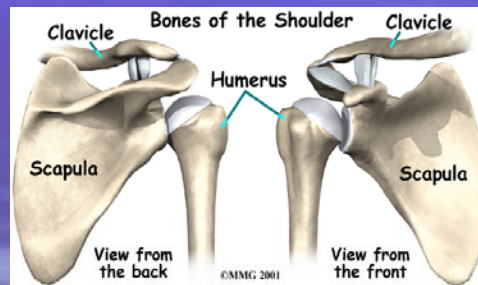
## Introduction

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



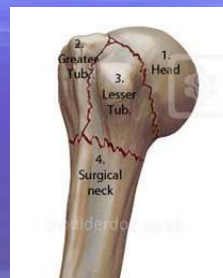
# Anatomy

- The Bones
  - Provide structure and support



# Anatomy

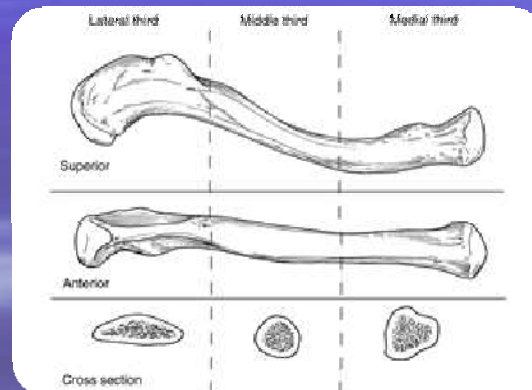
- The Bones
  - Humerus
    - Greater tuberosity
    - Lesser tuberosity
    - Surgical neck
    - Anatomic neck
    - Bicipital groove





# Anatomy

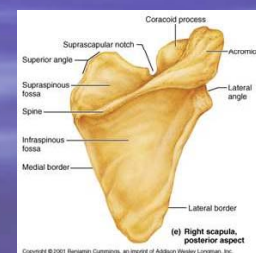
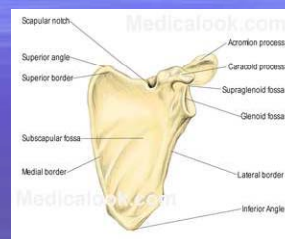
## ■ The Bones – Clavicle



# Anatomy

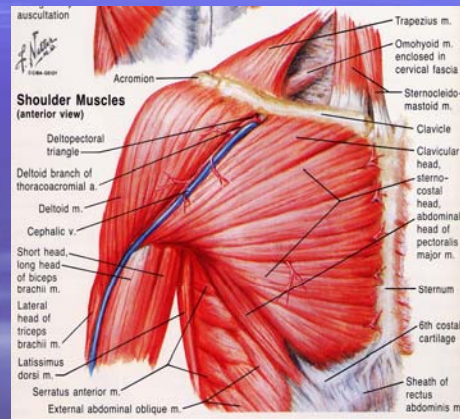
## ■ The Bones – Scapula

- Body
- Spine
- Acromion
- Coracoid
- Glenoid



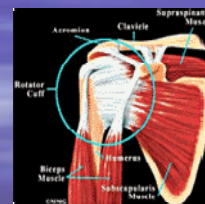
## Anatomy

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



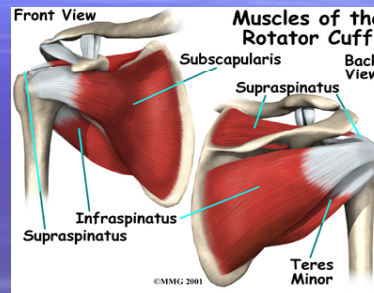
## Anatomy

- Ligaments
  - Connect bone to bone
- Tendons
  - Connect muscles to bone



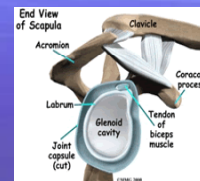
## Anatomy

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



## Anatomy

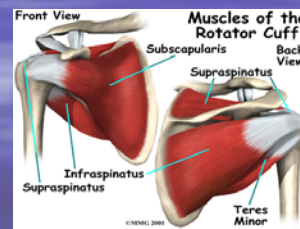
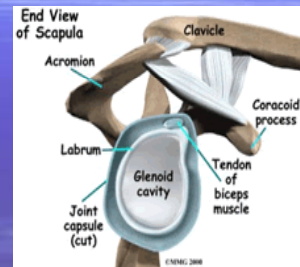
- The Supporting Soft Tissues
  - Cartilage
    - Labrum
    - Joint surfaces
  - Joint Capsule
    - Ligaments connecting ball to socket
  - Biceps Brachii
    - Long head





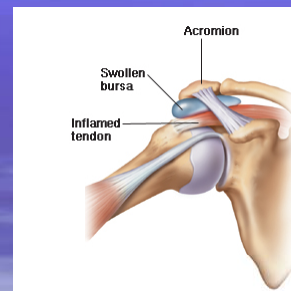
## Anatomy

- 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



## 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

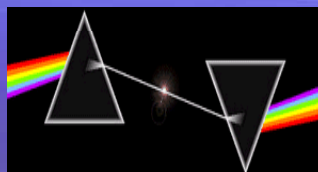
Inflammation →

Degeneration →

Partial tear →

Full thickness tear →

Massive tear



## Pathology

- Rotator Cuff tear

- “Timing”

- Acute (trauma)
    - Chronic (wear and tear)
    - Acute on chronic



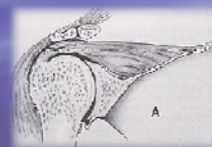
- “Size”

- Small → less than 1 cm
    - Medium → 1 - 3 cm
    - Large → 3 - 5 cm
    - Massive → > 5 cm



- “Thickness”

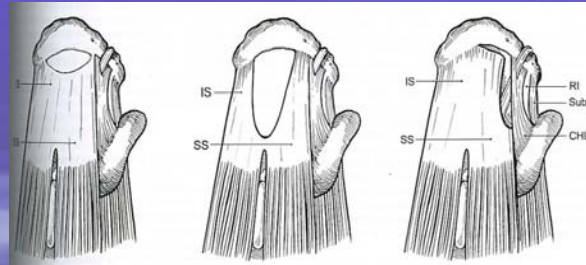
- Full-thickness Tear
    - Partial-thickness Tear



- “Symptomatic vs **Silent**”

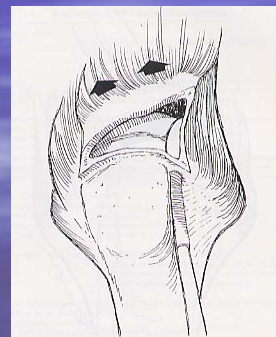
## Pathology

- “Pattern”
  - crescent
  - U shaped
  - L shaped
  - Massive



## Pathology

- 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

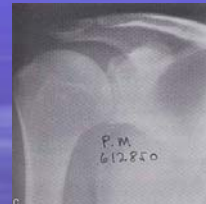




## Pathology

### ■ Shoulder (Glenohumeral) Dislocation

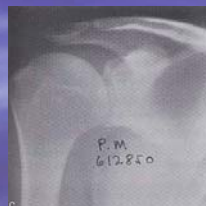
- ICD-9 → 831.0(1,2,3)
- Ball and socket
- Fall onto forward elevated hand
- Sliding or diving
- Fall on ice, grabbing railing



## Pathology

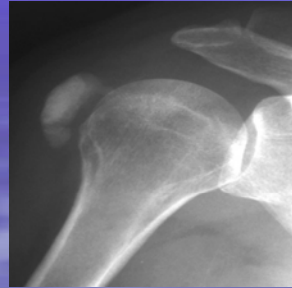
### ■ Shoulder (AC/acromioclavicular) Separation

- ICD → 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

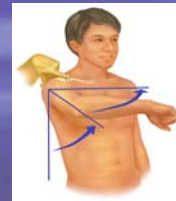
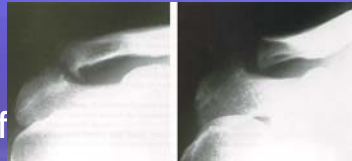
- Shoulder Arthritis
  - ICD-9 → 715.11
  - Wearing away of surface cartilage on ball and socket
  - Post injury
  - Lots of “miles” with wear and tear
  - Can be asymptomatic



## Pathology

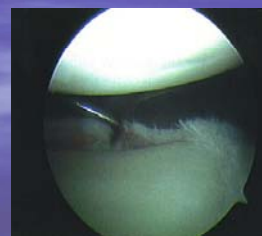
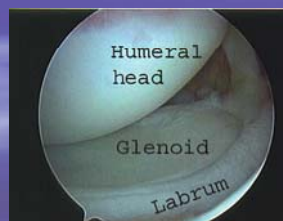
- Arthritis at end of collar bone  
9 → 715.11
- Acromioclavicular joint
- Between collar bone and top of shoulder blade
  - Hurts on top of shoulder
  - Worse when leaning on that side or reaching across body
- Spur pinches on cuff and bursa

ICD-



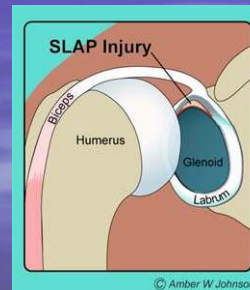
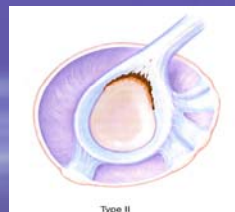
## Pathology

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



## Pathology

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



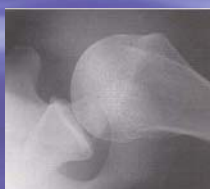
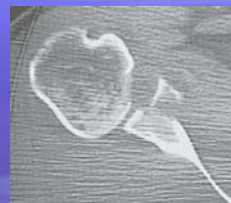
## Pathology

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



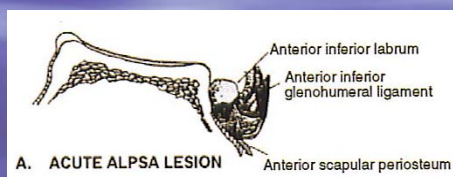
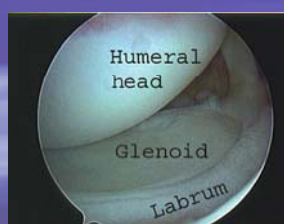
## Pathology

- 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

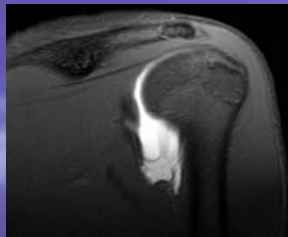




## Pathology

- HAGL

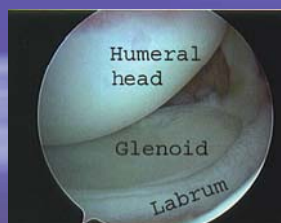
- Humeral avulsion glenohumeral ligament
- No code exists use instability



## 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**



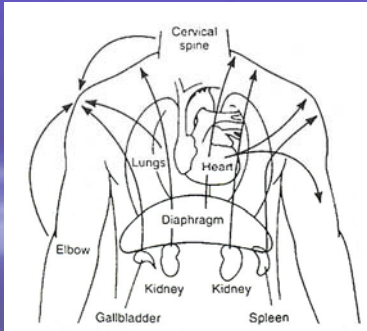
## History

- 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



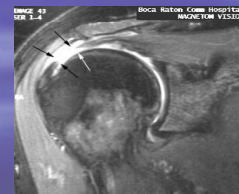
## Physical Exam

- 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



## 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



## Treatment

- 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



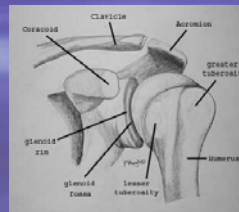
## Treatment

- 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



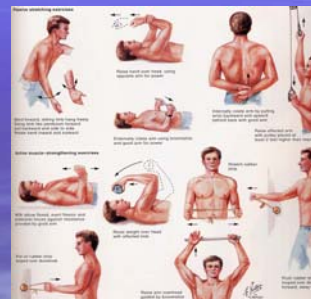
## Treatment

- 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)





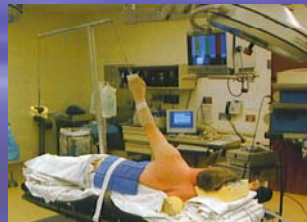
## Surgical Treatment

- 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



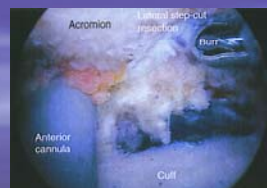
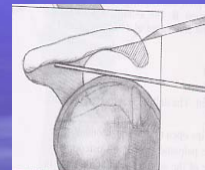
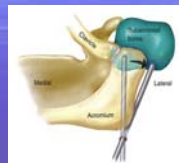
## Surgical Treatment

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



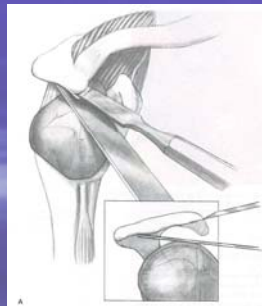
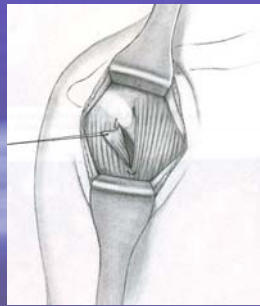
## Surgical Treatment

- Decompression
  - Remove spur
  - Remove inflamed bursal tissue



## Surgical Treatment

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



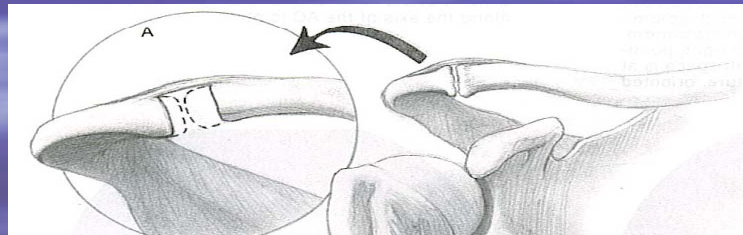
## Surgical Treatment

- 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



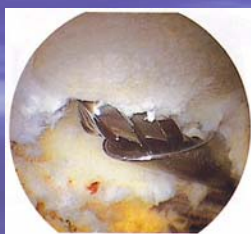
## Surgical Treatment

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



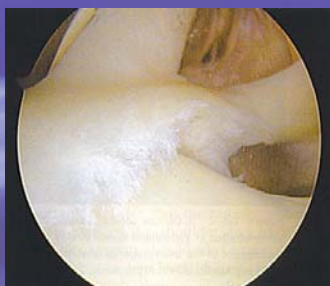
## Surgical Treatment

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



## Surgical Treatment

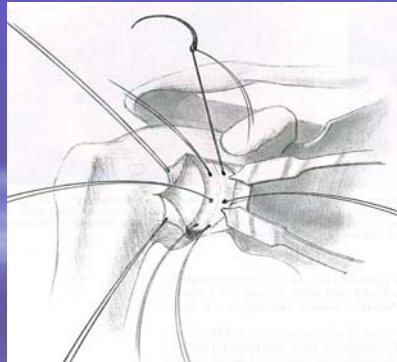
- Labrum (Cartilage) repair
  - Secure labrum and biceps to bone





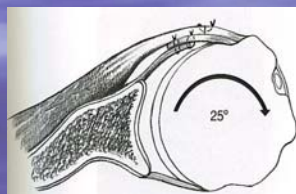
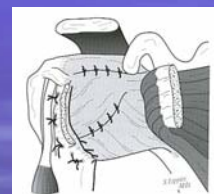
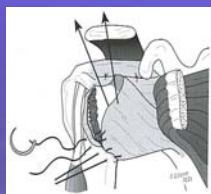
## Surgical Treatment

- Open Bankart
- CPT → 23455



## Surgical Treatment

- Open Capsular Shift
- CPT → 23450



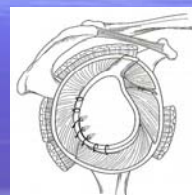
## Surgical Treatment

- 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

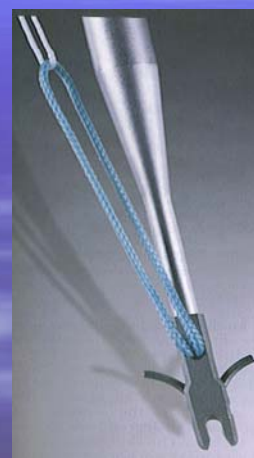
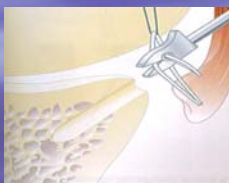


## Surgical Treatment

- Arthroscopic Bankart Repair

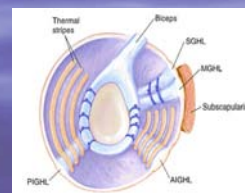
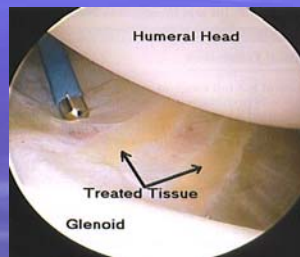
- Knotless anchor

- No need for tying skills
    - Eliminates weakness of knots
    - Metal and bio
    - Faster



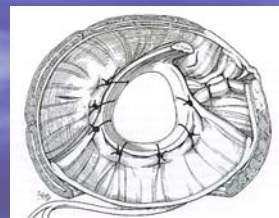
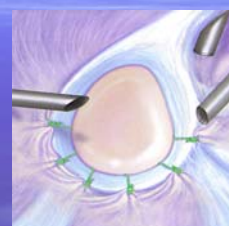
## Surgical Treatment

- Arthroscopic Capsulorraphy
  - 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 Capsulorraphy
  - CPT → 29806
  - Suture plication
    - Capsular tucks
    - Multidirectional instability
    - Adjunct to bankart or SLAP



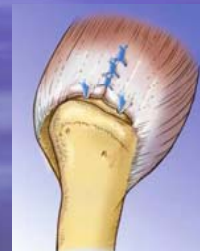
## Surgical Treatment

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



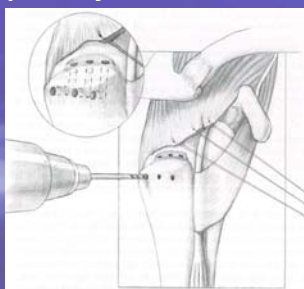
## Surgical Treatment

- 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

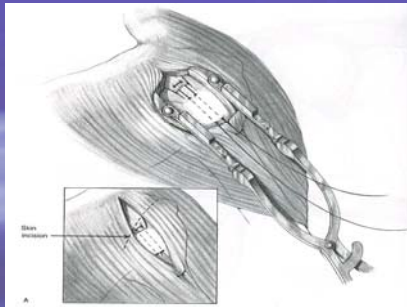
- Rotator Cuff Repair
  - Open
    - Saber type incision
    - Deltoid detachment
    - Combined with open SAD and DCR
    - Use anchors or bone tunnels
    - Cannot manage glenohumeral pathology
    - SLAP cannot be seen or repaired
    - Tear pattern not easily appreciated
    - Cannot mobilize massive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





## Surgical Treatment

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

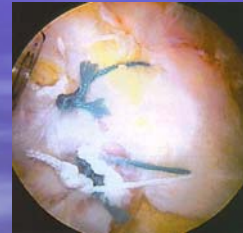
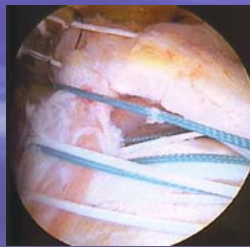
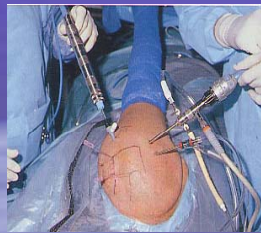


## Surgical Treatment

- 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

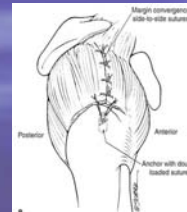
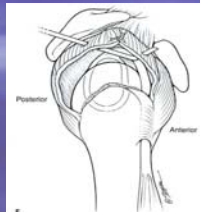
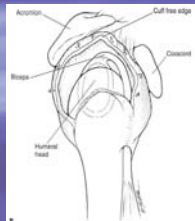
## Surgical Treatment

- Rotator Cuff Repair
  - Arthroscopic
  - CPT → 29827



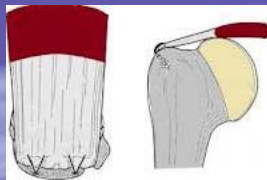
## Surgical Treatment

- Rotator Cuff Repair
  - Arthroscopic – Margin Convergence



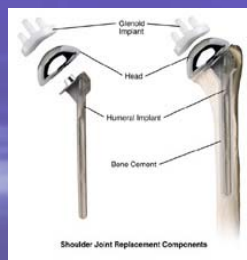
## Surgical Treatment

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



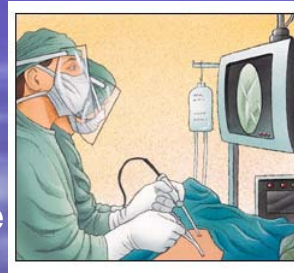
## Surgical Treatment

- 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

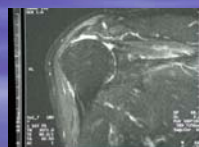
- Type of occupation/sport
  - Sedentary vs heavy labor
  - Ability to protect shoulder
  - One handed work available
  - Temporary change in position work or sport
- Pain control
  - Comfortable enough to work/play
  - Type of job where can work on pain meds
- Commute
  - Confidence in driving
  - Ability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



## Return to Work/Sports/Life

### Variables

- 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