Shoulder Pain: Keep surgeon’s hands in Pockets

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Case

68 year old

Rt shoulder pain

pain in all positions and motions

Radiation to arm

Night pain
• Do Symptoms progress and tears enlarge with time?

• Is painful cuff tear related to age?

• Does ADL related to tear size?

• After RC repair - will it heal?
“the recommendations were developed using systematic evidence-based processes”
Full Thickness Tears and Asymptomatic Patients

In the absence of reliable evidence, it is the opinion of the work group that surgery not be performed for asymptomatic, full thickness rotator cuff tears.

Strength of Recommendation: Consensus

Full Thickness Tears and Symptomatic Patients

Rotator cuff repair is an option for patients with chronic, symptomatic full thickness tears.

Strength of Recommendation: Weak
Rotator Cuff Tears and Exercise, Corticosteroid Injections, NSAIDS, Activity Modification, Ice, Heat, Iontophoresis, Massage, T.E.N.S., PEMF, and Phonophoresis, TENS, US

We cannot recommend for or against

Strength of Recommendation: Inconclusive
Acute Traumatic Rotator Cuff Tears and Surgery

Confounding factors

Increasing Age: Weak
MRI Tear Characteristics: Weak
Worker’s Compensation Status: Moderate
The glenohumeral joint - a balance between mobility and stability

Anatomy
Biomechanics
Pathology
Common sense
אנמנתה
בדיקה גופנית
הדמיה
טיפול ראשוני
ניתוח
(?
שיפול ראשוני
נתות (?)
مبادئ
אבחנה
Shoulder pain

16% of all musculoskeletal complaints

Peak in age 45-64 years

1y prevalence 20-50%

Chronic: >6 months

Causes:

extrinsic

Intrinsic
SHOULDER PAIN

Extrinsic

Intrinsic

Intracapsular

Extracapsular
extrinsic causes

- Cervical radiculopathy
- Suprascapular, long-thoracic, or spinal accessory neuropathy
- Adjacent or metastatic neoplastic disease
- Thoracic, abdominal
Intrinsic shoulder disorders

Intraarticular
osteoarthritis
adhesive
capsulitis
Instability
Labrum / LHB

extra-articular
Intrinsic shoulder disorders

Intraarticular

extra-articular

impingement rotator cuff ACJ LHB
MAIN COMPLAINT - ?

- PAIN
- INSTABILITY
- STIFFNESS
- WEAKNESS
- LOCKING
- DEFORMATION
Where is the pain?

Top of shoulder - ACJ, referred
Where is the pain?

Impingement (subacromial)
Where is the pain?

Radicular
Tendon rupture
Rotator Cuff Impingement
Evaluation

Selective injections *(Lidocaine test)*

SAS, ACJ
Case 1

68 year old male

Chronic Rt shoulder pain

pain in all positions and motions

Radiation to arm

Night pain
What is known?

**Age 68** - primary cuff, adhesive capsulitis, osteoarthritis

“**Pain in all positions**” - Cuff, capsule, cartilage (OA)

**Radiation to arm** - RC

68 year old male
chronic shoulder pain
pain in all positions and motions
Radiation to arm
Night pain
Special Tests - Impingement

- Neers sign
- Hawkins sign
- Jobes sign
Special Tests - Impingement

Neers sign
Special Tests - Impingement

Hawkins test
Special Tests - Impingement

Jobes test
Special Tests - Rotator Cuff

External rotation lag sign (ERLS)
Hornblowers sign
   *Infraspinatus / teres minor*
Internal rotation lag sign (IRLS)
Liftoff test
   *Subscapularis*
Zaslavs internal impingement test
Special Tests - Rotator Cuff

External rotation lag sign (ERLS)

*Infraspinatus / teres minor*
Special Tests - Rotator Cuff

Internal rotation lag sign (IRLS)

*Subscapularis*

Lift off test

Bear hug test
Special Tests - Rotator Cuff

Belly Press test
Special Tests - Biceps

- Speeds test
- Yergason test
Special Tests - Biceps

Speeds test
Special Tests - Biceps

Yergasons tests
SLAP Tears
Superior Labral Antero-Posterior
Mechanism

Distraction - Biceps Traction
  Pull on arm

Peel-Back - Indirect
  Hyperabduction
  Indirect blow to arm

With Shoulder Dislocation

Extension of Labral Tear
MR Arthrogram

76% Accuracy
O’Brien Test

No Pain → Pain
O’Brien Test
Special Tests - SLAP Lesions

Crank test
Axillary view
Calcific Tendinitis
Massive RC tear
Ultrasound
Conservative treatment for RC tear

Pain

Function

Tear size

Duration of symptoms
Conservative treatment for RC tear

Pain control - analgesics, NSAIDS, steroid inj.

Function - ROM, scapular stability, SSC, ISP
When to operate?

Recurrence of symptoms

Failure with conservative Tx

Tear expansion

Less functional rotator cuff
Natural History of Nonoperatively Treated Symptomatic Rotator Cuff Tears in Patients 60 Years Old or Younger  

Safran O AJSM 2011

51 patients <60y, 2-3y FU, mean age 54y
There was a correlation between the existence of considerable pain at the time of the follow-up ultrasound and an increase in tear.

49% had increased by 5 mm or more.
The natural history of asymptomatic rotator cuff tears: a three-year follow-up of fifty cases *moosmayer et al at JBJS (am) 2013*

18/50 developed symptoms

In the symptomatic group:

- Significant increase in mean tear size
- Progressing to advanced muscle atrophy
- Pathology of the LHB in the newly symptomatic group
Is it the bone?
Symptomatic Rotator Cuff Tears Show Higher Radioisotope Uptake on Bone Scintigraphy Compared With Asymptomatic Tears

36% in the symptomatic group showed increased radioisotope uptake.
Bone density of the greater tuberosity is decreased in rotator cuff disease with and without full-thickness tears *Waldorff* JSES 2011

Are the changes initiate within the tendon, the bone, or both?

Full-thickness RCT are associated with diminished BMD of the GT (loss of physical stimuli at the tendon insertion point)

Bone mineral changes are present in the greater tuberosity of shoulders with rotator cuff disease both with and without full-thickness tears

It is possible that these changes might precede the tear itself
Explanation for diminished BMD

- Disuse osteopenia?
  No - absence of corresponding demineralization within the humeral head

- The osteopenic response at the GT after impingement most likely reflects a local increase in osteoclast resorption
Treatment of rotator cuff tears in older individuals: a systematic review

There is insufficient evidence to support efficacy of operative vs nonoperative treatment of RCTs in patients aged 60 years and older.

The results suggest possible favorable outcomes with operative management of rotator cuff tears in this population.

Downie, Miller 2012

Evidence based medicine
When Do Rotator Cuff Repairs Fail?
Serial Ultrasound Examination After Arthroscopic Repair of Large and Massive Rotator Cuff Tears *Miller et al AJSM 2011*

Objective: define the timing of structural failure of surgically repaired large and massive rotator cuff tears by serial imaging with US

- 22 patients, 9 (41%) retear
- 7 - within 3 months of surgery
- 2 - between 3 and 6 months
- No retears between 6-24 months

*Winner of the 2010 O’Donoghue Award*
• Suspect: the failure most often occurs at the suture-tendon interface, as there was often suture in the visualized tendon gap, and no evidence of displaced suture anchors.
• Biologic factors that may govern the healing process.
• Role of NSAIDS?
When not operate?

Tear / Patient characteristics:

Small, asymptomatic tears

Good response to conservative Tx

Patient: elderly, work related
Anterior Deltoid Strengthening program
VuMedi is the place to watch, discuss and improve techniques online.

Wear and Lysis - Stable Femur

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A Multicenter Randomized Controlled Trial Comparing Single-Row with Double-Row Repair of Rotator Cuff Tear


In this multicenter Level 1 study, 90 patients were randomized to either single-row or double-row fixation for arthroscopic rotator cuff repair. The authors found that at 2 years follow-up there were no differences in the two groups with respect to functional or quality of life outcomes as measured by the Western Ontario rotator cuff (WORC) index, constant score and the American Shoulder and Elbow Surgeons (ASES) score. There was also no difference in strength between the two groups at follow-up. However, the study found that the double-row technique correlated with higher rates of healing on MRI assessment.

What is more important, functional outcomes or healing rates?

Select your vote

☐ Functional outcome

☐ Healing rate
**Purpose**: examine the impact of an active compensation claim following a work-related shoulder injury on reporting disability

*Figure 1. Pre- and post-operative scores of three outcome measures.*
Outcome of rotator cuff repair

710 consecutive open RC repairs

- patient self-assessment of satisfaction is very high - 87.5% pleased overall

Worse results after surgery:

- workers' compensation
- revision surgery
- < 55 y
Case 2

26 year old male

Chronic Rt shoulder pain 6 months

More in overhead activities

Weakness
Is it intrinsic or extrinsic?
Is it focal or radicular?
Neck pain?
Pain – location, radiation, exacerbation
Is there muscle wasting?
Which muscles are involved?
Is there instability?
Are there other neurological symptoms?
What is known?

**Age 26** - Age eliminates primary cuff, adhesive capsulitis, osteoarthritis

**Instability**: Male - Laxity less common

**“Weakness”** - What are your symptoms, pain or weakness?

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26 year old male
chronic shoulder pain 6 months
More in overhead activities
Weakness
D.D. At this point

Neurological etiology – Can be based on Hx and PE

“Weakness, overhead”

Pathology could be *Cervical radiculopathy*, cervical rib or a prominent C7 transverse process, *Parsonage-Turner syndrome*, *Rotator cuff Tear*, *Suprascapular nerve entrapment*
Imaging studies

Shoulder + C spine radiographs

Ultrasound

EMG

MRI - shoulder, spine (?)
Imaging studies
Suprascapular neuropathy
Or....
46 y male
Left shoulder pain 4-5 m
Night pain
No injury
MRI - paralabral cyst
What is known?

Age 46 - primary cuff, adhesive capsulitis, osteoarthritis+/-

“Pain in all positions” - Cuff, capsule, cartilage (OA)

No injury - RC tear less likely

Limited ROM - Adhesive capsulitis, OA

46 y male
Left shoulder pain 4-5 m
Night pain
No injury
MRI - paralabral cyst
Frozen shoulder?

**Adhesive capsulitis:** inflammatory condition of the glenohumeral joint synovium and capsule leading to a restricted range of motion.

**Primary (idiopathic)**
- Diabetes
- Hyper/hypothyroidism
- Intrathoracal pathology

**Secondary**
- Surgery
- Trauma
- Prolonged immobilization
1st stage (freezing stage) early inflammatory stage, hypervascular synovitis

2nd stage (frozen stage) decrease in hypervascularity and synovitis, capsular contraction and thickening

3rd stage (thawing phase) no synovitis, decrease in the thickness of the capsule
The natural course is self-limiting
Improves over an 18 to 24 m
"supervised neglect"
poor prognostic indicators: Intrinsic pathology or insulin-dependent diabetes of more than 10 years
Freezing stage - insidious onset of pain. At the end of this period, shoulder ROM becomes limited.

Frozen stage - reduction in pain, still restricted ROM

Thawing stage - ROM improves (can take between 12 and 42 m)
Case 3

MRI - “paralabral cyst”
Adhesive C. Normal
Coracoid
Adhesive Capsulitis - Tx

According to stages!

Freezing stage - insidious onset of pain. At the end of this period, shoulder ROM becomes limited.

Pain control, ROM, steroid injection

Frozen stage - reduction in pain, still restricted ROM

ROM, steroid injection, MUA, Surg. release

Thawing stage - ROM improves (12-24m)

ROM, MUA, Surg. release
Summary

History
Expose
Palpate
Active ROM
Passive ROM
Special Tests
Summary

Conditions

- Instability
- Subacromial impingement
- Rotator cuff rupture
- Frozen shoulder
- OA

OA
תודה!