Workers Compensation and the Rotator Cuff

A story filled with intrigue, mystery and heart break

Michael T. Daines, MD

Obligatory about me slide

- Boise Native (Borah High)
- Undergraduate degree in Biology at the University of Utah
- Columbia Medical School
- University of Iowa Hospitals and Clinics
- Oxford University, Shoulder fellowship


Surgery
Surgery

Post Education

- 2009-2013 Hospital employed orthopedics in Colorado
- 2013 moved into private practice with West Idaho Orthopedics
- Shoulder practice with some general
  - Robotics
  - 80% shoulder, growing

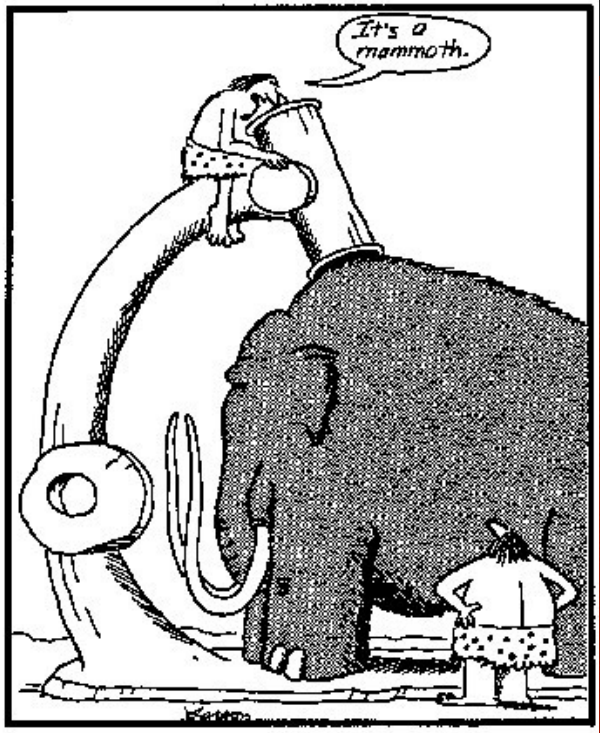
Current Practice

- West Idaho Orthopedics
- One of the largest independent groups in Idaho
- 3 physicians
- 3 PAs
- https://westidahoorthopedics.com/

IDID
INDEPENDENT DOCTORS OF IDAHO

Medical Education

- Repetition
- 50% of what you learn is wrong



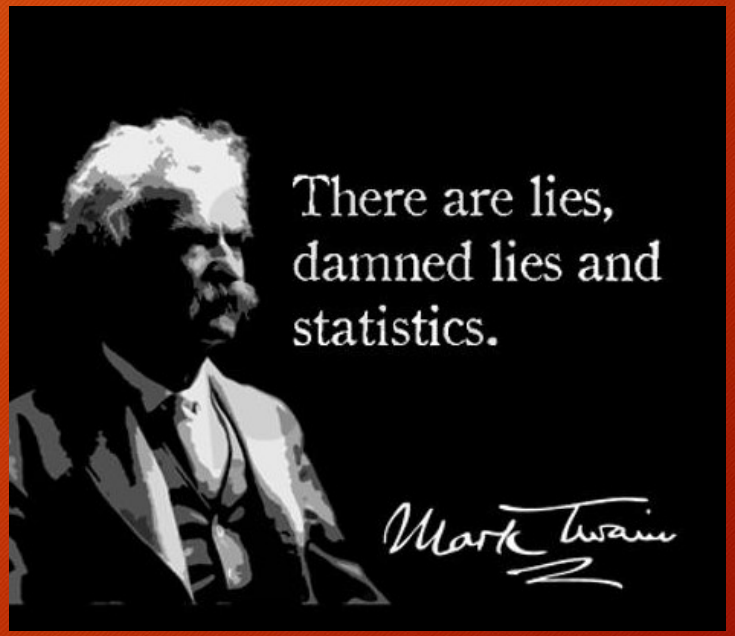
Early microscope

Plan

- Convince you that this is relevant to you!
- Discuss common Shoulder problems
  - Rotator cuff!
- Detour into biologics!
- Entertain!
- Time at the end for questions!

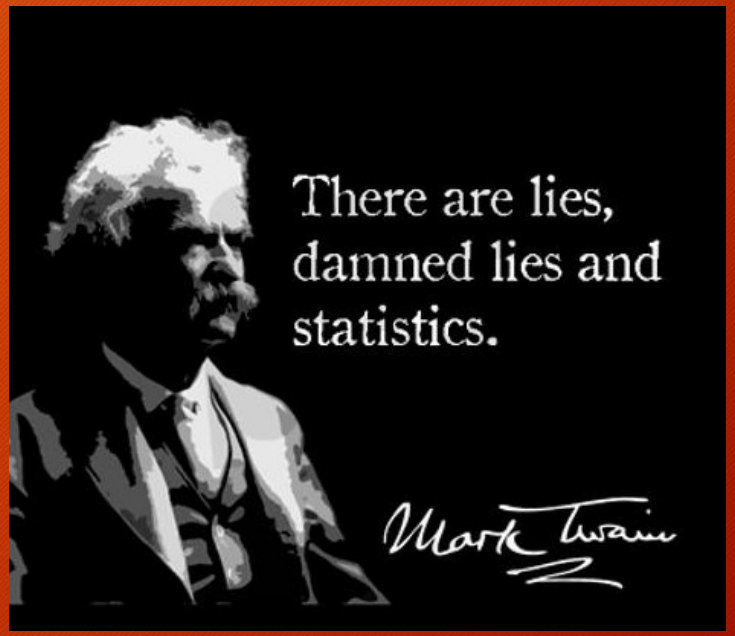
The shoulder

- Statistics!
  - 5 million shoulder visits for rotator cuff pathology in a six year period of observation by the AAOS
  - Estimates of 5-60 percent of adults over 50 have a rotator cuff tear!
- 15 new episodes of shoulder pain per 1000 patients
- Lifetime prevalence 70%
- Peaks in the 40-59 year old
  - Highest productivity group
- Rotator cuff accounts for 70%



Shoulder pain statistics

- 15% of men and 24% of women report weekly shoulder pain
- Lifetime prevalence is 70%
- Pope et al 20% of population suffer from shoulder pain



Shoulder pain statistics

- Only 50% of patients better within six months
- 60 % within a year
- 30% of people with shoulder pain report limitations in daily life

Work Comp Shoulder

- Common, represent 6 percent of DAFW cases
- Average work loss 28 days
- 51,750 dollars average claim

All claims average $44,179			$23,409	$20,770
Head/CNS (a) $91,844			$60,174	$31,670
Multiple body parts $71,645			$37,195	$34,450
Neck $68,021			$35,690	$32,331
Hip/thigh/pelvis (b) $62,110			$36,696	$25,414
Leg $59,994			$37,441	$22,553
Arm/shoulders $51,750			$26,690	$25,060
Lower back $40,409			$18,087	$22,322
Upper back $37,320			$17,588	$19,732
Knee $36,581			$18,388	$18,193
Face (c) $34,560			$18,305	$16,255
Ankle $31,685			$16,946	$14,739
Multiple trunk/abdomen $30,168			$17,683	$12,485
Foot/toes	$15,359	$13,717	$29,076	
Chest/organs	$14,464	$13,492	$27,956	
Hand/fingers/wrist $27,072			$14,791	$12,281

Source: National Council on Compensation Insurance (2024). Average total incurred costs per claim by part of body, nature of injury, and cause of injury - Using WCSP Data as of Latest Report Available for Accident Years 2021-2022 and states where NCCI provides ratemaking services. Note: The data includes COVID-19 claims.

Note: The National Council on Compensation Insurance makes no representations or warranties of any kind nor assumes any responsibility for accuracy of the underlying data or any third-party use of the data.

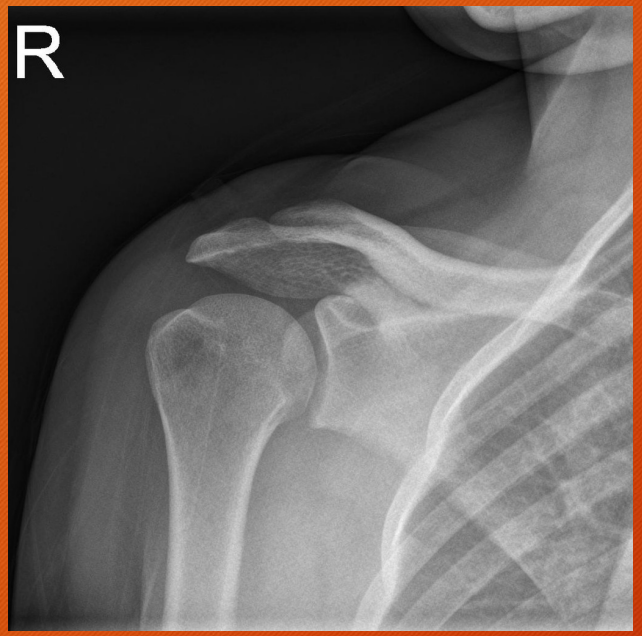
(a) Central nervous system

(b) Includes sacrum and coccyx.

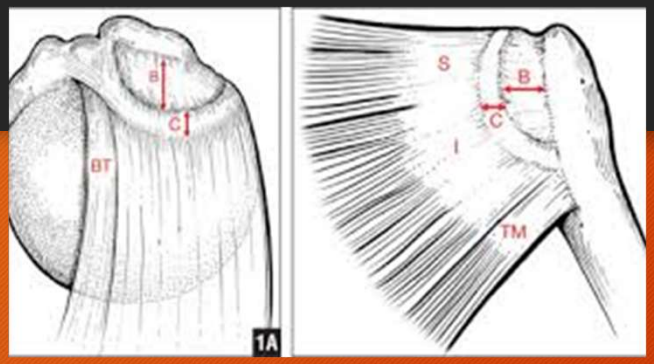
(c) Includes teeth, mouth, and eyes.

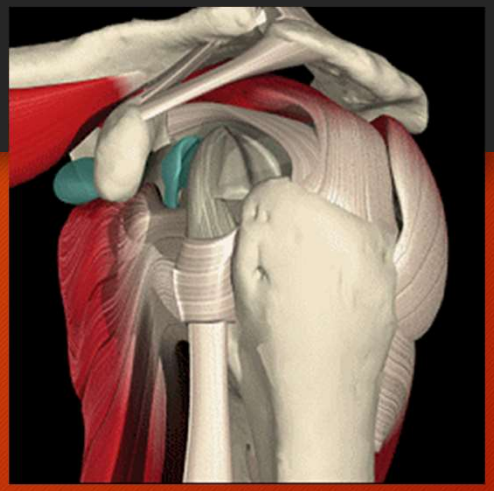
The Rotator Cuff

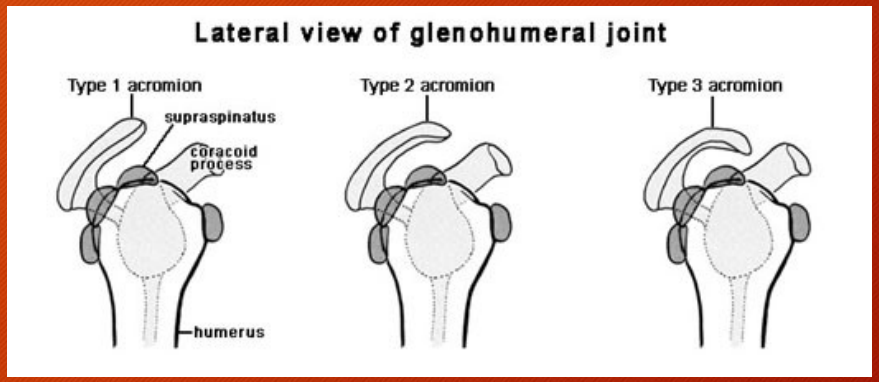
The Rotator Cuff



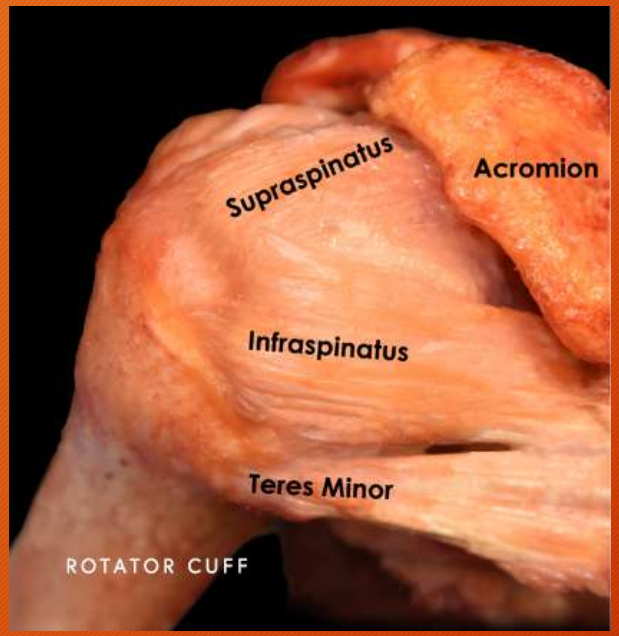
The Rotator Cuff

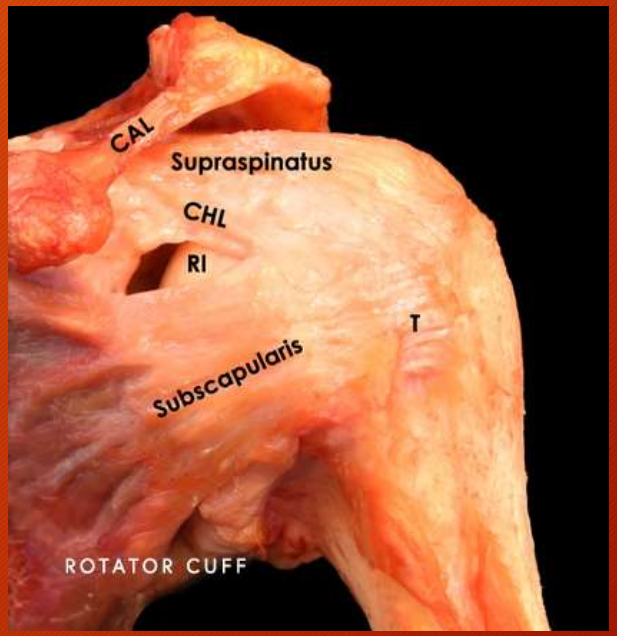






The Rotator Cuff





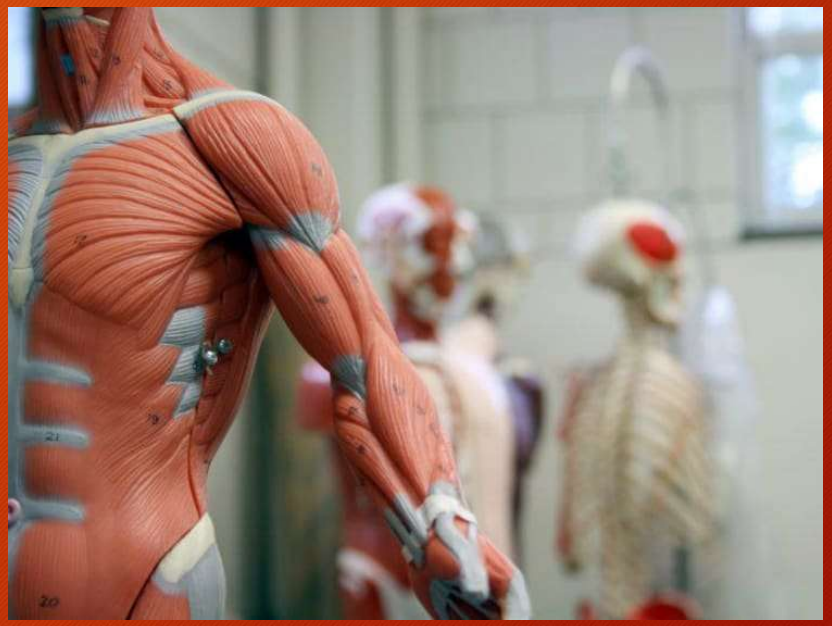
Arthroscopic View

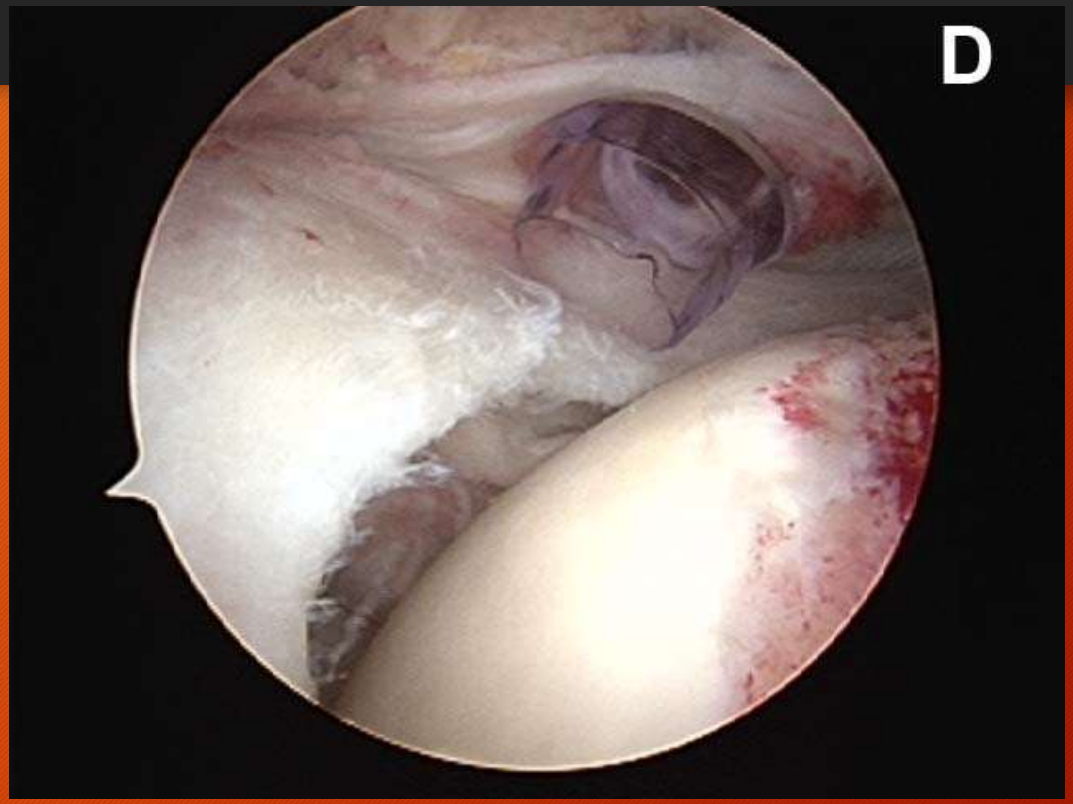
When good rotator cuffs go bad

- Tendonitis
- Impingement
- Rotator cuff tendon tears
  - Traumatic
  - Chronic/degerative

Dead men and radiologists don't lie: a review of cadaveric and radiological studies of rotator cuff tear prevalence

- 4629 shoulders, literature review
- 11.75% full thickness rotator cuff tears
- 18.49% partial thickness tears
- US asymptomatic patients 39.9%
- US symptomatic 41.4%
- MRI asymptomatic 26.2%
- MRI symptomatic 49.4%



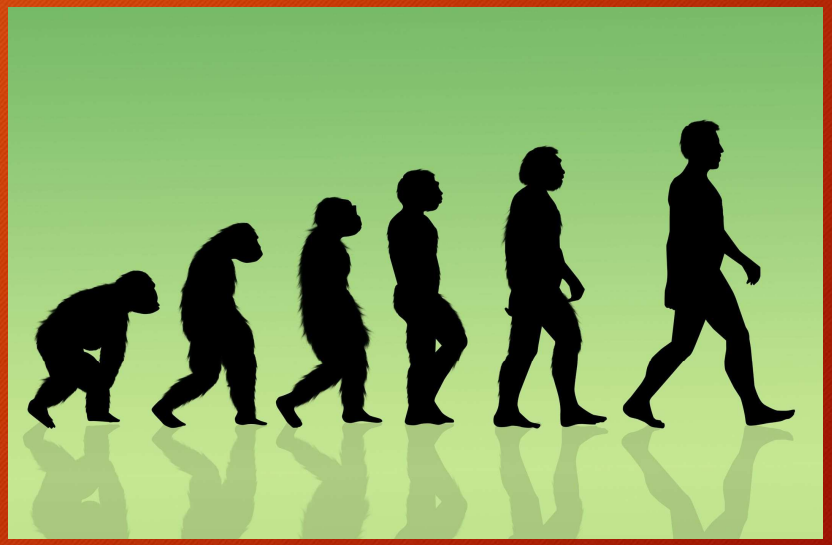

D

Rotator cuff tears

- Occur in up to 40 % of people over 50
- Most not associated with an injury
  - Can worsen with an injury
- Insidious onset of shoulder pain
- Night pain
- Weakness
- Mechanical symptoms
  - Catching
  - Locking

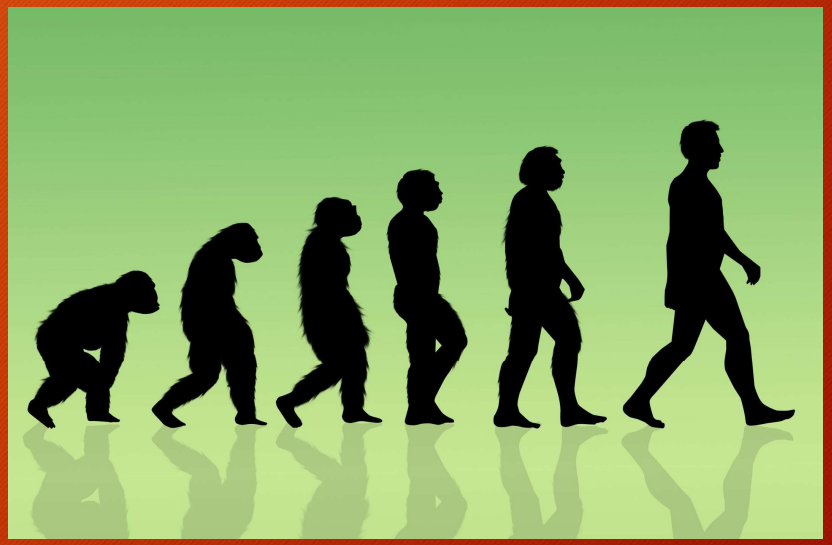
Rotator cuff tears treatment

- Evolving
- Influenced by size
- Age
- Chronicity
  - Biology



Rotator cuff tears treatment

- Influenced by size



Small rotator cuff tears

- Evolving
- Role for therapy, possibly injections?
- Tend to get bigger over time
- Role for surgery
  - Easier to repair
  - Better chance to heal
  - Avoid issues of larger tears

Medium tears

- Weakness
- Overhead activity aggravates pain
- Early fatigue
- Larger with injury
- Treatment largely surgical
  - Outcomes better
  - Good healing potential
- Limited role for conservative management

Large tears

- Significant weakness
- Loss of function
- Mechanical symptoms more prominent
- Often acute on chronic
  - Sudden worsening of long lasting symptoms
- Limited role for non operative treatment

Massive and Irreparable tears

- Special case
- Profound functional loss
- Pseudo-paralytic shoulder
- Surgical treatment is evolving
  - Repair
  - Shoulder replacement

Rotator cuff tears by age

- Younger than 40
- Middle age (younger than 65)
- Life experienced

Young patients

- Smallest group
- Largest potential for disability
- Best potential for healing
- Limited role for non operative management

Middle Aged (40-65)

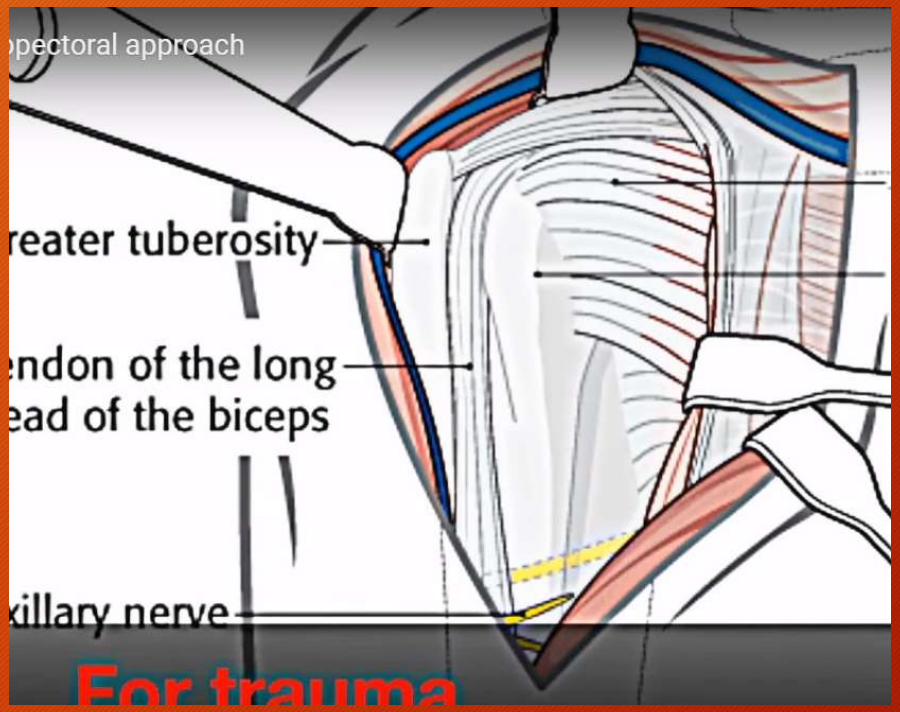
- Largest group
- Most cases gradual
- Often discovered due to an injury
- Pain a primary feature
- Mostly surgical

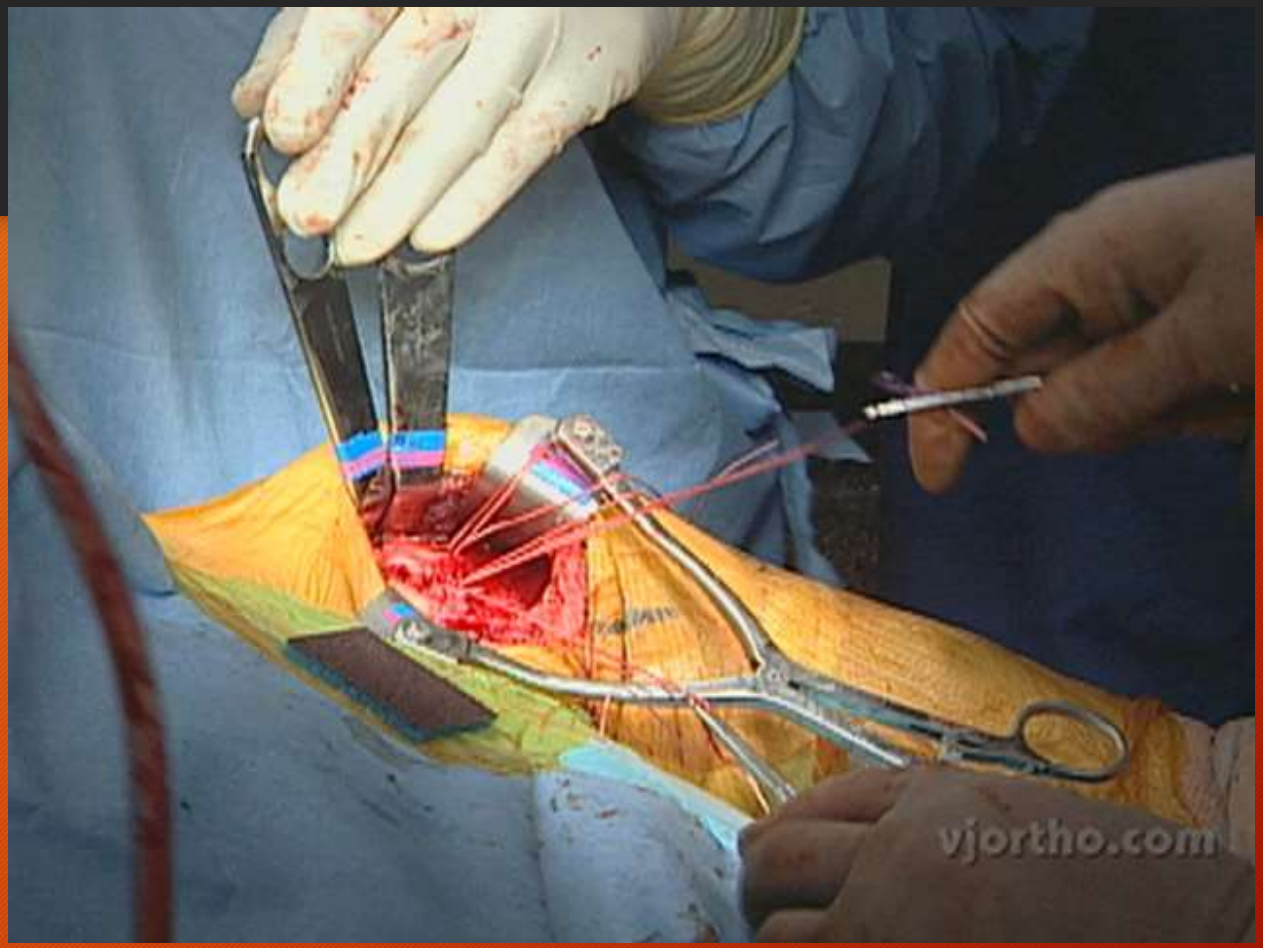
Older than 65

- Second largest group
- Pain less prevalent
- Weakness and loss of function
- May do well with therapy and activity modification
- Surgical
  - Primary repair
  - Reverse total shoulder

How to fix it?

Traditional open repair




vjortho.com

Mini Open Repair (arthroscopic assisted)

- Deltoid not removed from bone
- Quicker recovery
- Less stiffness

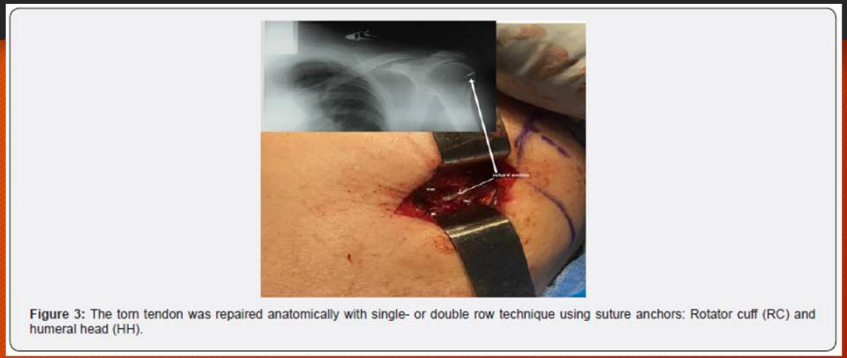
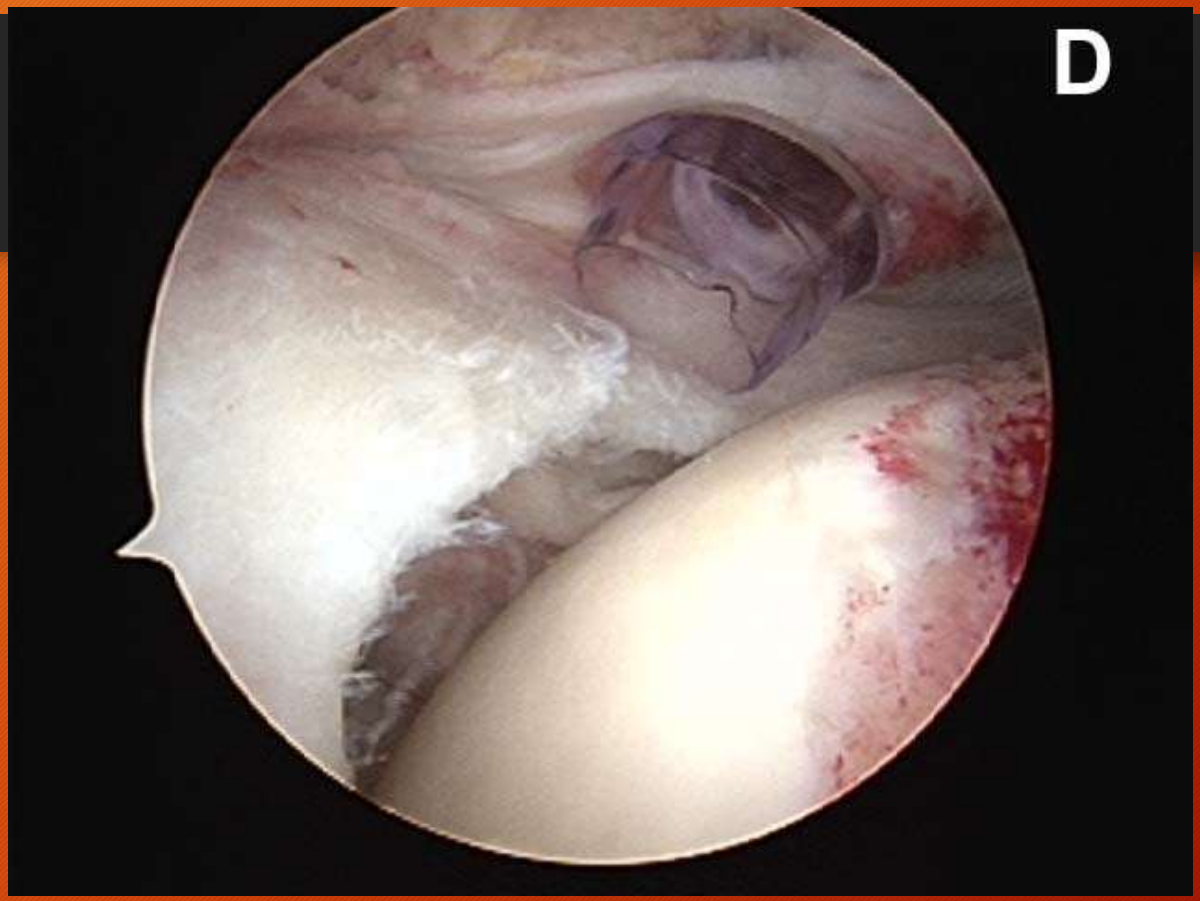


Figure 3: The torn tendon was repaired anatomically with single- or double row technique using suture anchors: Rotator cuff (RC) and humeral head (HH).

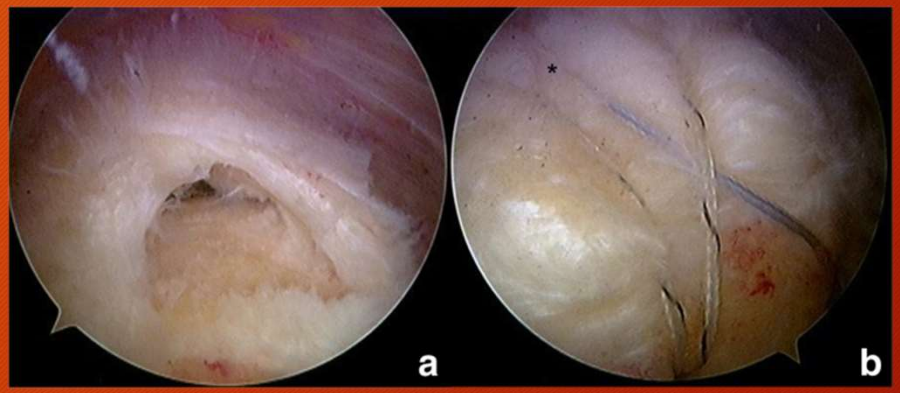
Shoulder arthroscopy

- Minimally invasive
- Allows for a more complete assessment of the rotator cuff
- Less pain
- Quicker return to function


D

All Arthroscopic repair

- Least violation of the deltoid
- Lest painful
- Less scarring, less stiffness
- More complete visualization



Outcomes

- Improved strength and stamina
- Less night pain
- Improved overall shoulder use

Rotator cuff tears in the context of the workers compensation clinic

- Two categories
  - Trauma
  - Non traumatic

Traumatic rotator cuff tears

- Younger age
- Memorable event!
  - Not talking about the ‘felt a pop’
- Dislocations
- Violent trauma
- Obvious disability

Traumatic rotator cuff tears

- Present acutely, often necessitating an emergency room visit
- Severe functional deficits
- Often other associated trauma
- Causality rarely in doubt!

Traumatic rotator cuff tears

- Push treatment forward
- Early MRI
- Early referral to surgery
- Outcome depends on timely treatment

Traumatic rotator cuff lacerations

- Push treatment forward
- Early MRI
- Early referral to surgery
- Outcome depends on timely treatment

Non Traumatic tears

- Vague pain
- Pain with overhead activity
- Night pain
- Mechanical symptoms
- Often symptoms progress in a non linear fashion
  - I felt a pop!

Non Traumatic tears

- History
  - First will be the best
  - Overhead work
  - Previous symptoms
  - Previous treatment
- Physical exam
  - Key in on weakness
  - Drop arm test

Conditions

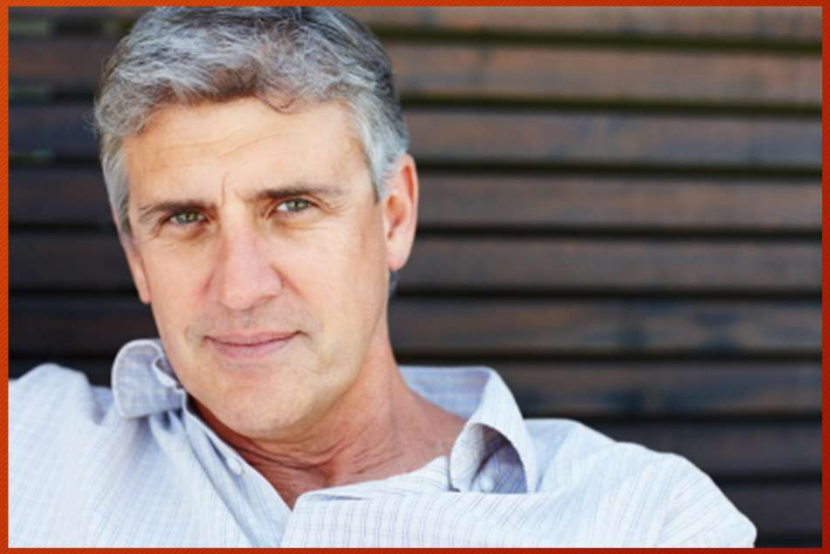
- Impingement
- Partial thickness rotator cuff tendon tears
- Full thickness tears
- Cuff tear arthropathy

Non Traumatic tears

- If there is a sudden change, get the MRI early
- Establish what is new vs what is chronic
- Helps with apportionment later

Middle Aged Man

- Insidious onset of pain
- Minor accident
- Seems worse at work
- Night pain



Exam

- Relatively benign
- Pain overhead
- No weakness
- Impingement signs

What do we call it?

- Impingement
- Bursitis
- Tendinitis

Is it a work injury?

- What now?
- Need a systematic approach
- History needs to be complete and accurate
  - Prior history?
- Good physical exam

How Long Do You Wait?

- Medicare guidelines state six months
- Reality is if you don't see improvement with NSAIDs and injections, time will not help
- Cut to the chase!

Did the Job cause it?

- Initial history
- Work conditions!
- Injury?
- Aggravation and apportionment

59 year old Laborer

- Works on a truck
- Previous Shoulder injury
  - Closed
  - Documented return to normal function
- Reports no symptoms immediately prior to injury

Injury

- Dreaded pop in his shoulder
- Unable to elevate his arm
- Pain 10/10
- Unable to return to work

Exam

- Profound weakness
- Atrophy
- Range normal
- Pain
- crepitance

How do you resolve this one?

- Acute?
- Chronic
- Mix?
- Apportionment?

Outcome

- Failed repair
- Poor functional outcome
- Permanent restrictions

Sticky Questions

- Apportionment?
- Permanent restrictions?

- 70/30
- Permanent restrictions
- Impairment rating

48 year old prison gaurd

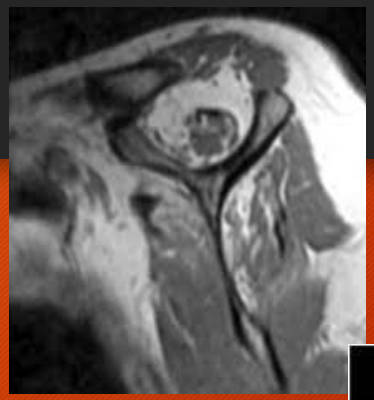
- Restraining an inmate
- Felt a pop in his shoulder
- Difficulty elevating the shoulder
- Seen in workers compensation clinic
- Unable to use sidearm

48 Year old prison guard

- Referred to therapy
- Requested MRI
- Told he had to do 12 weeks PT first
- MRI done at 6 months
- Referred to my office at 7 months

48 year old prison guard

- Failed repair
- Reverse total shoulder
- On disability



Sticky Questions

- Apportionment?
- Permanent restrictions?
- On disability
- Massive impairment rating
- 100 percent apportioned to the injury

63 year old data entry clerk

- Insidious onset of shoulder pain
- Mild mechanical symptoms
- Pain worse with activity
- Relieved by rest

Exam

- Limited External Rotation
- Crepitance
- Cogwheel rigidity
- Neuro intact.
- Good cuff strength

X-ray

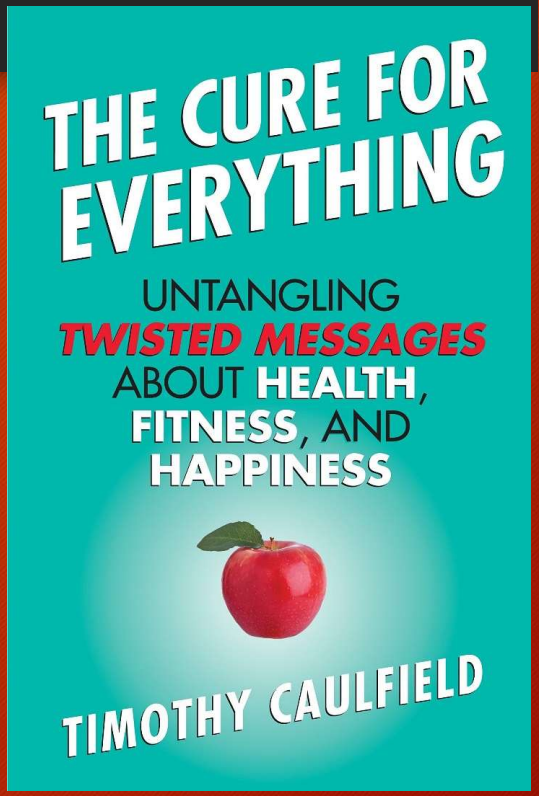
- Osteoarthritis
- Clearly not related to work conditions

Voodoo Magic!

- Biologics!

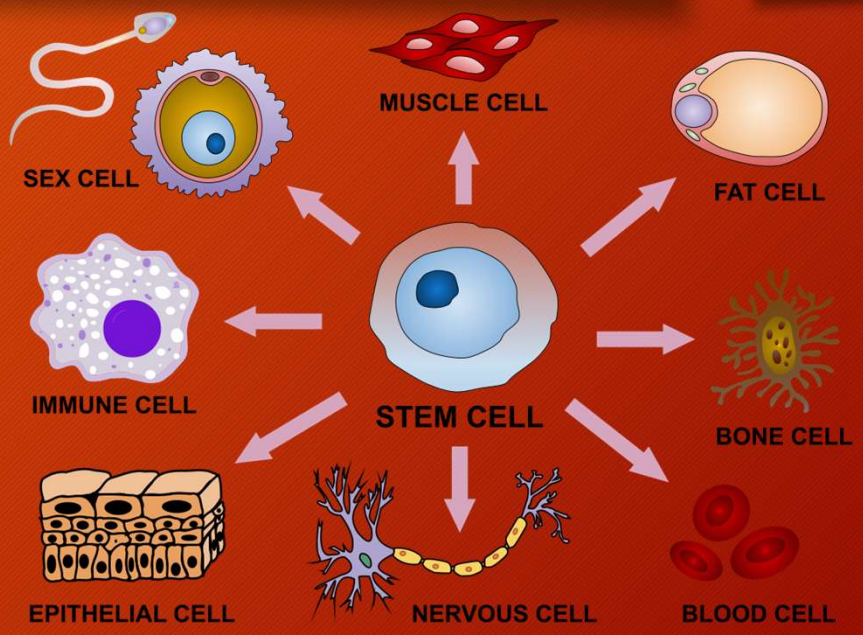
Biologics

- Stem Cells
- Bone marrow aspirate
- Platelet Rich Plasma



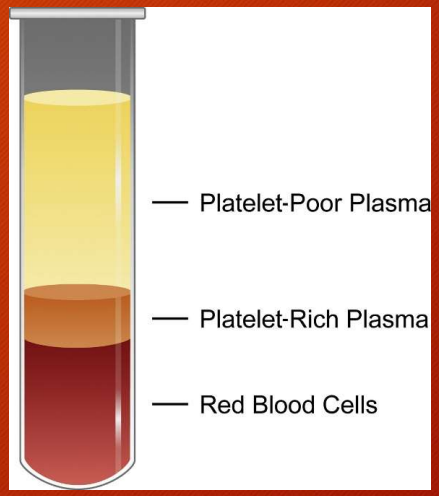
Stem cells

- Laboratory purified cells
- Cell preparations
- Source
  - Adipose tissue
  - Bone marrow aspirate
- Manipulation
  - Illegal in the US



Platelet Rich Plasma

- Spin down of whole blood
- Auto versus allo
- Multiple delivery systems
- Multiple collection systems
- Quality research
  - Confirms efficacy
  - Specific situations



PRP

- Different types
- Hyunchyl et all JBJS
  - PRP improved steadily for 6 months
  - Steroids showed initial but worsening symptoms after 2 months
- Growing body of evidence it out performs steroid
  - Shoulder study
  - Elbow study

Tempelhof et al JSES Jul-Aug 1999 Age related prevalence of rotator cuff tears in asymptomatic shoulders

- 411 volunteers
- 4 age groups
- Overall 20% had rotator cuff tears
- Increased with age
- ‘As a result, rotator cuff tears must to a certain extent be regarded as "normal" degenerative attrition, not necessarily causing pain and functional impairment.’

Dead men and radiologists don't lie: a review of cadaveric and radiological studies of rotator cuff tear prevalence
Reilly et al 2006 Ann R Coll Surg Engl

- 4629 shoulders, literature review
- 11.75% full thickness rotator cuff tears
- 18.49% partial thickness tears
- US asymptomatic patients 39.9%
- US symptomatic 41.4%
- MRI asymptomatic 26.2%
- MRI symptomatic 49.4%

Natural history of asymptomatic rotator cuff tears: a longitudinal analysis of asymptomatic tears detected sonographically Yamaguchi et al JSES 2001

- 58 patients
- 51% became sympromatic within 3 years
- 9/23 tears showed progression

- To determine the prevalence of rotator cuff tears in asymptomatic shoulders we conducted a prospective clinical and ultrasonographic study of 411 volunteers. We anticipated an age-dependent outcome and divided the patients into 4 age-groups. Overall, we found evidence of a rotator cuff tear in 23% of the patients. In group 1 (aged 50 to 59 years), 13% (22 of 167) of the patients had tears; in group 2 (aged 60 to 69 years), 20% (22 of 108) of the patients had tears; in group 3 (aged 70 to 79 years), 31% (27 of 87) of the patients had tears; and in group 4 (age >80 years), 51% (25 of 49) of the patients had tears. An astonishingly high rate of rotator cuff tears in patients with asymptomatic shoulders was thus demonstrated with increasing patient age. At this stage it remains unclear, however, which parameters convert an asymptomatic rotator cuff tear into a symptomatic tear. As a result, rotator cuff tears must to a certain extent be regarded as “normal” degenerative attrition, not necessarily causing pain and functional impairment.