Upper Extremity Repetitive Use Injuries

UE RSI’s

Treating Common Injuries
of Everyday Athletes
at
Work & Play

Jackson Orthopaedic Foundation

UE RSI's

A.J. Benham, DNP

ajbenham@jacksonortho.org

510-759-7078

Conflict of Interest

I hereby certify that, to the best of my knowledge, no aspect of my current personal or professional situation might reasonably be expected to affect significantly my views on the subject on which I am presenting.

OBJECTIVES

- Identify likely UE RUIs by presentation & history
- Perform a focused physical exam
- Order & interpret diagnostic tests
- Design & implement treatment plans
- Generate complete & specific referrals

Case Study #1

17 y.o. female competitive swimmer

R > L bilateral shoulder pain

Athletic appearance

No previous trauma or injury

No significant co-morbidities

Normal ROS

O.L.D. C.A.R.T.S.

- Onset
- Location
- Duration
- Character
- Aggravates/Alleviates
- Radiation
- Timing
- Severity

- When did it start
- Where is it
- How long does it last
- What does it feel like
- ? makes worse/better
- Where does it go
- When does it happen
- Scale of 1-10

Subjective Complaints

- Onset
- Location
- Duration
- Character
- Aggravates/Alleviates
- Radiation
- Timing
- Severity

- Gradually over 3 mos.
- Lateral shoulder
- Constant
- Dull, aching, burning
- Swimming/rest
- Trapezius, neck
- Worst after practice
- 4-7 depending on activity

Anatomy Review #1

Shoulder Anatomy Animated Tutorial

https://www.youtube.com/watch?v=D3GVKjeY1FM

Shoulder Anatomy

www.jacksonortho.org

Jackson Orthopaedic Foundation

Physical Exam

- Inspection
- Palpation
- Range of Motion
- Strength
- Sensation
- Circulation

- Swollen tendon insert.
- TTP tendon insertions
- Pain arc 90-130
- 5/5 w mod pain flexion and ext. rotate
- WNL
- WNL

Special Tests

- Impingement Sign
- Jobe's/Empty Can
- Drop Arm Test

- (+) pain with passive/resisted flex
- (+) Pain with abd/rotate
- (-) Able to maintain abduction

Jackson Orthopaedic Foundation

Diagnosis

- Probable
- Possible
- Rule Out
- Unlikely

- Impingement Syndrome
- Bursitis
- Partial thickness RCT
- Full thickness RCT

Treatment

- Physical Modalities
- DME
- IEP
- Pharmacologic
- Referral
- Activity Modification

- Other

- Ice > heat
- TENS
- Pendulums/ Stretches
- NSAIDS, Analgesics
- PT ? (Trainer?)
- Avoid reaching/lifting overhead
- Coach; family
- RTC 2 wk

Follow Up Eval #1

- Subjective:
- Objective:
- Special tests:

Imping/Jobes/DA

- Pain somewhat reduced now less constant, 0-5
- Reduced swelling, ++ ttp; ROM still painful 90-130; Resisted strength 5/5

+/+/-

Jackson Orthopaedic Foundation

Referral

- Type of Therapy
- Body part
- Diagnosis
- Frequency
- Duration
- Objectives

Physical Therapy

Right shoulder

Prob. Impinge Syndr

2x week

4 weeks

Decrease inflammation; teach IEP & postural awareness

Jackson Orthopaedic Foundation

Follow Up Eval #2

- Subjective:
- Objective:
- Special Tests:

Imping/Jobes/DA

- Pain now occasional, intermittent, 0-3
- Reduced swelling, neg ttp; ROM full, pain free; Resisted strength 5/5

-/-/-

Treatment #2

- Physical Modalities
- DME
- IEP
- Pharmacologic
- Referral
- Activity Modification
- Other

- Ice > heat
- TENS
- Continue per PT
- NSAIDS, Analgesics
- None right now
- Resume limitd training
- Coach; family
- RTC 4 wk

Follow Up Eval #3

- Subjective:
- Objective:
- Imping/Jobes/DA*

- Pain 6-7, increased frequency
- Incr. swelling, ttp; ROM guarded w comp 70-130; Resisted strength 4/5

  +/+/-*

Treatment #3

- Physical Modalities
- DME
- IEP
- Pharmacologic
- Referral
- Activity Modification
- Other

- Ice > heat
- TENS
- Pendulums/ Stretches
- NSAIDS, Analgesics
- Imaging
- Avoid reaching/lifting overhead
- Injection
- RTC 4 wk

Imaging/Diagnostics

- Xray – AP int/ext rot plus Y view
- Subacromial Inj

- Downward sloping Type III acromion

Transient relief within 15-20 minutes/ lasts 30 days.

Jackson Orthopaedic Foundation

Follow Up Eval #4

- Subjective:
- Objective:
- Impngmnt/Jobes/DA*

- Pain 7-9, constant; felt something "pop"
- Incr. swelling, ttp; ROM guarded w comp 70-130; Resisted strength 4/5

  +/+/-*

Jackson Orthopaedic Foundation

Treatment #4

- Physical Modalities
- DME
- PT
- Pharmacological
- Activity Modification
- Referrals

- Ice > heat
- TENS
- Hold for now
- NSAIDS, Analgesic
- Avoid reaching/lifting overhead
- MRI

Referral for MRI

- Type of Consult
- Body part
- Diagnosis
- Duration of Treatment
- Treatment provided to date
- Response to treatment

- MRI Right shoulder rule out rotator cuff tear vs. tendinopathy for pain that has persisted >3 mos cons. care incl NSAIDs, PT, & injections x 3.

Imaging/Diagnostics

- Xray – AP int/ext rot plus Y view
- Subacromial Inj
- MRI

- Downward sloping acromion – Type III

Transient relief within 15-20 minutes, lasted 30 days

Mild-mod supraspinatus & infraspinatus tendinosis

Treatment #5

- Physical Modalities
- DME
- PT
- Pharmacological
- Activity Modification
- Referrals

- Ice > heat
- TENS
- 8 sessions
- NSAIDS, Analgesic
- Avoid reaching/lifting overhead
- Coach/Trainer
- Psychologist
- Surgery

Referral to Psychologist

- Type of Consult
- Body part
- Diagnosis
- Duration of Treatment
- Treatment provided to date
- Response to treatment

- Evaluate & recommend treatment for pain management & possible adjustment disorder r/t shoulder condition that has failed to improve with >3 mos cons. care incl NSAIDs, PT, & injections x 3.

Referral to Orthopedist

- Type of Consult
- Body part
- Diagnosis
- Duration of Treatment
- Treatment provided to date
- Response to treatment

- Evaluate & recommend treatment for right shoulder pain that has failed to improve with >3 mos cons. care including NSAIDs,12 sessions PT, & injections x 3.
- MRI shows …..

Jackson Orthopaedic Foundation

Case Study # 2

- 56 y.o. right handed male school custodian c/o right elbow pain radiating to lateral forearm, wrist and pinkie finger.
- Three previous episodes over last year resolved spontaneously with weekend rest.
- ROS: Type II Diabetes;
  HTN; HDL

Subjective Complaints

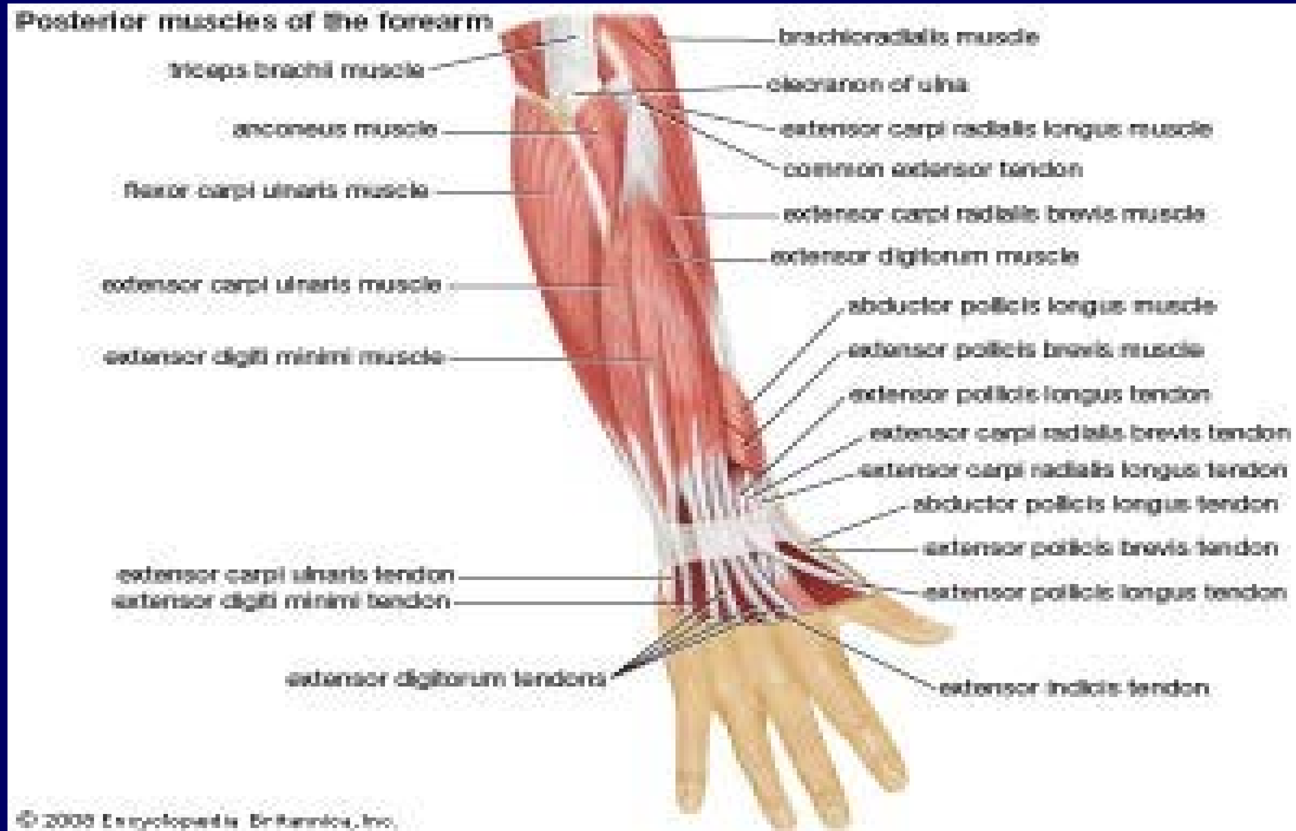
Onset	7 days ago
Location	Lateral R elbow to hand
Duration	Hours - constant
Character	Burning, dull, weak
Aggravate/Alleviate	Ext/flex elbow/wrist
Radiation	Occ paresthesia pinkie*
Timing	Floor wax; side reach
Severity	Variable 2-7 w activity

Jackson Orthopaedic Foundation

Anatomy Review #2

Elbow Anatomy Tutorial

Elbow and Forearm Anatomy



Physical Exam

- Inspection
- Palpation
- Range of Motion
- Strength
- Sensation
- Circulation

- Diffuse elbow edema
- +++TTP lat elbow/FA
- + TTP medial elbow
- (-)TTP dorsal FA
- Guarded ext Elb/ Wrst
- WNL, painful R
- WNL R=L
- WNL

Diagnosis

- Probable
- Possible
- Rule Out
- Unlikely

- Lateral epicondylitis
- Medial epicondylitis
- Cubital tunnel syndrome
- Radial nerve syndrome

Special Tests

Test	Result
Resisted wrist ext	(+) Painful
Resisted wrist ext and forearm supination	(+) Painful
Resisted 3rd digit ext	+ Painful
Resisted wrist flex	(-) Not painful
Tinel's at Olecranon	(+) with radiation to pinkie

Jackson Orthopaedic Foundation

Diagnosis

Probable	Lateral epicondylitis
Possible	Cubital tunnel syndrome
Unlikely	Radial nerve syndrome
Unlikely	Medial epicondylitis

Treatment

- Physical Modalities
- DME
- IEP
- Pharmacologic
- Activity

- Referral
- Injections
- Other

- Ice
- Elbow band
- Strength/Stretch
- NSAIDs, analgesics
- Limit extension of elbow
- 6 weeks PT
- 2cc 50/50 lido/depo

Imaging/Diagnostics

- Xray
- MRI
- EMG/NCS

- r/o arthritic changes, calcific tendinitis
- r/o ligament tear/ tendinopathy
- r/o nerve entrapment syndrome

Imaging/Diagnostics

- Xray
- MRI
- EMG/NCS

- Mild effusion; arthritic changes, calcium deposits in proximal extensor tendon
- Mod-severe extensor tendinosis
- Moderate ulnar neuropathy w/o signs of polyneuropathy

Referral - PT

- Type of Therapy
- Body part
- Diagnosis
- Frequency
- Duration
- Objectives

- Physical Therapy – evaluate and treat right epicondylitis 2x week x 6 wks. Include ultrasound, massage, phonophoresis to reduce inflammation improve strength and decrease meds.

Referral to Orthopedist

- Type of Consult
- Body part
- Diagnosis
- Duration of Treatment
- Treatment provided to date
- Response to treatment

- Evaluate & recommend tx for right elbow pain that has failed to improve with >3 months cons. care including NSAIDs,12 sessions PT, and injections x 3.
- Diagnostic study summaries

www.jacksonortho.org

Jackson Orthopaedic Foundation

Case Study #3

- 48 y.o. L. handed female self employed medical biller
- Increasing pain L wrist & thumb 2-3 years.
- New c/o L long finger “sticking”.
- ROS: mod obese, recent dx “pre” diabetes, managed w diet & exercise, otherwise healthy.

Subjective Complaints

- Onset
- Location
- Duration
- Character
- Aggravates
- Alleviates
- Radiation
- Timing
- Severity

- Gradual
- L wrist, 1st,2^{nd,} 3rd
- 2-3 years/ months
- Aching,burning/sharp
- *Keyboard & bowling
- Rest & heat
- None except night
- Morning;>2 hrs work
- 6-7

Anatomy Review #3

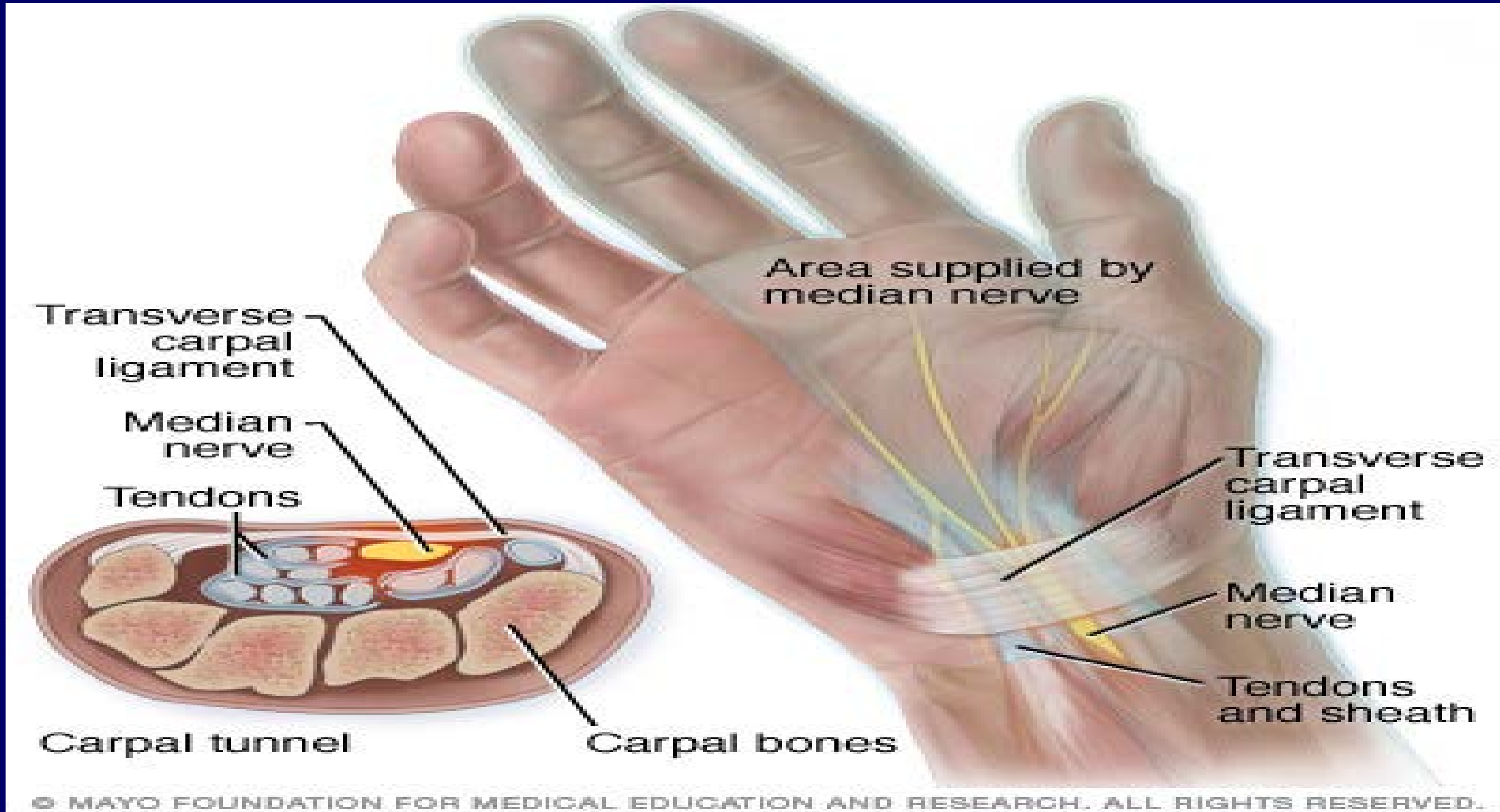
- Animated Wrist/Hand Anatomy Review

Forearm & Wrist Anatomy

Biceps brachii
Brachialis
Brachial artery
Medial epicondyle of humerus
Median nerve
Tendon of biceps brachii
Pronator teres
Brachioradialis
PALMARIS LONGUS
FLEXOR CARPI RADIALIS
FLEXOR CARPI ULNARIS
FLEXOR DIGITORUM SUPERFICIALIS
Flexor retinaculum
Metacarpals
Tendon of flexor digitorum superficialis
Tendon of flexor digitorum profundus
I
II
V

Triceps brachii
Brachioradialis
EXTENSOR CARPI RADIALIS LONGUS
Medial epicondyle of humerus
Lateral epicondyle of humerus
Olecranon of ulna
EXTENSOR CARPI ULNARIS
EXTENSOR DIGITORUM
FLEXOR CARPI ULNARIS
Extensor retinaculum
Tendons of extensor digitorum

Anatomy of the Wrist



Physical Exam - Left

- Inspection
- Palpation
- Range of Motion
- Strength
- Sensation
- Circulation

- Diffuse edema
- ++TTP 1st mcp, palm, distal radius
- WNL wrist, digits
  Thumb – painful
- Decreased grip, ++
- Decreased 1st, 2nd, 3rd
- WNL

Diagnosis

- Probable
- Possible
- Rule Out
- Unlikely

- Thumb OA
- CTS
- DeQuervain's
- 3rd digit tenosynovitis

? Underlying metabolic contributors

Autoimmune/inflammatory

Jackson Orthopaedic Foundation

Special Tests

Test	Result
Grind	Positive L>R
Tinel's, Carpal Compression,	Positive L>R
Finkelsteins	Equivocal L, + R
Triggering	Negative L, + R

Imaging/Diagnostics

- Xray: Wrist, hand & thumb
- MRI
- Other

Diffuse mod -severe OA,worst at 1st MCP

Not required at this time

EMG/NCS – mod-severe median neuropathy

Treatment

- Physical Modalities
- DME
- IEP
- Pharmacologic
- Other
- Referral

- Ice/heat
- Thumb spica splints
- Wrist stretches
- NSAIDs, analgesics
- Ergonomics, activity restriction
- Anti-inflamm diet
- Exercise
- PT/Hand Specialist

Treatment, continued

- Injection
- Surgery

- Referrals
- Other

- ½ cc lido + ½ cc depo
- Carpal Tunnel Release; MCP joint debridement; tendon release
- Post-op PT
- Pain management
- Activity pacing
- Follow up!

Referrals

- Type of Therapy
- Body part
- Diagnosis
- Frequency
- Duration
- Objectives

- Rx Physical therapy to left upper extremity 2x wk x 4 weeks for treatment of 1st MCP osteoarthritis and CTS with instruction in IEP and self care with goal of improving function and decreasing meds

Jackson Orthopaedic Foundation

About JOF

•Our Mission: To improve the lives of people with musculoskeletal conditions through education, research & service.

•Our Goal: To raise the profile and priority of non-surgical musculoskeletal health with local hospitals, schools and the general public, while encouraging a collaborative, multi-disciplinary care model in ortho community.

•We call this approach Orthopedic Primary Care.

Jackson Orthopaedic Foundation
3317 Elm Street, Suit 201
Oakland, CA 94609
Phone (510) 238-4851
www.jacksonortho.org

Thank You