

Assessment and Management of Common Disorders of the Shoulder – Virtual Edition

Fay Leung MD, FRCS(C)

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Disclosures

- Zimmer-Biomet: clinical trial
- Stryker – clinical consultant
- My talk will not discuss specific surgical implants

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Objectives

1. Maximize a virtual/telehealth examination of the shoulder
2. Determine when a physical encounter is necessary
3. Identify acute injuries that require emergent/urgent Orthopedic referral
4. Discuss appropriate use of imaging

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THE SHOULDER MATRIX

INSTABILITY <ul style="list-style-type: none"> • Anterior instability • Posterior instability • Multidirectional instability 	PAIN <ul style="list-style-type: none"> • Rotator cuff tendinopathy • Rotator cuff tear • Calcific tendinopathy
WEAKNESS <ul style="list-style-type: none"> • Massive rotator cuff tear • Neurological 	STIFFNESS <ul style="list-style-type: none"> • Adhesive capsulitis • Glenohumeral osteoarthritis • Locked shoulder dislocation



RULE OUT FRACTURES AND TUMOR

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History

- Most important component of patient evaluation
- Preliminary idea of diagnosis
- Sets up for directed physical
- Informs appropriate imaging

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Patient Demographics

Age	Pathology	Associations
15-30	Instability, AC separation	Trauma
30-45	Calcific Tendinitis	Tendinopathy
40-50	Adhesive capsulitis	DM, Thyroid, Women
45-50	Impingement, Cuff tears	Degenerative
>60	Arthritis, late cuff tears	OA, silent tears

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History

- Traumatic
 - Instability/dislocation
 - AC Separation
 - Fracture
 - Acute cuff tear
- Non-Traumatic
 - Impingement
 - Degenerative rotator cuff tears
 - Tendinopathy
 - Arthritis
 - Systemic referred

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PHYSICAL EXAMINATION

Location of Pain: THE FINGER TEST



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Location of pain

- Anterolateral shoulder pain
 - Most shoulder pathology
 - Rotator cuff tears/tendinopathy
 - OA
 - Biceps tendinopathy
 - AC joint arthrosis
 - SLAP tears

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Location of pain

- Posterior shoulder pain
 - Rare
 - Posterior shoulder instability
 - Scapulothoracic
 - Sometimes OA, SLAP tears

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Location of pain

- Pain referral
 - Shoulder pain rarely radiates past elbow
 - C-spine
 - 15% overlap
 - GI
 - Pancoast tumor

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THE SHOULDER MATRIX

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VIRTUAL EXAMINATION

- 1. Inspection – FINGER TEST
- 2. ROM – AROM AND PROM
- 3. Rotator cuff testing for strength
- 4. Impingement testing
- 5. Stability testing – apprehension test

I will show you...

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THE SHOULDER MATRIX

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IMAGING

- **START WITH RADIOGRAPHS**
 - Usually all you need
 - A/P and lateral in scapular plane
 - Axillary view
- **ADDITIONAL IMAGING IF:**
 - Traumatic - early
 - Degenerative – after failure of non-op management

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Instability

- 21 yr old complains of recurrent right shoulder instability
- First dislocation at age 17
- Football tackle with arm outstretched, externally rotated
- Reduced in ER
- 5 subsequent dislocations, in **ABD&ER**
- No daily pain

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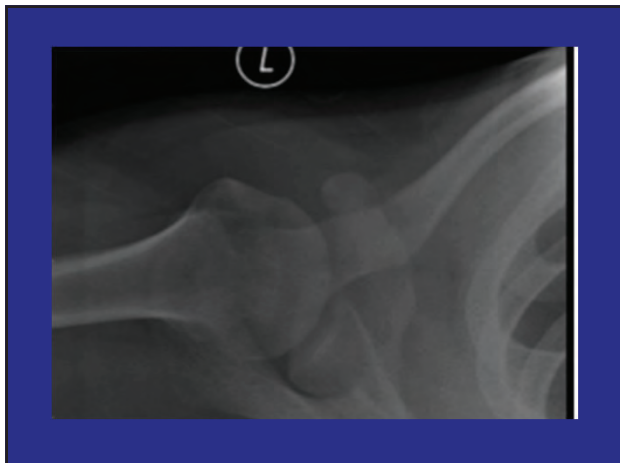
Instability

- Physical Exam
 - Full, pain free ROM
 - No obvious tenderness
 - No weakness
 - **Positive apprehension test**
 - +/- signs of hyperlaxity

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18



19



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Instability

- 90% of shoulder instability is anterior

FURTHER WORK-UP REQUIRED ??

- Atypical features:
 - Pain
 - Atypical position of risk
 - Multiple dislocations with no associated trauma
 - Multiligamentous hyperlaxity, FHx

WORK-UP MAY INCLUDE MR ARTHROGRAM, CT

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Instability

- Age 18 yrs – risk of recurrence as high as 90%
 - Early referral to reduce risk of recurrent instability and bone loss
 - Bone loss associated with poor outcome
- Age 40+ yrs – risk of recurrence 10% but risk of rotator cuff tear 30-80%
 - Further work-up if complaints of shoulder pain/weakness

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Pain

- 56 yr old male, construction worker
- 2 yr history of anterolateral shoulder pain
- No antecedent trauma
- Worse with activity, lifting arm above shoulder height
- Night pain

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Shoulder pain

- Physical exam
 - Tenderness over tuberosities/subacromial area
 - FULL ROM
 - +/- painful arc
 - Impingement test
 - Pain but not necessarily weakness with rotator cuff testing
 - Jobe' s/empty can, Resisted ER, lift-off tests

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Shoulder pain

- Differential diagnosis:
 - Rotator cuff tendinopathy/impingement
 - Calcific tendinitis
 - AC joint arthropathy
 - Rotator cuff tear

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Imaging

- Xrays
 - Usually normal



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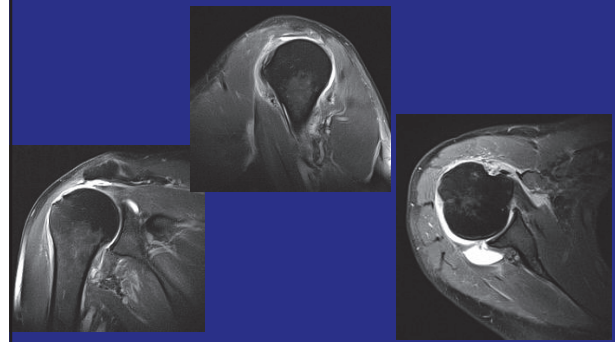
Management

Impingement, tendinopathy, bursitis, calcific tendinopathy, partial thickness cuff tears, full-thickness tears

- Oral analgesics
- Activity modification
- ****Active Physiotherapy****
- Subacromial steroid injections ???
- RSWT or Barbotage for Calcific Tendinitis
- IMAGE IF REFRACTORY
- Surgery if non-op fails

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MRI



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Rotator Cuff Tear: Treatment



The description of "TEAR" can indicate normal wear pattern

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Weakness

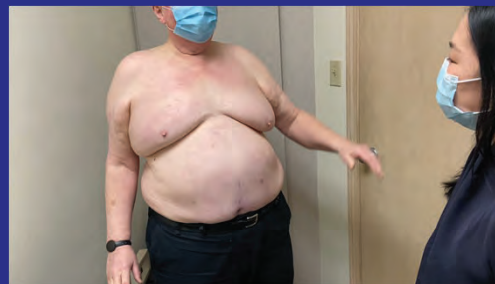
- 38 yr old male, fall off bike and down a cliff
- Presents with shoulder pain and inability to raise his arm

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Physical Examination

- Limited **active** ROM
 - DIFFERENTIATE BETWEEN LIMITED PASSIVE ROM
 - DIFFERENTIATE FROM PAIN INHIBITION

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Differential Diagnosis

- Acute massive rotator cuff tear
 - URGENT referral to Orthopedic surgeon and URGENT request for imaging
- Chronic massive cuff tear
- Neurologic injury
- Myopathy

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Shoulder Stiffness

- 42 year old female presents with 3 months of severe shoulder pain
- Woke up in the am with severe pain to the entire arm
- Pain now improving but finds that shoulder is stiff
- PMHx: DM, hypothyroid

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Shoulder Stiffness

- Physical exam
 - Tenderness over tuberosities
 - Limited **active AND passive** ROM
 - LOOK AT ER WITH ELBOW AT THE SIDE

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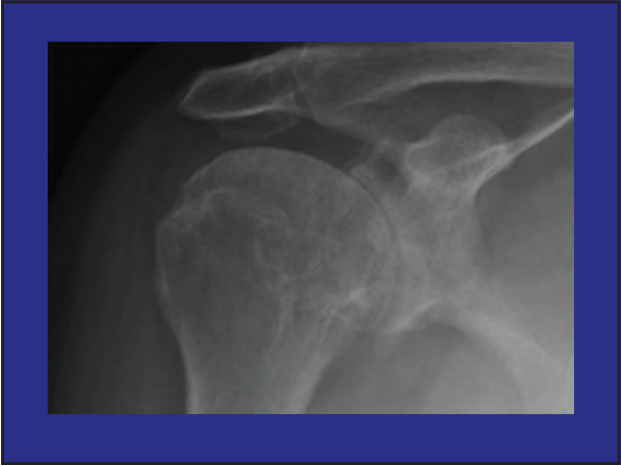
Differential diagnosis

- Idiopathic adhesive capsulitis
- Glenohumeral osteoarthritis
- Locked dislocation of shoulder

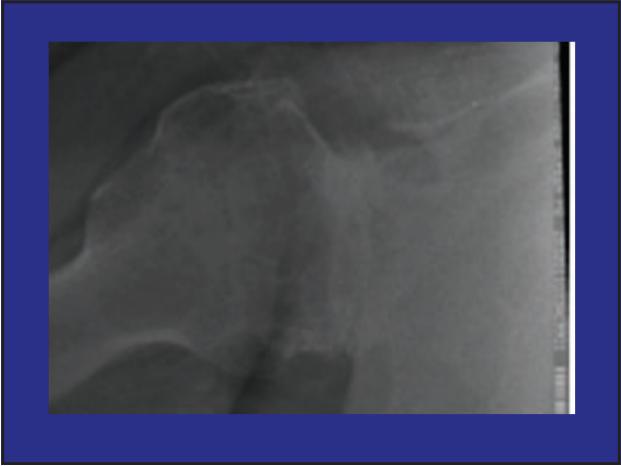
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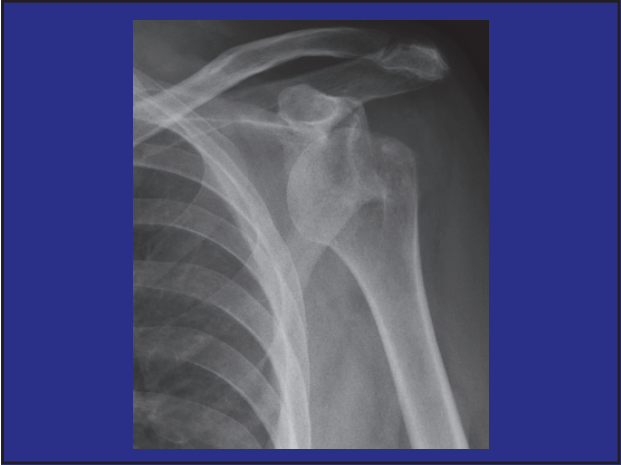
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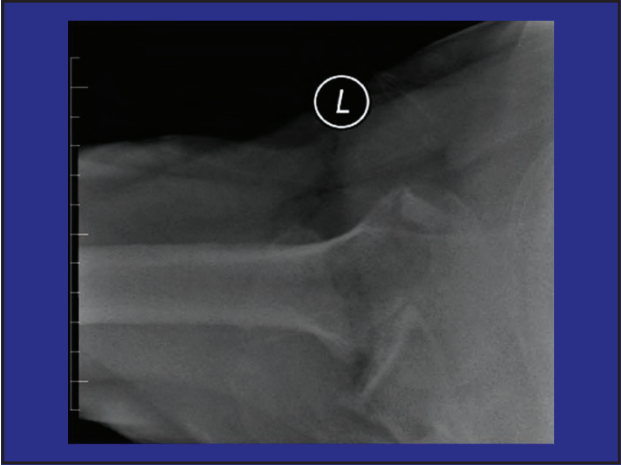
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Management

- Adhesive capsulitis
 - Expectant management
 - Persistence and patience
 - ROM exercises
 - Intra-articular steroid injections???
 - Management of endocrinopathy
 - > referral if does not resolve after 12-18 months

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Management

- Glenohumeral osteoarthritis
 - Non-Op
 - Physiotherapy
 - Oral analgesics
 - Oasis Referral
 - Viscosupplementation, Cortisone
 - Surgical
 - Arthroplasty

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The Ideal Surgical Candidate



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The Ideal Surgical Candidate

- Indications for surgery:
 - Functionally limited by pain
 - Failed trial of non-operative management
 - Motivated for procedure
 - Ability to adhere to post-op protocol
 - 6 week sling immobilization
 - > 6 months recovery

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WHEN TO SEE IN PERSON

- Unable to establish a clear diagnosis
 - Failure of internet
 - Unable to obtain history
 - Unable to complete physical examination

WHEN TO REFER

- **URGENT:**
 - **TRAUMA:** fracture, locked dislocation, acute cuff tear,
 - **TUMOUR**
- Failure of non-operative management
- For diagnostic/treatment clarity
- Shoulder instability

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COMING SOON...



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Summary

- Patient Evaluation:
 - Careful history, finger test, ROM
- Classify problem:
 - Instability, pain, weakness, stiffness
- Radiographs are important first step
- Physiotherapy is a reasonable first step **UNLESS THERE IS HISTORY OF TRAUMA**

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THANK YOU!



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Hand and Wrist Injuries

Tips & Pearls

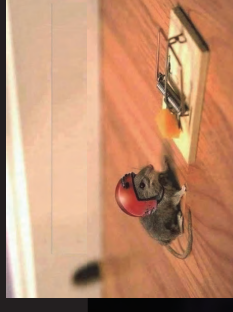


Rodney French, BSc, MD, MEd, FRCSC, Dip. Sports Med.

NHL & NHLPA Consultant Hand & Wrist Surgeon
Core Team Physician, Canadian Olympic Team
Assistant Professor, UBC Plastic Surgery
Vancouver, BC

Work-Related Hand & Wrist Injuries:

History Tips



Hand and Wrist Exam Tips & Pearls
Dr. Rodney French, MD, MEd, FRCSC, Dip. Sports Med

MECHANISM

1st : Acute or Repetitive

If acute, mechanism CRITICAL:

- Where did the energy go?



Hand and Wrist Exam Tips & Pearls
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If acute, mechanism CRITICAL:

- **Fall** ... fractures, ligaments (S-L, L-T)
- **CUT** ... tendons, nerves
- **Crush** ...how heavy, by what? Scar in all layers!
- **Twist with load** ... Acute DeQuervains, TFCC*
- **Torque force** ... TFCC*

Twist under load



R. Glenn Gaston, MD
Charlotte, North Carolina

Unique Injury:

Care aide grasped by elderly demented patient



Work-Related Hand & Wrist Injuries:

Pearls of Physical Exam



Cave of the Hands
Rio Pituas Canyon, Patagonia, Argentina

Traumatic Injuries: TWO things to look for in Fingers



Scissoring



Extensor Lag

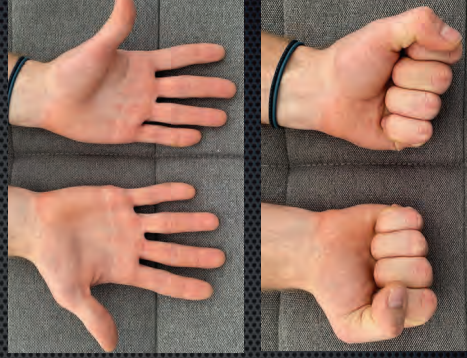
Scissoring



10 Seconds

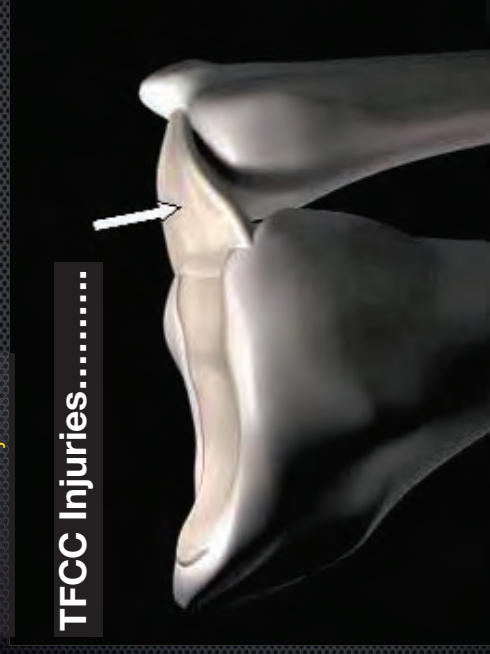
BEST Screening Tool:

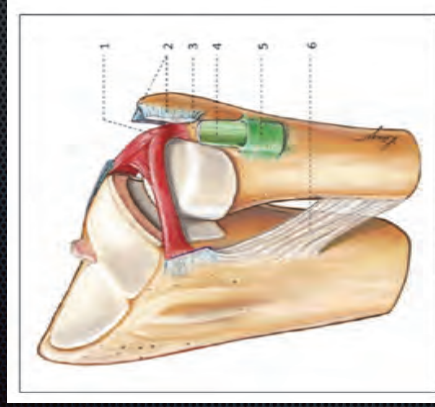
make a fist and extend...both hands, both sides



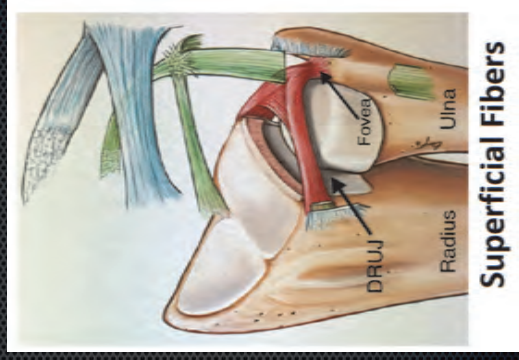
Traumatic Injuries:

TFCC Injuries.....

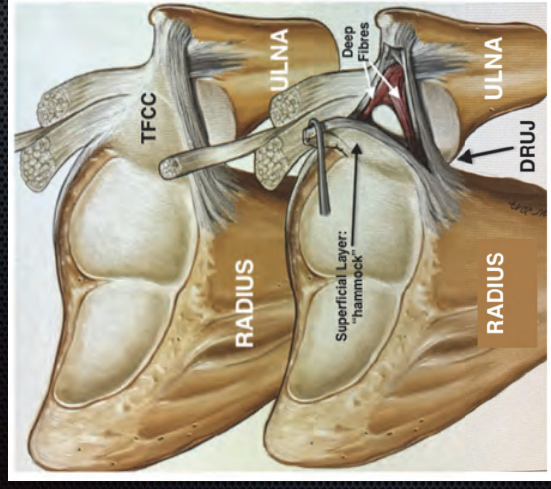




Deep Fibers:
Ligamentum subcrucium



Superficial Fibers

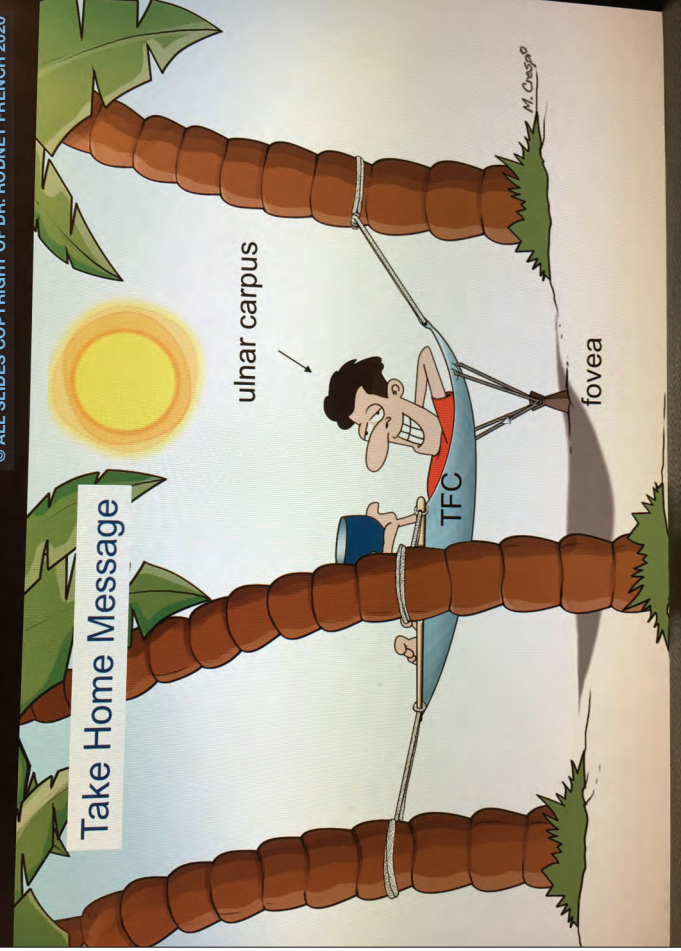


TFCC

Dual Function:

1. Cushion (wrist)
2. Stabilizer (DRUJ)

Take Home Message

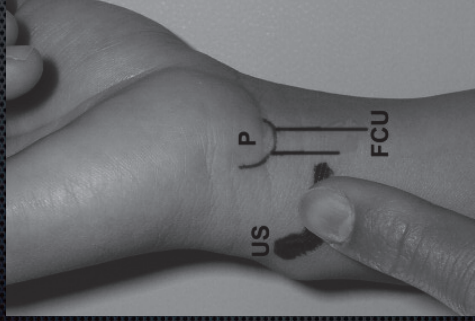


TFCC Injuries: 3 TESTS

1. Foveal tenderness (Berger's sign)
2. TFCC grind test
3. DRUJ stability

Always, Always, Always COMPARE SIDES!!

1. Foveal tenderness (Berger's sign)



2. TFCC grind test test the "hammock"

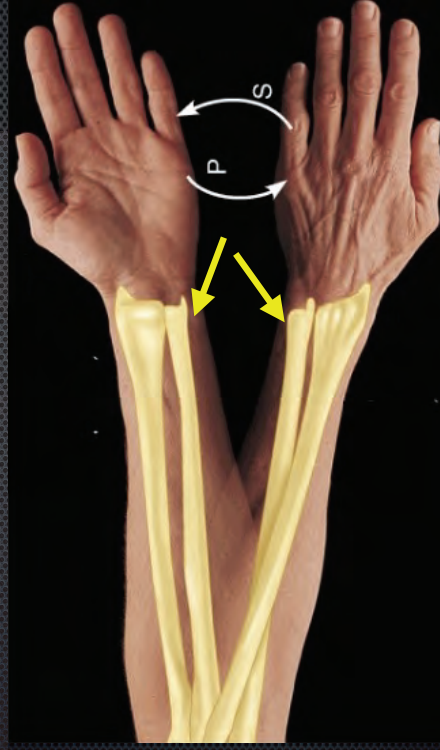
- ulnarly deviate wrist
- then flexion and extension



VIDEO on YOUTUBE:
<https://www.youtube.com/watch?v=l6LedAdjnN0>

3. DRUJ Stability ... test of the deep stabilizing fibers

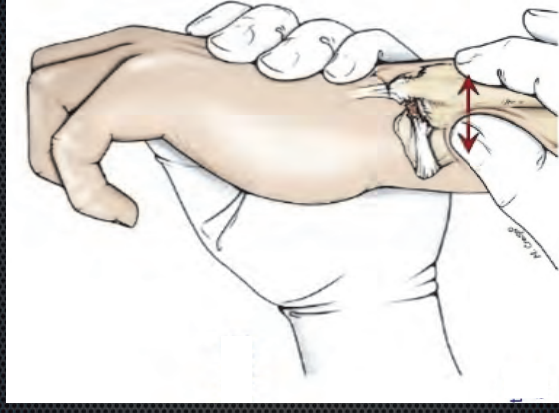
* Note: ulna does not move, ONLY the radius



3. DRUJ Stability

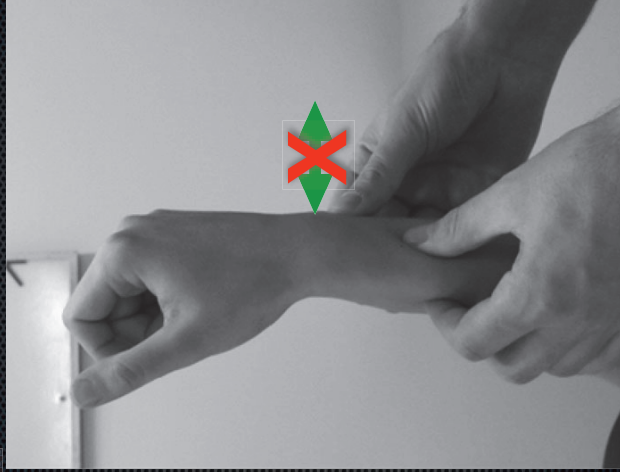
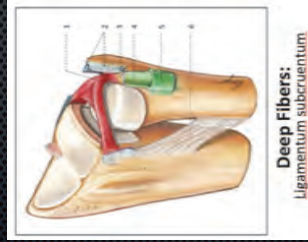
In PRONATION
&
In NEUTRAL
it has MOTION, LAXITY.

HOWEVER.....



3. DRUJ Stability

In SUPINATION



TFCC Injuries:

To MRI,or not to MRI



Age	Degeneration with disc perforation (%)	Normal appearance (%)
First decade	0	100
Second decade	0	100
Third decade	7.6	61.5
Fourth decade	18.1	54.5
Fifth decade	40.0	0
Sixth decade	42.8	0
Over 60 years	53.1	0

Mikić, *Journal of Anatomy*, 1978

The microvasculature of the triangular fibrocartilage complex: Its clinical significance

The microvascular anatomy of the triangular fibrocartilage complex was investigated in 10 cadaver specimens by histology and fluorescence (Spindler) techniques. It was found that the triangular fibrocartilage of the wrist is supplied by small vessels that penetrate the triangular fibrocartilage complex in a radial fashion from the palmar, dorsal, and dorsal ulnar sides of the joint capsule and supply the peripheral parts in part. The most characteristic position in vascularization of this study is a network of small vessels that are located in the peripheral parts of the triangular fibrocartilage. However, tears that occur in the center and along the radial attachment do not have immediate access to a blood supply and are not likely to heal. (J Bone Joint Surg 1995; 54A:1100-5.)

Michael S. Bechar, MD, Steven P. Amadio, DPM, and Andrew J. Weitzel, MD, New York, N.Y.

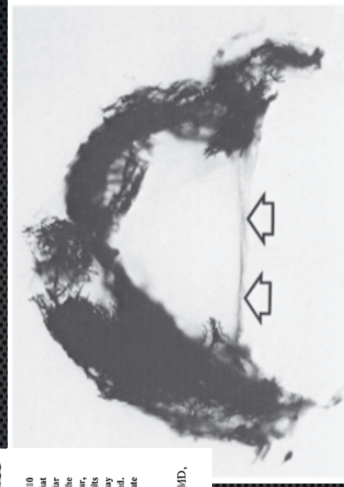
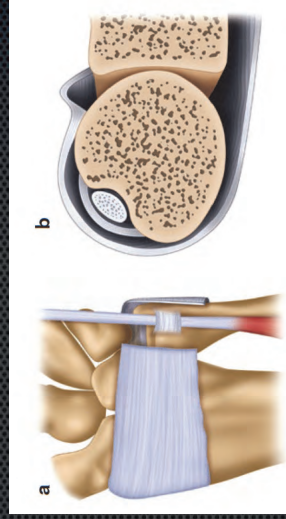
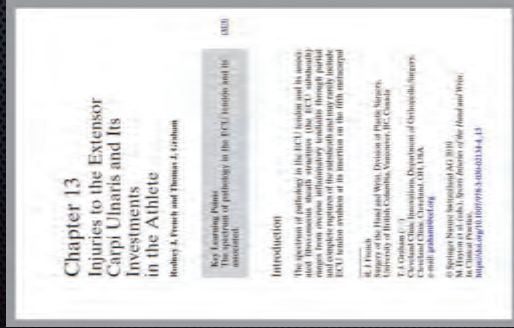


Fig. 3. Axial view of an 18-year-old patient with triangular fibrocartilage complex (TFCC) after vascular injury. The image shows the TFCC in a radial position. The inner (fluorocast) portion of the TFCC is a thick band of vessels. In addition, an vessels could be seen entering the TFCC from its radial attachment (arrows).

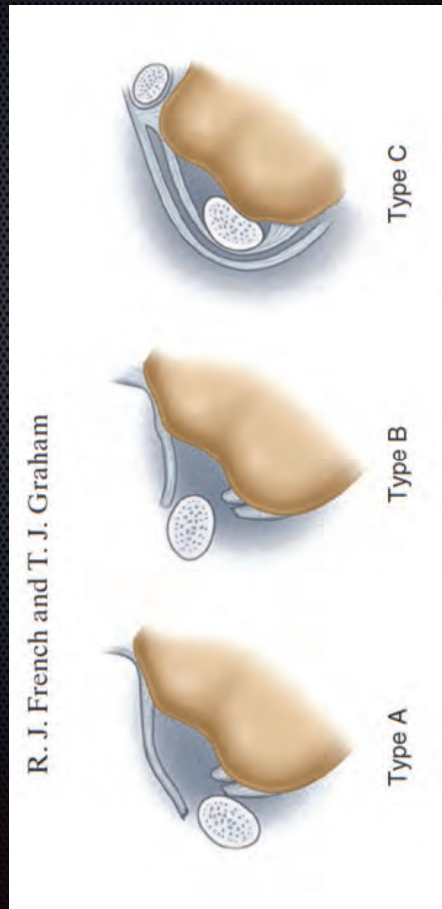
**NO BLOOD SUPPLY
TO CENTRAL DISK !!!**

The Journal of
HAND SURGERY
Vol. 16A, No. 6
November 1991

Traumatic/Overuse Injuries: ECU Subsheatth Injuries

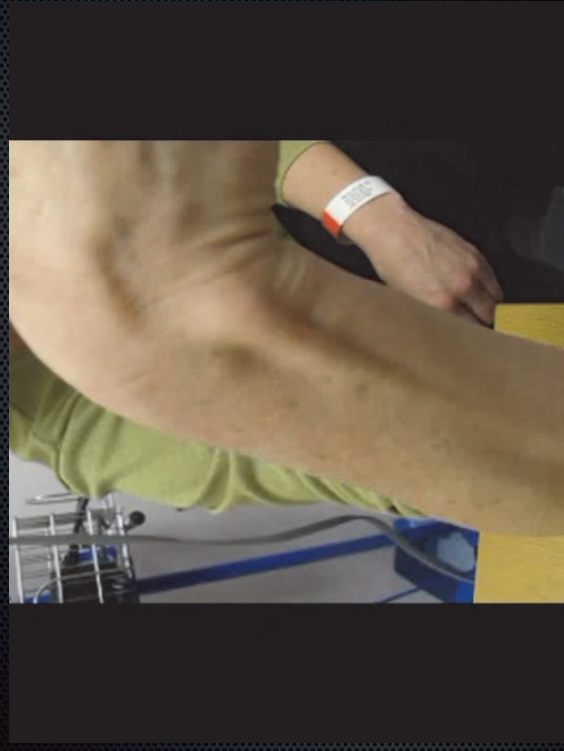


In *Sports Injuries of the Hand and Wrist*, 2019,
Springer; Cham, Switzerland; Hayton et al. eds.

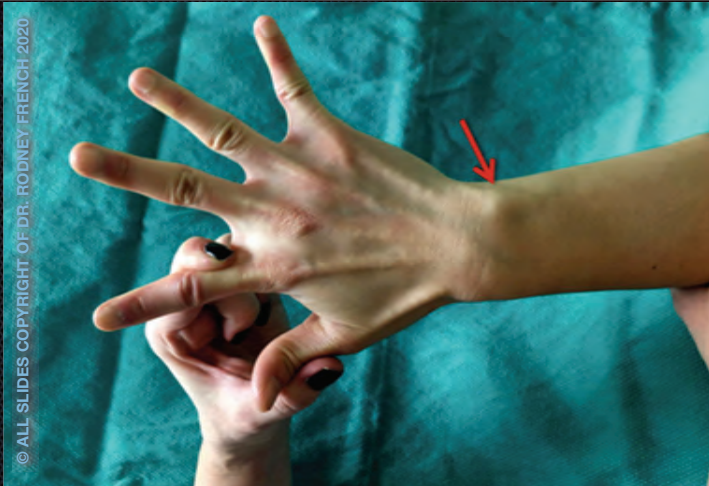
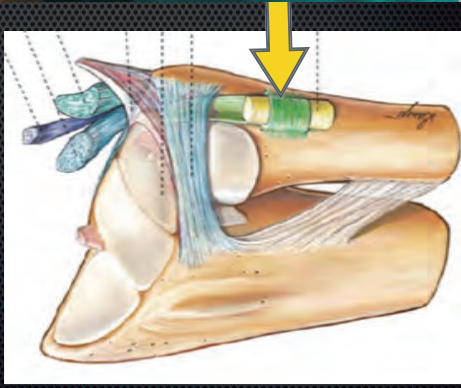


R. J. French and T. J. Graham

In Chapter 13, *Sports Injuries of the Hand and Wrist*, 2019,
Springer; Cham, Switzerland; Hayton et al. eds.



ECU SYNERGY TEST



Work-Related Hand & Wrist Injuries: IMAGING



X-Rays

- Under-rated!!
- often the most information
- do **3** views at a minimum: PA, Lateral, Oblique
- Add scaphoid view if concern.
- Clenched fist views for scapholunate tears

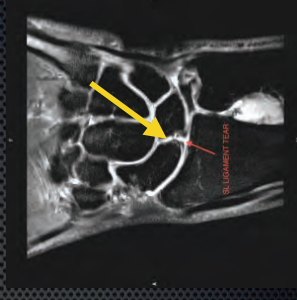
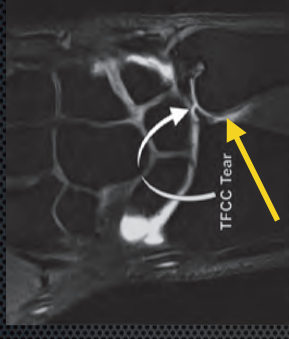
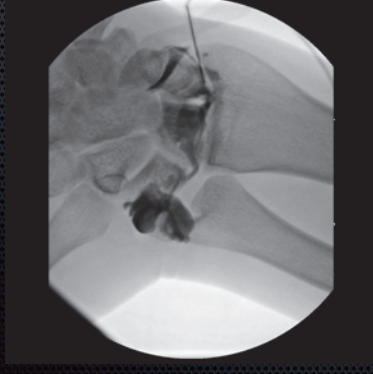
X-Rays: clenched fist view



TFCC Injuries:

To MRI,or not to MRI ?

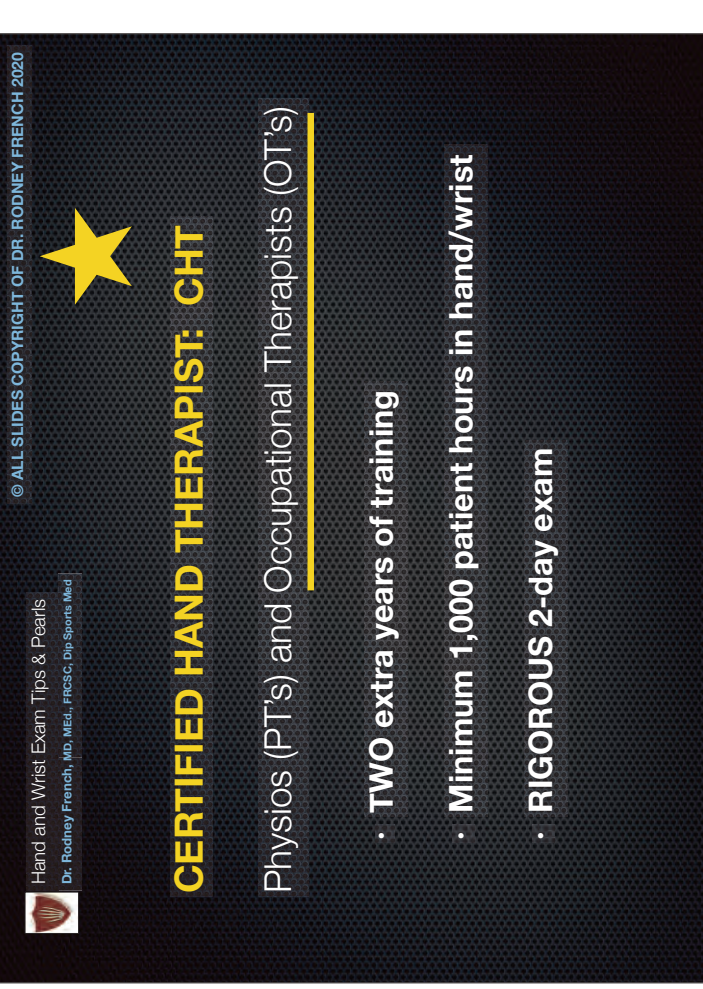
- To clarify a diagnosis WHEN YOU HAVE ONE IN MIND
- For suspected ligament tears, do an **MRI ARTHROGRAM**



CERTIFIED HAND THERAPIST: CHT

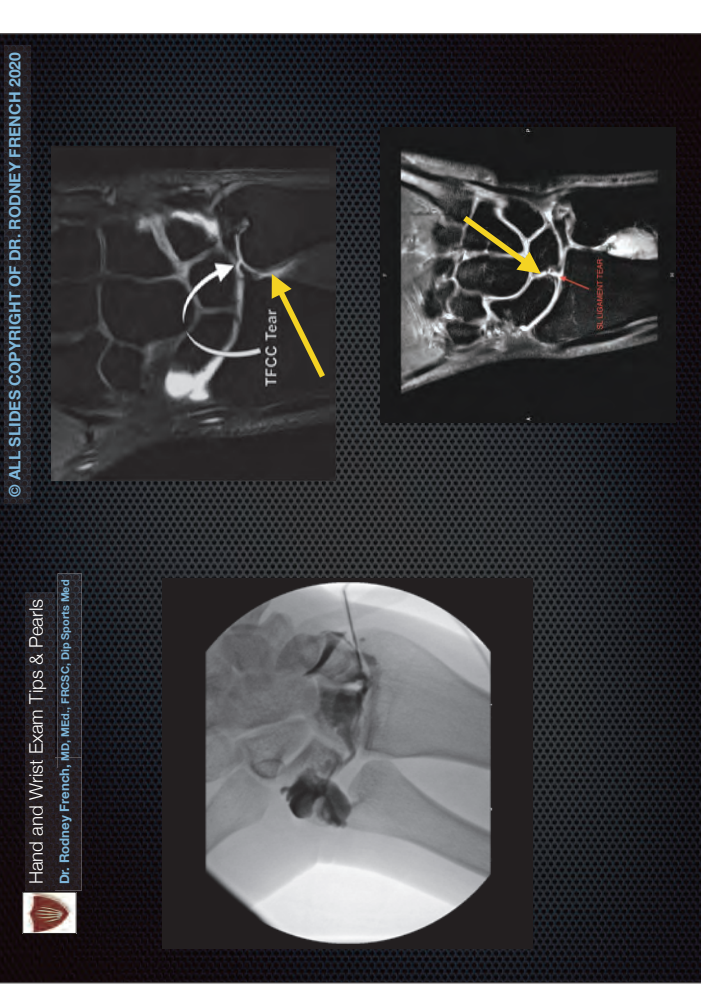
Physios (PT's) and Occupational Therapists (OT's)

- TWO extra years of training
- Minimum 1,000 patient hours in hand/wrist
- RIGOROUS 2-day exam



Work-Related Hand & Wrist Injuries:

Referrals





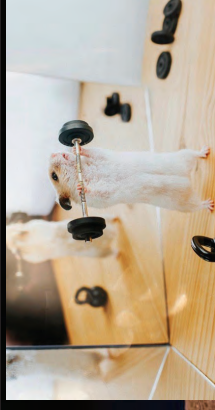
CERTIFIED HAND THERAPIST: CHT

- Know **MORE** than any general ortho or general plastic surgeon
- Can **DIRECT REFER** patients to the **VSC**
- **Quicker access** than Hand/Wrist Surgeons or the **VSC**



Work-Related Hand & Wrist Injuries:

My 3 Favourite “workhorse” Splints



OFF-THE-SHELF SPLINTS

General Rule:

“They are made to **fit everyone** . . . so they **fit no one WELL.**”

*2 exceptions are 2 of my 3 go-to splints



Hand-Based Opponensplasty Splint

Thumb MCP joint: UCL ligament (Skier’s thumb)
Custom made . . . by Certified Hand Therapists



Push-Ortho® CMC Splint

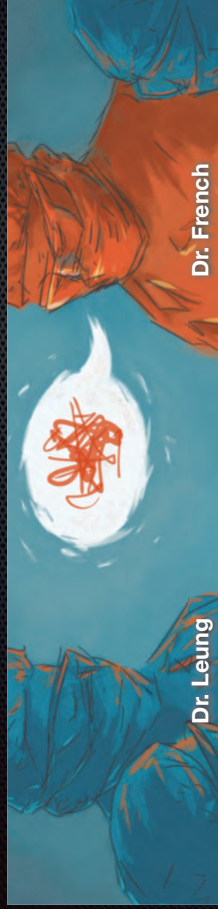


SIZE	CIRCUMFERENCE
1	16 - 19.5
2	19.5 - 22.5
3	22.5 - 26

Execution: left and right

Push-Ortho® CMC Splint

Any CMC joint problem
Buy **online**. Most CHT's carry these



Dr. Leung

Dr. French

A WISE DOCTOR ONCE WROTE
Am, how do you find out - me in

Wrist Widget®

TFCC - mainstay of treatment
Buy **online**. Most CHT's carry these



RESOURCES

1. Beyond Essential Services in Primary Care: framework for determining in-person or virtual visits

<https://bcfamilydocs.ca/wp-content/uploads/2020/06/Beyond-Essential-Services-in-Primary-Care-0620.pdf>



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

2. Virtual Care Toolkit (Doctor's Technology Office)

https://www.doctorsofbc.ca/sites/default/files/dto_virtual_care_toolkit.pdf

3. Virtual Care Playbook (CMA, CFPC, RCPSC)

https://www.cma.ca/sites/default/files/pdf/Virtual-Care-Playbook_mar2020_E.pdf

5

5

RESOURCES

4. Doctor's Technology Office – YouTube Channel

<https://www.youtube.com/channel/UCbMorEsu25ddzLrVKepq3vA/playlists>



UBC CPD
Medicine
CONTINUING
PROFESSIONAL
DEVELOPMENT

5. Telehealth and Virtual Care – Education & FAQ (CMPA)

<https://www.cmpa-acpm.ca/en/covid19/telehealth-and-virtual-care>

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