



Lateral Elbow Arthralgia

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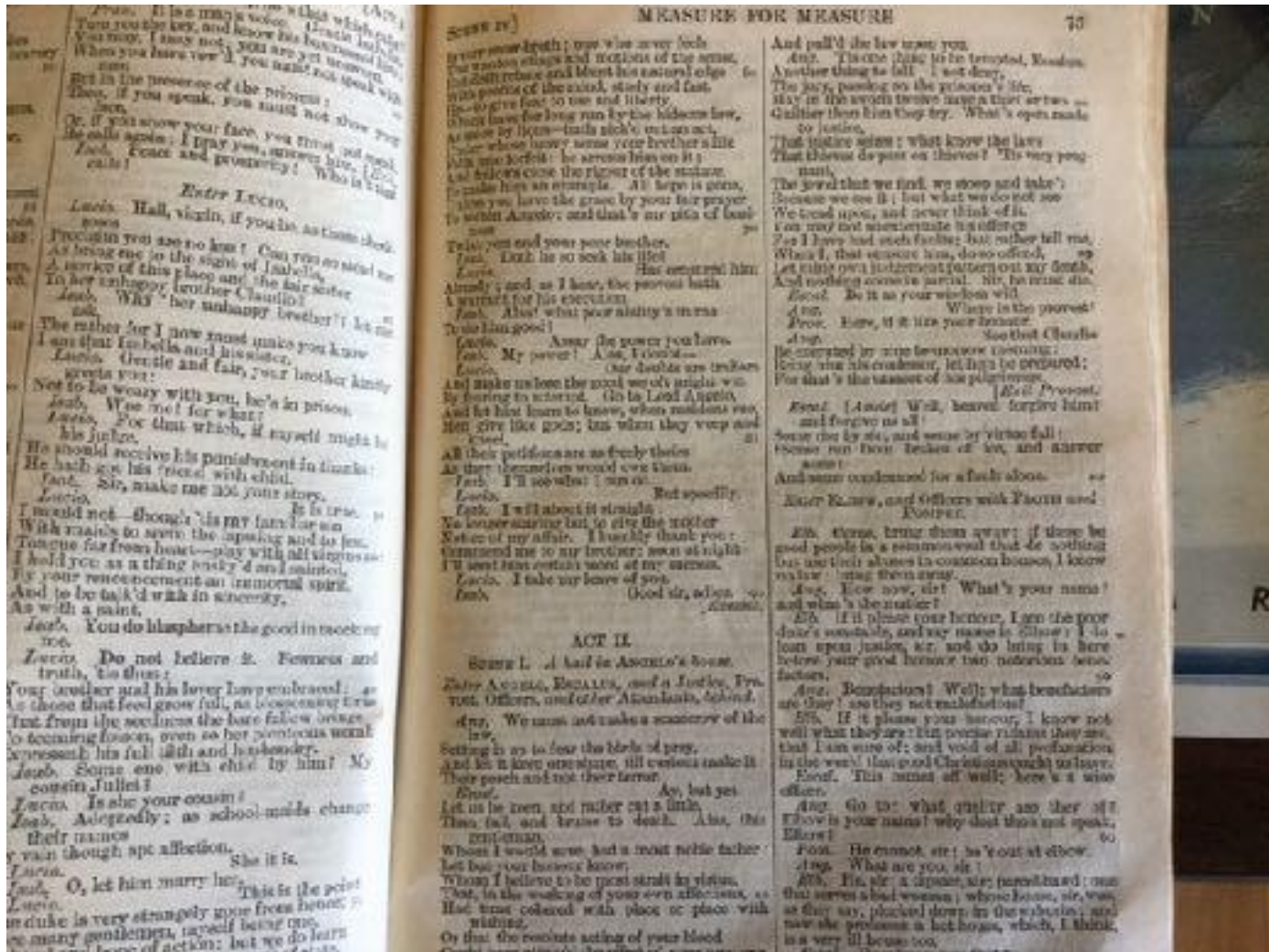
elbows



“ELBOW” IN ENGLISH LANGUAGE

- ❖ First in 1030 AD : adopted from celtic “ elnboga”
- ❖ *Ell- length of the forearm
- ❖ * Boga -bow or bend

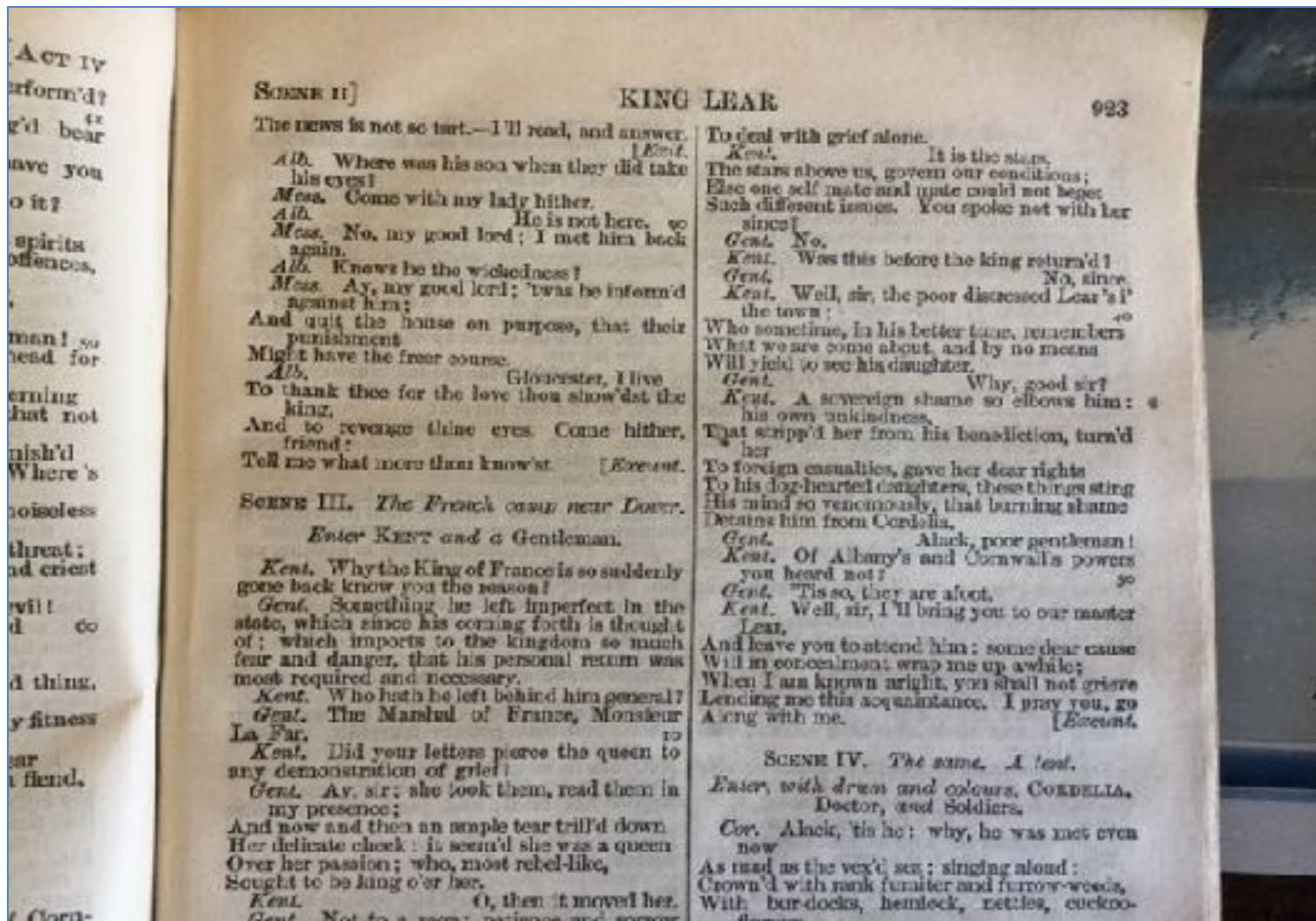
“ELBOW” AS A CHARACTER



Measure for Measure
Act2/scene 1
(1604)

*If it please your honour, I am the
poor duke's constable, and my
name is Elbow; I do lean upon
justice. . .*

“ELBOW” AS A VERB

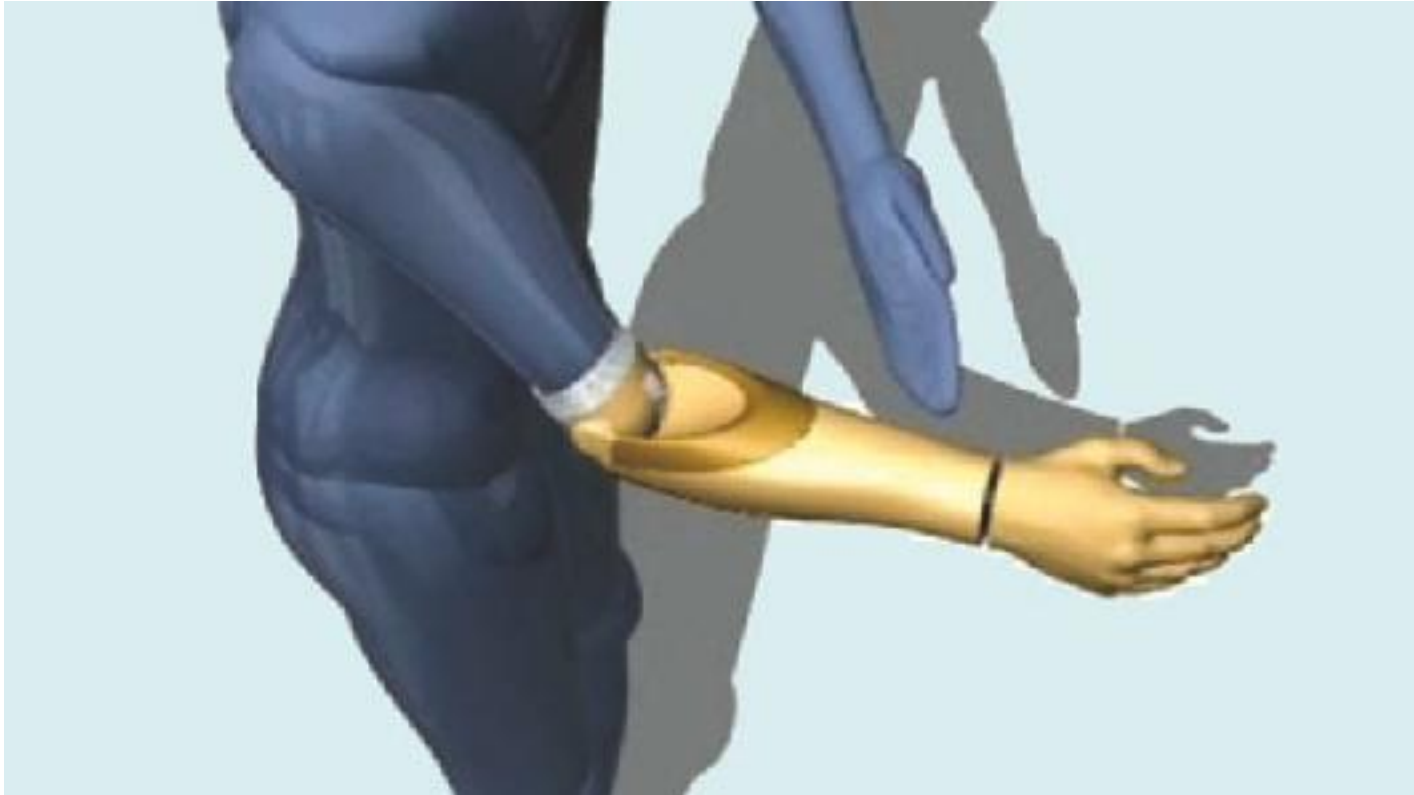


King Lear : act4/scene 3 (1606)

Kent: *A sovereign shame so
elbows*

*him: his own unkindness, that
stripp'd her from his
benediction , turn'd her to
foreign casualties. . .*

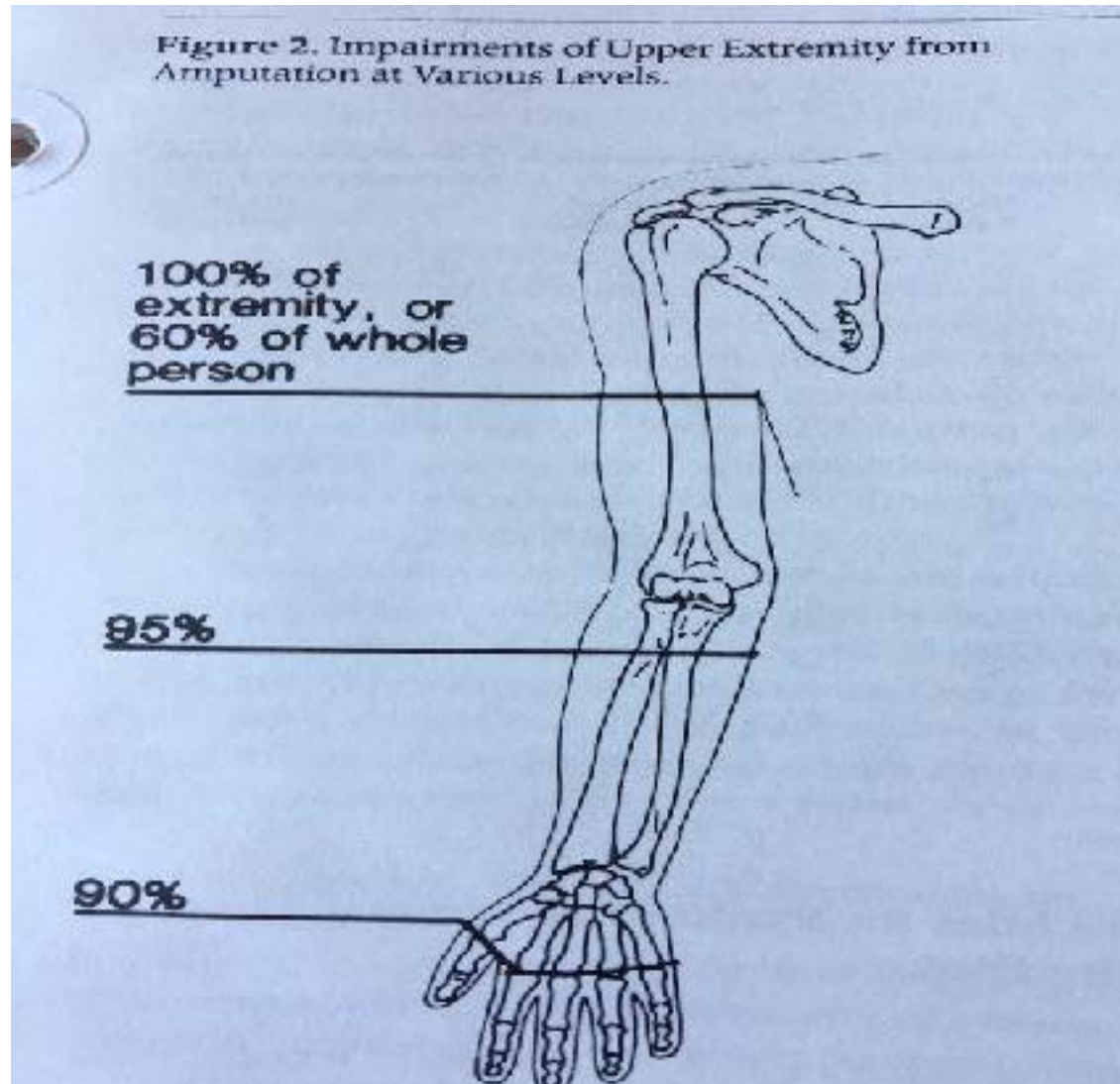
How important is elbow function ?



Colorado Division of Workers Compensation 2017

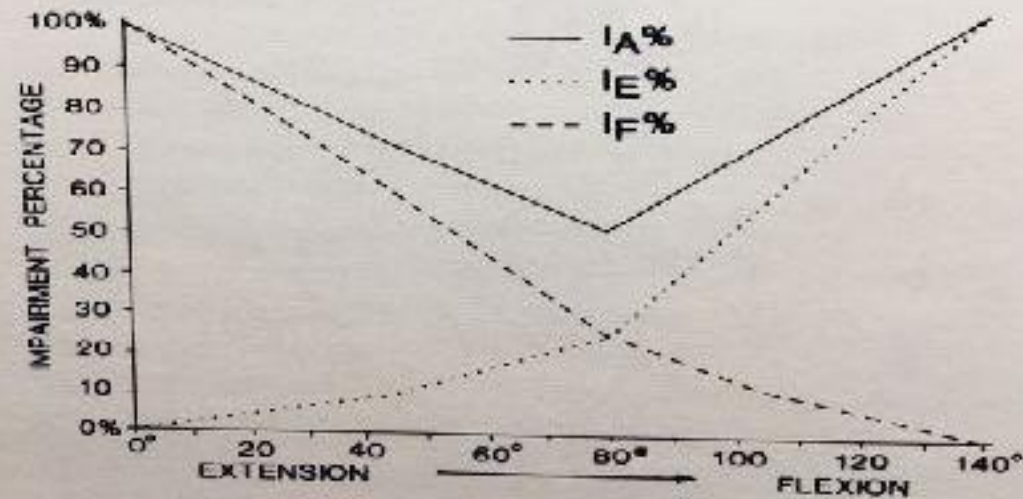
- In Colorado:
- amputation with loss of the elbow joint equates to 100% upper limb function and ankylosis about 70% of upper limb function .
- (sorry shoulder specialists 😊)

Amputation impairment



Ankylosis impairment

Figure 3L. Impairment Curves for Ankylosis ($I_A\%$), Loss of Flexion ($I_E\%$), and Loss of Extension ($I_F\%$) of Elbow joint. Ankylosis in Functional Position (80° flexion) is Given the Lowest Impairment Value (50%).



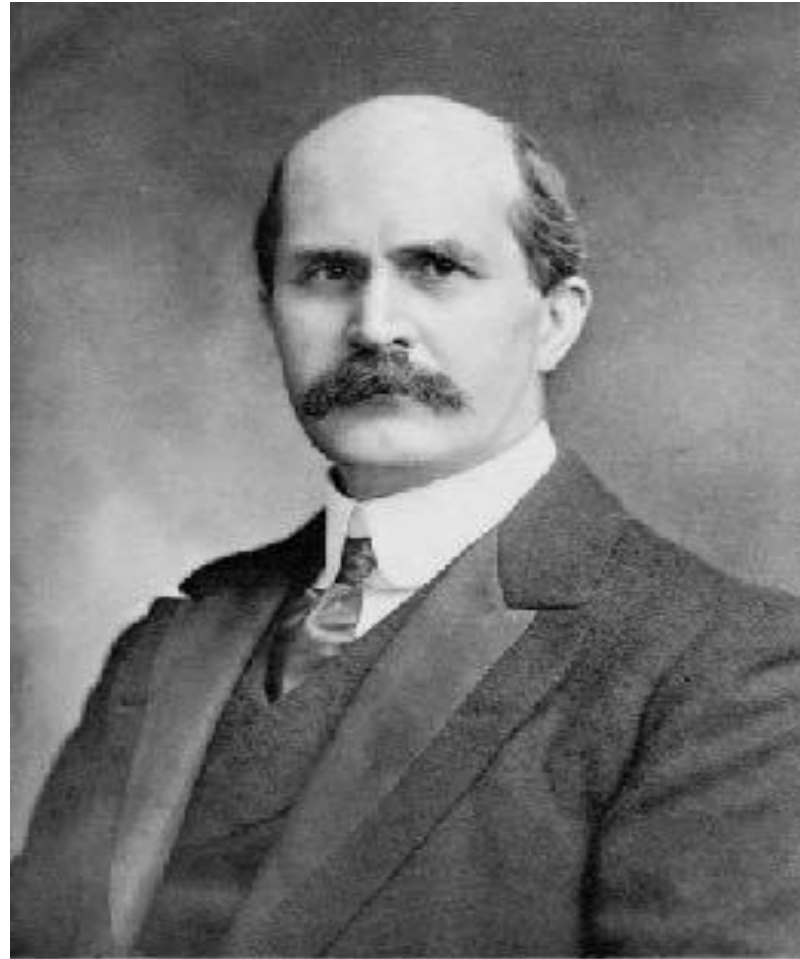
Hippocrates (400BC) worried about elbow stiffness:

- If ankylosis should actually develop : an arm ankylosed in the extended position would be better away (amputated) . . For it would be a great burden and of little use.

. .

William Bragg

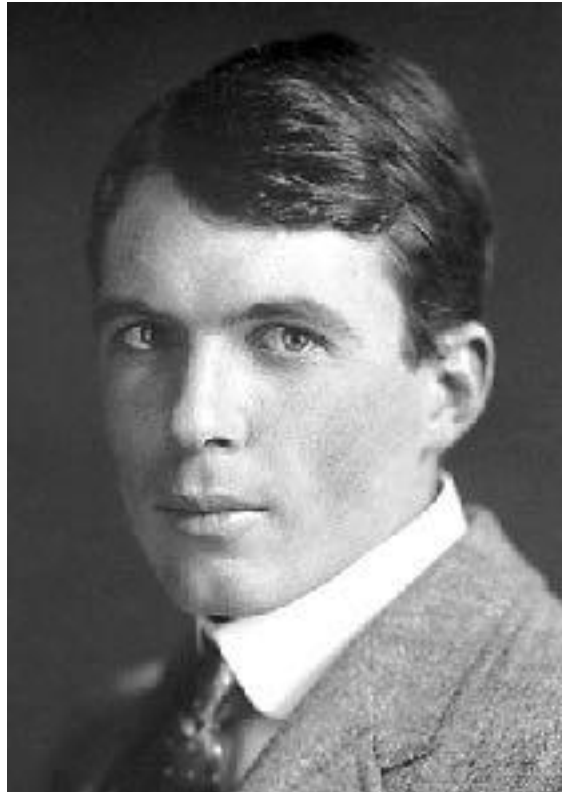
29 May 1896 at Adelaide



W. H. Bragg

Sir Lawrence Bragg

Nobel prize in Physics 1915



Bragg about x-rays January 1896 Adelaide

‘ . . . This invention made the knowledge of fractures more exact and their treatment less complicated...’

–Scudder CJ, Cotton FJ: The treatment of fractures .

WB Saunders , 1900

Elbow



Lateral Elbow Pain

spring 2018



Lateral Epicondylalgia.

Open Release



Lateral Epicondylalgia



PRP injection



Seven key growth factor groups: PDGF-A&B, TGF- β , EGF, IGF I&II, VEGF, bFGF and ECGF10,

- Steady release of autologous GFs (≥ 7 days)
- 5X concentration over baseline whole blood
- Fibrin scaffold for cell migration
- PRFM accepts multiple sutures and remains intact during delivery (arthroscopic)
- Platelets and growth factors preserved; no exogenous thrombin required
- Safe, easy to use, minimal patient blood required, cost effective
- Minimal red blood cell contamination

Epicondylalgia

Reference: (Literature review)

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Epicondylalgia

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ELBOW PRP:

1 Platelet-Rich Plasma Injection Reduces Pain in Patients with Recalcitrant Epicondylitis - *Hecthman K.S., Uribe J.W. et al. - Orthopedics - January 2011; 34 (2)*

2 Platelet rich ELBOW

1 Platelet-Rich Plasma Injection Reduces Pain in Patients with Recalcitrant Epicondylitis - Hecthman K.S., Uribe J.W. et al. - Orthopedics - January 2011; 34 (2)

2 Platelet rich plasma versus steroid on lateral epicondylitis: meta-analysis of randomized clinical trials - Bobin Mi, Guohuio Liu, Wu Zhou, Huijuan Lv, Yi Liu, Qipeng Qu, Jin Liu - *The Physician and Sportsmedicine - March 2017; 97-104*

3 Treatment of Chronic Elbow Tendinosis With Buffered Platelet-Rich Plasma - Mishra A. et al. - *American Journal of Sports Medicine - November 2006; 34 (11) 1774-78*

4 Positive Effect of an Autologous Platelet Concentrate in Lateral Epicondylitis in a Double-Blind Randomized Controlled Trial: Platelet-Rich Plasma Versus Corticosteroid Injection With a One-Year Follow-p - Peerbooms J., Sluimer J., Bruijn J., Gosen T. - *American Journal of Sports Medicine - February 2010; 38 (2) 255-262*

5 Ongoing Positive Effect of Platelet-Rich Plasma Versus Corticosteroid Injection in Lateral Epicondylitis: A Double-Blind Randomized Controlled Trial With

2-Year Follow-Up - Gosen T., Peerbooms J., van Laar W., den Oudsten B. - *American Journal of Sports Medicine - June 2011; 39 (6): 1200-1208*

Epicondylalgia

- **Background:**
- Cumulative trauma disorder of the lateral elbow characterized by micro trauma, degeneration with angio-fibroblastic hyperplasia in the origin of the ECRB tendon at the lateral epicondyle. (Nirschl 1979). There are several other causes of lateral elbow pain, many are concomitant with lateral extensor tendinitis.

Epicondylalgia

- **Cumulative Trauma Conditions:** *Rule 17 exhibit5:* Division of Workers Compensation Department of Labor and Employment, State of Colorado:
- **Symptoms:** pain with lifting, work and activities of daily living.
- **Signs:** tenderness, pain with resisted extension and supination

Epicondylalgia

- **Risk factors:** awkward posture, forceful lifting, screwing; needs a combination of force and repetition of the wrist and hand.
- **Three Months** conservative treatment.
(**Six month Rule:** unlikely to go back to the same occupational position)
- **Differential Diagnoses:** radio capitellar chondral lesion, Plica, PIN, PLRI

Epicondylalgia

- **Conservative treatment:**
- **80% improve over one year (in Europe)**
 - Verhaar: int ortho 1994
 - Haahr: Rheumatol 2003
 - Binder: BrJRheu 1983

Epicondylalgia

- 10% of patients who seek treatment will eventually come to surgery (in Europe)
- Poor prognosis: Manual labor, dominant arm, long duration of symptoms, high levels of baseline pain, poor coping or social supports.

Epicondylalgia (preop treatment)

- PRP injections may be just as good as other non operative treatments and better than steroid injections in the longer term (3 months) but it is likely that the 10% / 90% ratio may not be modified by these non operative treatments .

Meta analysis PRP

The American Journal of sports medicine.

June 6, 2016; vol 20/10pp1-8

- Fitzpatrick et al :

CONCLUSION

This network meta-analysis has identified that the type of PRP and the techniques used affect the outcomes and should always be included in any meta-analysis in the future, as predicted by Moraes et al³⁷ and recommended by Gosens and Mishra.²¹ Our systematic review and network meta-analysis found strong evidence that LR-PRP improves outcomes in tendinopathy and confirms the results published by Baksh et al.³ The technique for the injection of LR-PRP includes the use of 1 to 2 mL of local anesthetic injected prior to LR-PRP superficial to the tendon. A single LR-PRP is injected using a peppering technique intratendinously into the affected area, generally under ultrasound guidance.

Meta analysis PRP

The American Journal of sports medicine.

June 6, 2016; vol 20/10pp1-8

- Mishra et al:

placed with 10.1% in the cortisone group ($P < .0001$).

The pilot study of Mishra and Pavelko²⁶ was underpowered and only suggested some value for unactivated PRP in patients with chronic lateral epicondylar tendinopathy who were considering surgery when all other nonoperative measures had failed. The studies of Gosens et al¹³ and Peerbooms et al³³ had excellent methodology and execution but have been criticized for using cortisone as a control group because of its potential negative effects. Overall, however, these 2 controlled studies reported no safety issues and supported the use of unactivated PRP with leukocytes as an alternative to surgery. The second set of studies also clearly showed that cortisone has little or no long-term value in the treatment of chronic tennis elbow.

Epicondylalgia

- **Surgery:**
- **Open Nirschl (1979) -Nirschl JBJS 1979**
 - 97.7% improvement, 85.2 % returned to prior work.
- **Athroscopic release (Cohen J Shoulder Elbow Surg2008)**

Epicondylalgia

- **ARTHROSCOPIC:** (Cohen Hand Clin 2009, Merrell J Hand Surg 2009)
 - **PROS:** see the whole joint and tendon insertion, exclude other pathology, less invasive, faster return to work, lesser immobilization, smaller incision.
- **CONS:** needs general anesthetic. Longer OR time.

Epicondylalgia

Arthroscopic outcomes

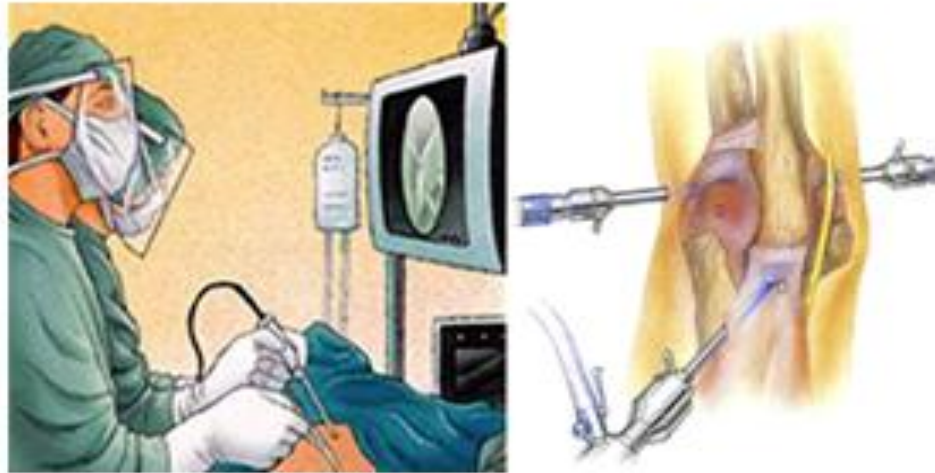
- Baker: ten year follow-up: 95% much better.
- Yan: no difference between open and arthroscopic
- Owens 16 patients all better after arthroscopy
- Tseng 1994, Stapleton 1996, Field 1998 : all improved with arthroscopy
- Peart 2004 , 87 patients: no difference between open and arthroscopic, but faster return to work, significantly less therapy
- Szabo 2006 : 109 patients no difference in outcomes
- Latterman 2010: 36 patients 3.8 weeks back to activities and 8 weeks to MMI.
- Savoie 2010: 97.7% improvement with arthroscopy and treat associated pathology
- Solheim 2013: 315 patients, three years: 78% good in arthroscopy, 67% in open technique. Arthroscopic group faster back to work

Epicondylalgia

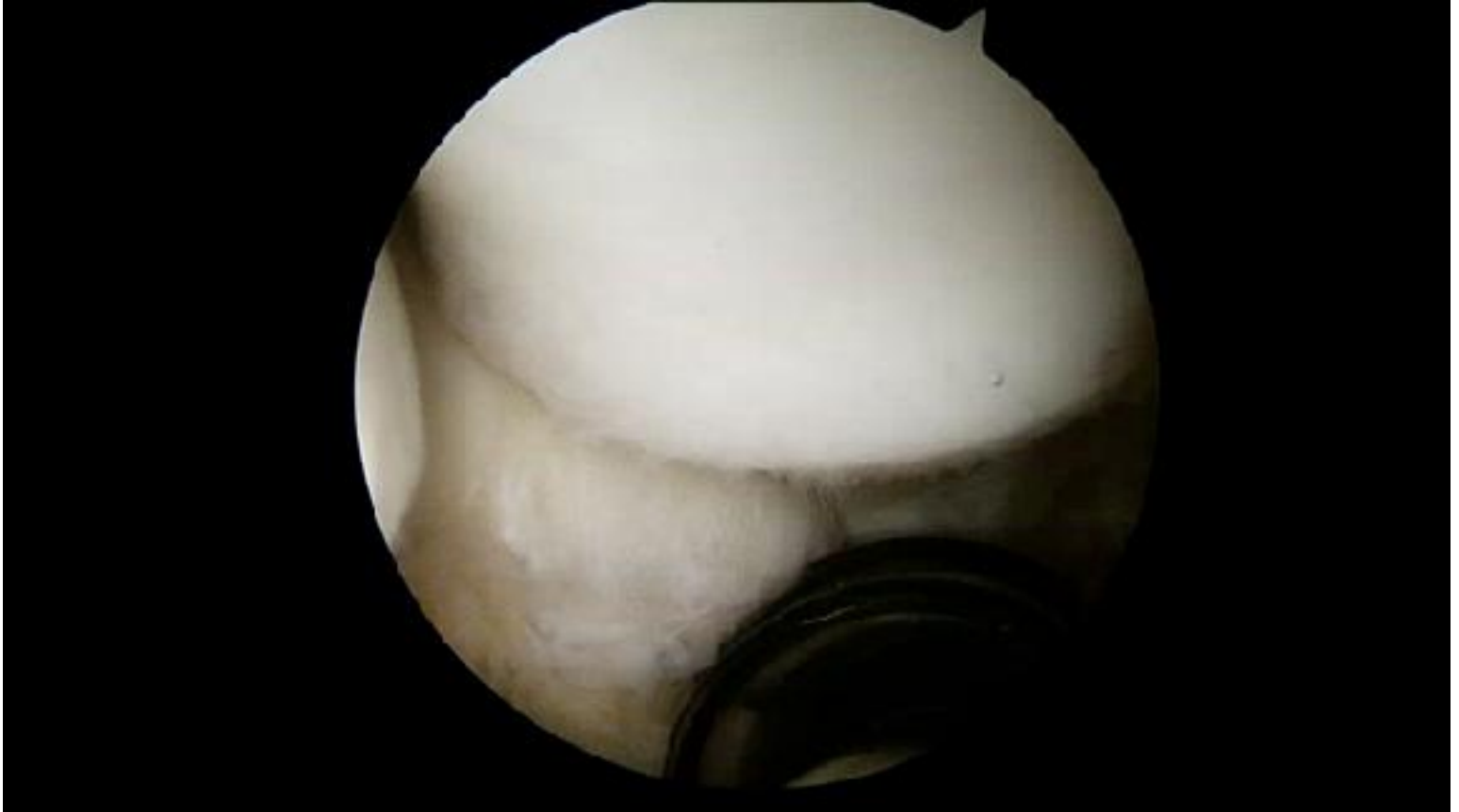
- Dzugan 2012: PLRI can be a complication of conservative treatment (can be addressed at arthroscopy)
- Sasaki2012 : 81% lateral elbow pain had radial head cartilage injury, cartilage damage on 67% of the capitellum

Surgical Treatment video

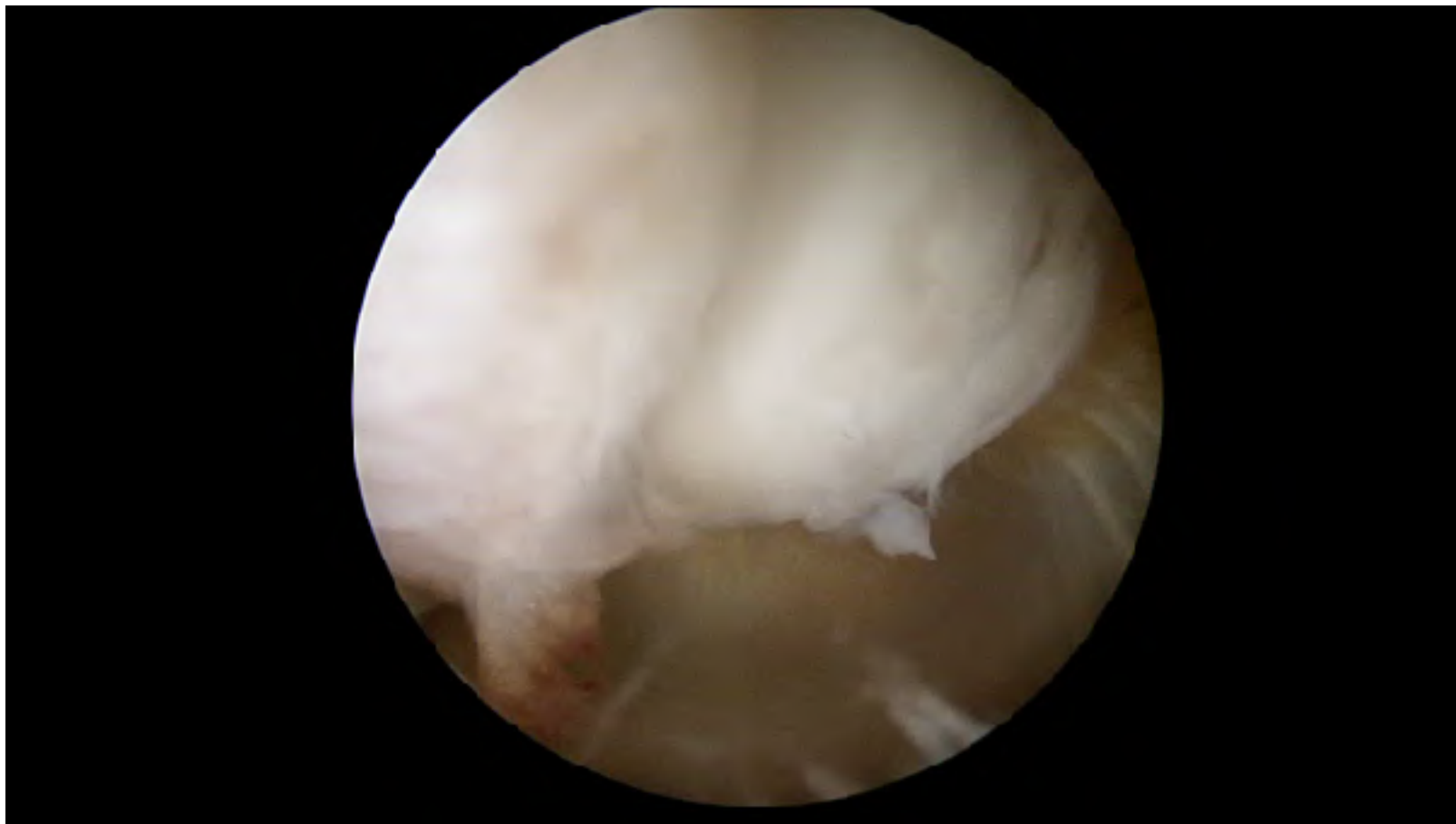
Epicondylalgia



Ecrb defect



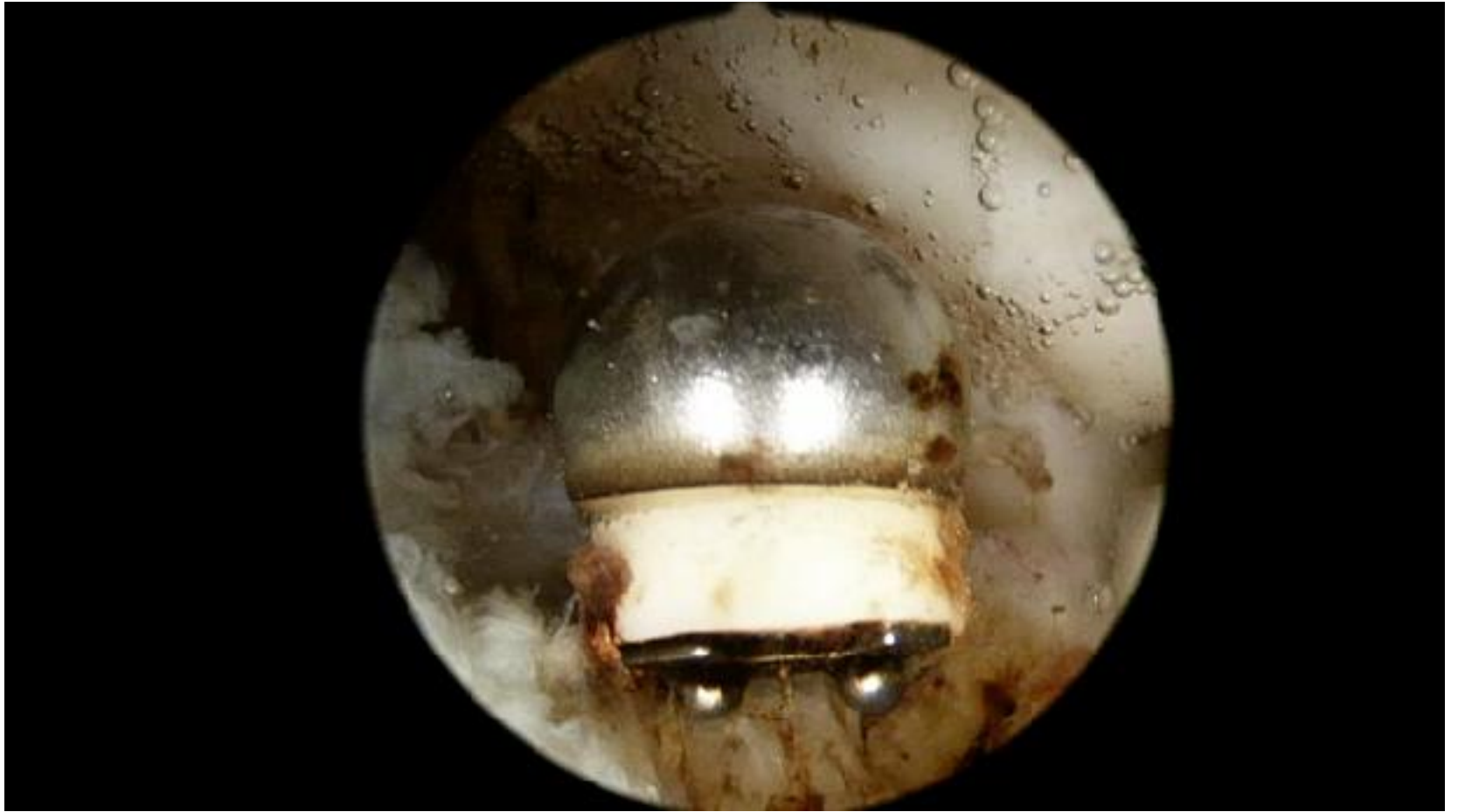
Medial side



ECRB TEAR



PLICA



Summary

spring 2018

- ***Lateral epicondylitis/epicondylalgia:*** lateral elbow pain, with evocative signs. 80% get better with “conservative measures” over six weeks to three months. If the symptoms and limitations last more than six months patients are unlikely to go back to the same level of activity at work.

Summary

spring 2018

- 10% of patients, who present early, will come to surgery. (A higher proportion in late presenters will require surgery.)

Summary

spring 2018

- There are good comparative trials which support arthroscopic treatment of lateral epicondylalgia with case control trials and ten year follow up.
- It may not be necessary to perform preop MRI scans ultimately.

Epicondylagia Surgery

- **Open**
- Nirschl (1970)
- 97% good results about ten weeks recovery
- ***ARTHROSCOPIC:***
 - (Cohen Hand Clin 2009, Merrell J Hand Surg 2009)
 - see the whole joint and tendon insertion, exclude other pathology, less invasive, faster return to work, lesser immobilization, smaller incision. 95% good

Arthroscopic

- The technique and anatomy is straight forward and well defined
- (Cohen and Savoie).

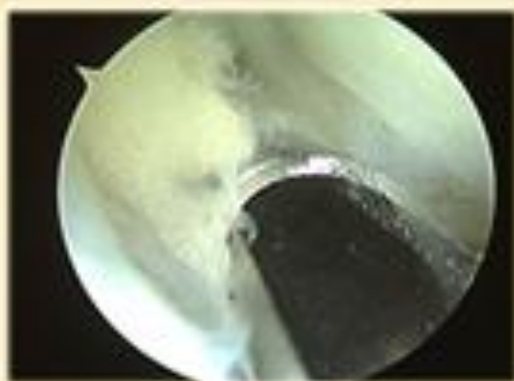
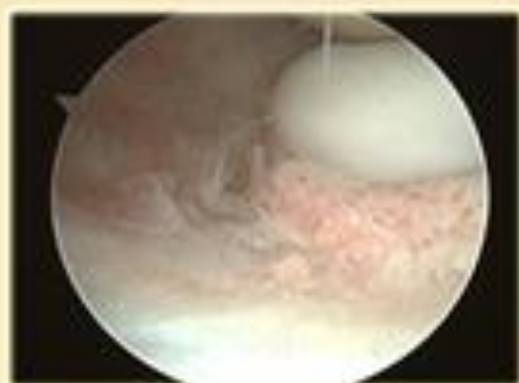


PRP Injection



Lateral Epicondylalgia

Arthroscopic Release (cont.)



Lateral Epicondylalgia.

Open Release



ELBOWS

