

Lateral Elbow Arthralgia Satoru T. Chamberlain, MD Orthopaedic Surgeon, Hand-Upper Extremity

elbows



"ELBOW" IN ENGLISH LANGUAGE



*

First in 1030 AD : adopted from celtic "elnboga"

*Ell- length of the forearm



"ELBOW" AS A CHARACTER

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ACT IL

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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

ACT IV			1000
aform'd?	SCENE II] KING	LEAR 923	The summer strength
g'd bear	The news is not so tart I'll read, and answer.	To deal with grief alone.	and the second s
nve you	All. Where was his son when they did take his eyes!	The stars above us, govern our conditions	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
oitz	Meas. Come with my lady hither.	Such different issues. You spoke not with her	and the second
spirits	Mess. No, my good lord ; I met him back	Gent. No.	UNIE
offencias,	All. Knows he the wickedness i Mess Ay, my good lord; 'twas he informid	Kent. Was this before the king return'd 1 Gent, No, since	1.1.945
- Contraction of the second	And quit the house on purpose, that their	the town :	10122
man! so head for	Might have the freer course.	What we are come about, and by no means Will yield to see his daughter.	
erning that not	To thank thee for the love thou show'dst the	Gent. Why, good sir? Kcut. A severeign shame so ellows him: a his own unkindness.	
nish'd	And to revenue thine eves. Come hither,	"Last scripp'd her from his benediction, turn'd	1000
Where's	Tell me what more than know'st. [Encount.	To his dog-hearted daughters, these things sting	
oiseless	SCRNE III. The French casus near Lover.	His mind so venemously, that burning shame Detains him from Cordelia.	
threat :	Enter KENT and a Gentleman.	Gent. Alack, poor gentleman !	12
ad criest	Kent. Why the King of France is so suddenly gone back know you the reason f	you heard not? 30 Gent. "Tis so, they are aboot. 30	
d co	Gent. Something he left imperfect in the state, which since his coming forth is thought	Kent. Well, sir, I'll bring you to our manter Lear,	Contraction of
and an and the second	of ; which imports to the kingdom so much fear and danger, that his personal return was	And leave you to attend him ; some dear cause	
d thing.	Most required and necessary. Kent. Who bisth he left behind him general?	When I am known aright, you shall not private	100
y fitness	Geat. The Marshal of France, Monsteur	Lending me this acquaintance. I pray you, go A long with me.	
sar	Kent. Did your letters pierce the queen to any demonstration of grief	SCENE IV. The same. A lent.	
t flend,	Gent. Ay, sir; she took them, read them in	Enter, with drum and colours, CORDELIA. Dector, and Soldiers.	
and the second	And now and then an ample tear trill'd down	Cor. Alack, 'tis he : why, he was met even	ALC: NOT
121213	Her delicate check : is seen'd she was a queen Over her passion ; who, most rebel-like,	As mad as the vex'd sea ; singing aloud ;	-
STATEST	Sought to be king o'er her. Kent. O, then it moved her.	Crown'd with rank furniter and furrow-weeds,	Sector Sector
(Clord-	Gent Not to a more ; natispase and somer		Contract of the local division of the local

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...

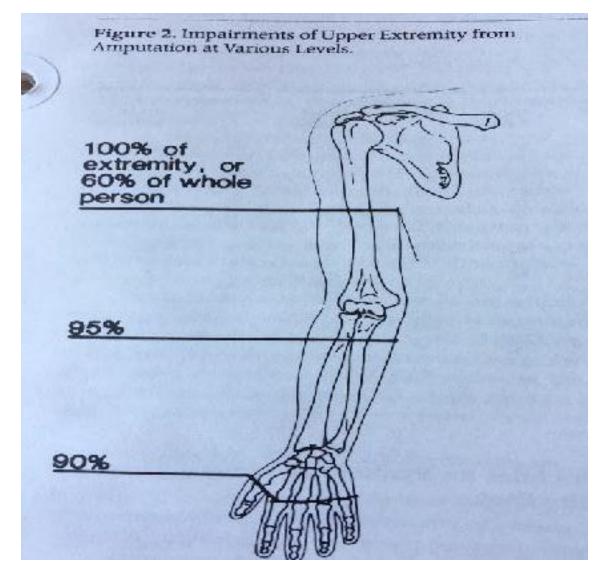
How important is elbow function ?



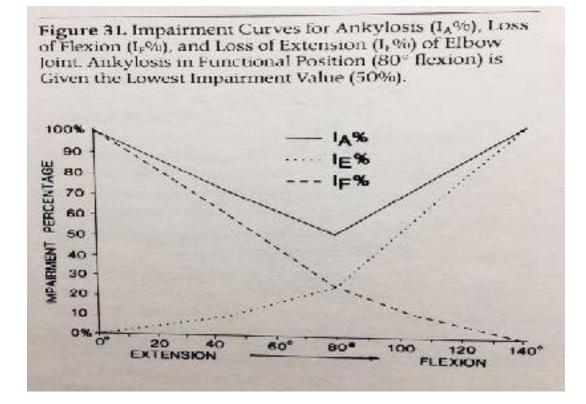
Colorado Division of Workers Compensation 2017

- 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



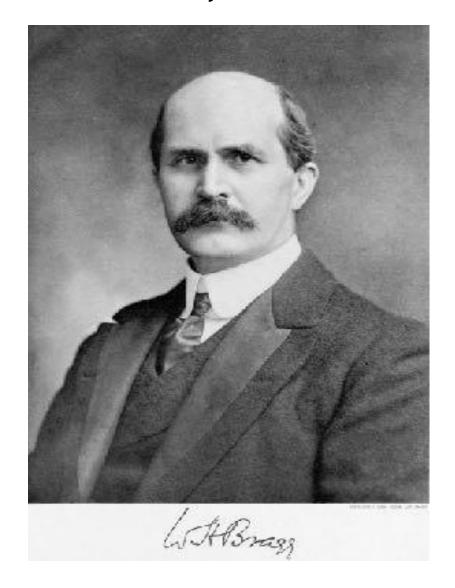
Ankylosis impairment



Hippocrates (400BC) worried about elbow stiffness:

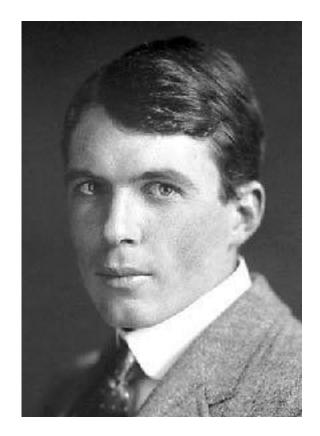
- If ankylosis should actually develop : an arm ankylosed in the extended position would be better away (amputated)... For it would be a great burden and of little use.

William Bragg 29 May 1896 at Adelaide



Sir Lawrence Bragg

Nobel prize in Physics 1915



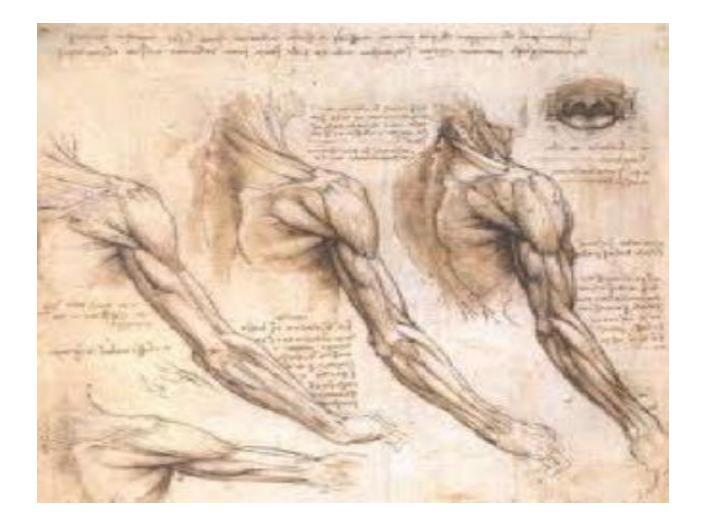
Bragg about x-rays January 1896 Adelaide

* 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

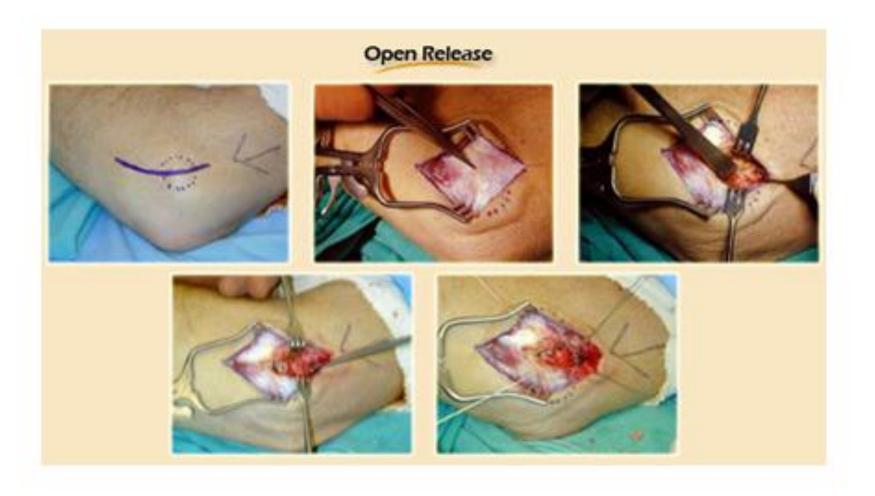


Lateral Elbow Pain

spring 2018



Lateral Epicondylalgia.



Lateral Epicondylalgia



PRP injection



Seven key growth factor groups: PDGF-A&B,

TGF-b, EGF, IGF I&II, VEGF, bFGF and ECGF10,

- Steady release of autologous GFs (\geq 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

Reference: (Literature review)

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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

• 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.

- 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

- **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 chrondral lesion, Plica, PIN, PLRI

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

- 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:

pared when to the in the contabule group (F < .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.

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

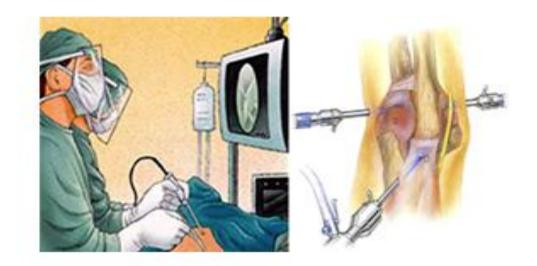
- **ARTHROSCOPIC:** (Cohen Hand Clin 2009, Merrell J Hand Surg 2009)
 - PROS: see the whole joint and tendon insertion, exclude other pathology, less invasive, faster return to work, lesser immobilization, smaller incision.
- CONS: needs general anesthetic. Longer OR time.

Epicondylalgia Arthroscopic outcomes

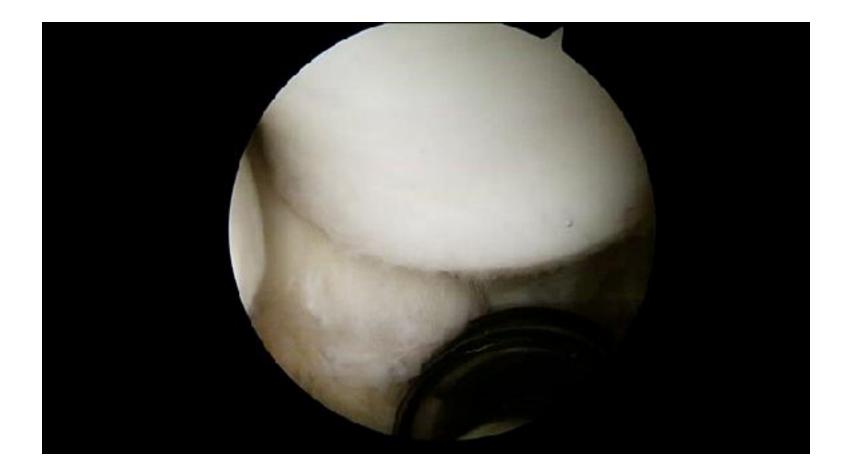
- Baker: ten year follow-up: 95% much better.
- Yan: no difference between open and arthroscopic
- Owens 16 patients all better after arthroscopy
- Tseng 1994, Stapleton 1996, Field 1998 : all improved with arthroscopy
- Peart 2004, 87 patients: no difference between open and arthroscopic, but faster 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

- 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

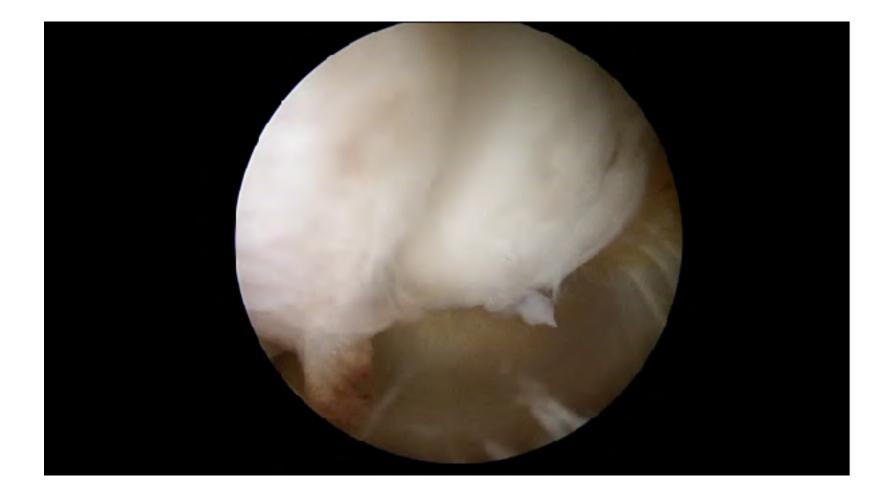
Surgical Treatment video Epicondylalgia



Ecrb defect



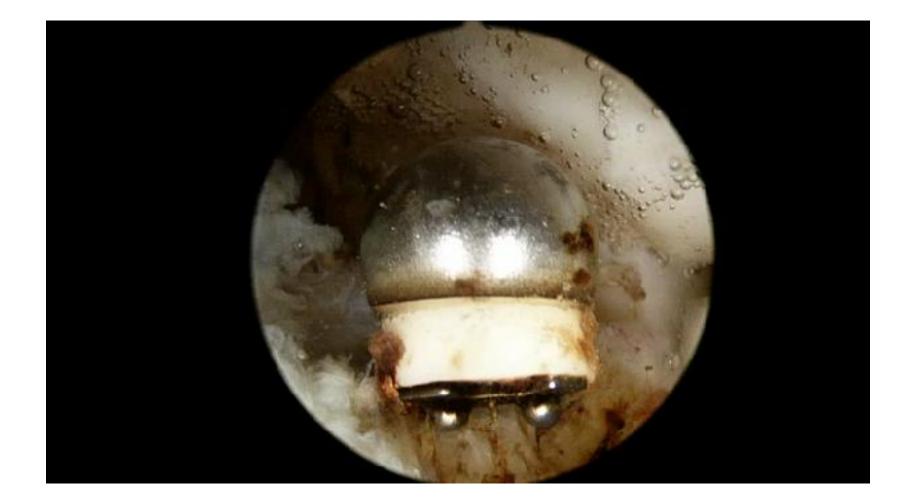
Medial side



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)

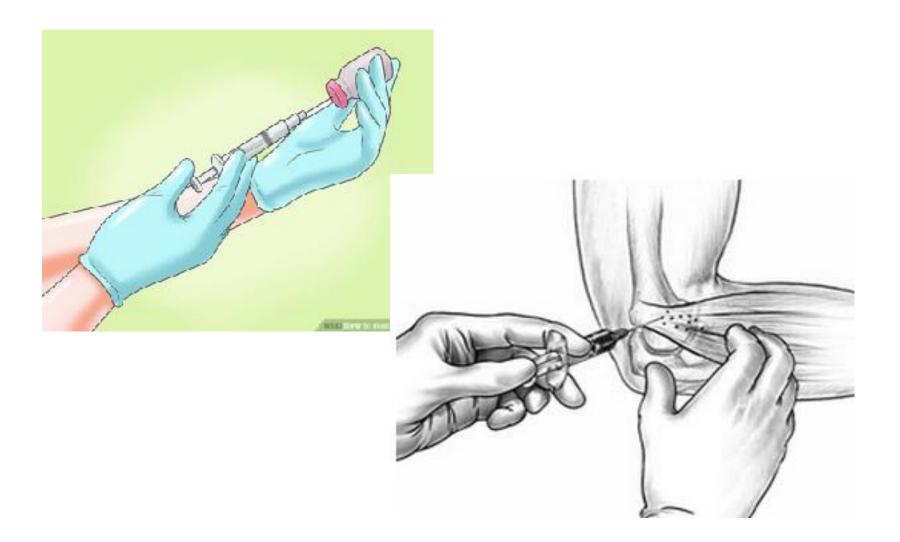
 see the whole joint and tendon insertion, exclude other pathology, less invasive, faster return to work, lesser immobilization, smaller incision. 95% good

Arthroscopic

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



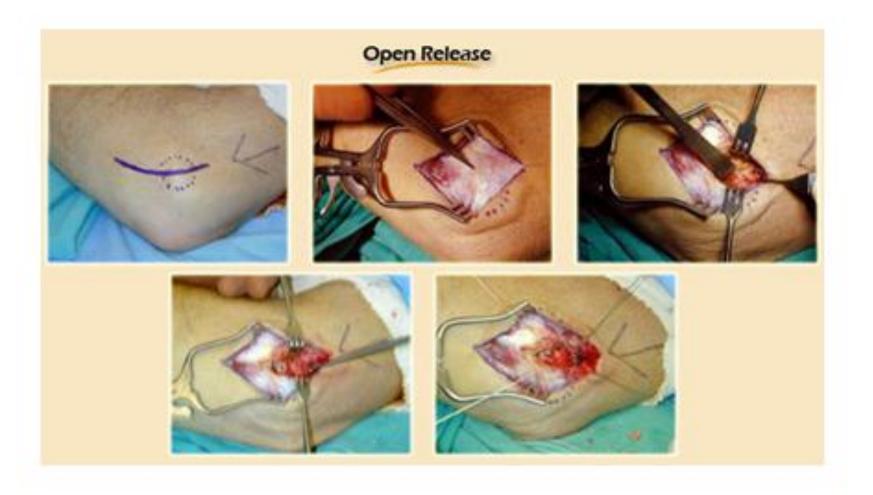
PRP Injection



Lateral Epicondylalgia



Lateral Epicondylalgia.



ELBOWS

