THE EFFECTS OF CORTICOSTEROID INJECTION VERSUS LOCAL ANESTHETIC INJECTION IN THE TREATMENT OF LATERAL EPICONDYLITIS

Thesis

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ABSTRACT

Introduction This study seeks to compare two treatment methods of lateral epicondylitis: corticosteroid injection and a local anesthetic injection.

Patient and methods In this single blinded randomized clinical trial, 15 patients were assigned into CSI group receiving methylprednisolone 1 ml, another 15 patients were assigned into LAI group receiving procaine 1 ml 2% in a single dose.

Primary outcome was by Quick DASH score while secondary outcome was by VAS score.

Follow –up was at 3-, 6- and 12-week post treatment visits.

Results The recovery rate was more effective and higher in CSI group especially at 3-week visit.

Conclusion CSI has the best short-term treatment results yet a high recurrence rate.

Keyword: ERCB , RCT ,MRI, EMG

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LIST OF ABBREVIATIONS

Abbrev.	Full term
CEO	Common extensor origin
CSI	Corticosteroid injection
CT	computed tomography
DASH	Disability of arm and shoulder
ED	Energy density
EMG	electro myography
ERCB	Extensor carpi radialis brevis
ESWT	Extracorporeal shock wave therapy
Fig	Figure
KP	Kilo Pound
LAI	Local Anasthesia Injection
MJ	Mille joule
MRI	Magnetic resonance image
NSAIDs	Nonsteroidal anti-inflammatory drugs
PIN	Posterior interosseus nerve
RCT	Randomized control trail
VAS	Visual Analogue Scale

INTRODUCTION

Lateral epicondylitis is usually defined as a syndrome in which pain is present in the area of lateral epicondyle**.** [(1)]

The more commonly proposed etiologies for tennis elbow can be grouped into three broad categories: **I.** Tendinous irritation from insertional tendinitis, **II.** Entrapment of neurological structures and **III.** Intra-articular abnormalities. More specifically, they include periosteal tearing of the extensor carpi radialis brevis (ECRB) related to muscle stress and strain of the common extensors, radial nerve entrapment, traumatic synovitis of a redundant synovial fringe of the radiohumeral joint, even stenosis by the orbicular ligament from the pulsating mechanism of radial head rotation, chondromalacia of the radial head, calcific tendinitis of the extensor muscles, posterior interosseous nerve entrapment, irritation of the articular branches of the radial nerve, and traumatic periostitis of the lateral epicondyle**.** [(2)]

Although the exact pathology of tennis elbow has not yet been elucidated, it is believed to be a degenerative process resulting in vascular proliferation and hyaline degeneration of the extensor carpi radialis brevis (ECRB) and extensor digitorum communis (common extensor origin) at the lateral epicondyle. These findings suggest a failure of the normal repair mechanism. [(3)]

Tennis elbow can be diagnosed clinically by eliciting pain in the region of the lateral epicondyle with use of manual provocation tests. The most common manual tests for tennis elbow are local palpation above the lateral epicondyle, resisted wrist tests, and resisted middle finger extension tests. Other tests used to diagnose tennis elbow are testing of the pain with elbow extended and wrist flexed in pronation (Mills test), and the so called chair lifting test**.** [(4)]

In addition to pain, patients almost always have decreased function**.** [(1)]

Treatment Modalities by clinical recommendations:

- The following interventions are **propably** helpful for lateral epicondylitis:

  Watchful waiting, short - term topical NSAIDs, corticosteroids injection (short term releif), exercise regimens, ultrasonography.

- The following interventions are **possibly** helpful for lateral epicondylitis:

  Short term oral NSAIDs, tennis elbow brace, topical nitrates, botulinum toxin type A injection (Botox), surgery.

- The following interventions are **unlikly** helpful for lateral epicondylitis:

  Extra -corporeal shock wave therapy, laser therapy. [(5)]

AIM OF THE WORK

Review of literature of lateral epicondylitis as regard anatomy, biomechanics, pathophysiology, Diagnosis, modalities of treatment and compare two treatment methods of lateral epicondylitis: corticosteroid injection (CSI) and a local anesthetic injection (LAI) in short-term follow-up.

ANATOMY OF THE LATERAL EPICONDYLE

Relevant anatomy of tennis elbow include the following items:

1. Osteology of the lower end of the humerus especially the lateral epicondyle as well as the upper end of the radius.
2. Ligaments related to the lateral epicondyle and upper end of radius.
3. Bursae related to the elbow joint.
4. The Common Extensor origin.
5. Surgical Anatomy of the radial nerve.

1. Osteology of the lateral part of the elbow joint.

a) The lower end of humerus:

The lower end of the humerus consists of two epicondyles, capitulum and trochlea. Basically the lower end of the humerus is a modified condyle, it is wider transversely and has articular and non – articular parts. The articular part join the radius and ulna at the elbow and is divided into a lateral convex capitulum and a medial, pulley shaped trochlea. The non- articular part include medial and lateral epicondyles, olecranon, coronoid and radial fossae**.** [(6)]

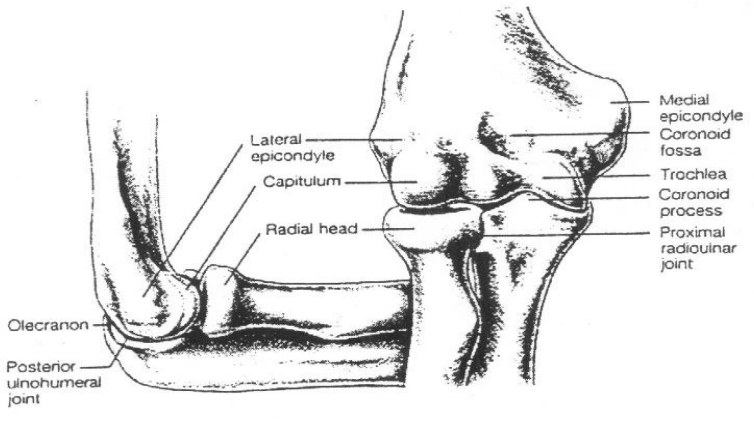

Figure (1): Normal bony architecture of the elbow as seen from the anteroposterior and lateral directions ***(McVay, 1984).***

The lateral epicondyle: is the lateral non-articular part of the condyle. It does not project beyond the lateral border. It has an antero-lateral impression for the superficial forearm extensors. Its posterior surface, slightly convex, is easily felt in a depression visible behind the extended elbow. The lateral humeral border ends at the lateral epicondyle from which extending proximally to from what is known the lateral supracondylar ridge. [(7)]

The two epicondyles of the humerus are subcutaneous and readily palpable but the medial epicondyle is more prominent. The lateral epicondyle is palpated most easily with the arm semi-flexed but with the arm in full extension the condyle is hidden in a small depression bounded by anconeus muscle medially and radial extensor muscles laterally. The lateral epicondyle lies farther from the olecranon than does the medial epicondyle. Immediately distal to the lateral epicondyle and the depression marking the radio–humeral joint is the projecting head of the radius, the rotatory movements of which are detected readily by pronating and supinating the forearm alternatively.[(7)]

When the forearm is flexed the head of the radius lies 2.5 cm anterior to the lateral epicondyle. The interval separating them is being occupied by the capitulum of the humerus. When the forearm is in complete extension, a finger may be inserted into a distinct depression corresponds to the lateral and posterior part of the radio – humeral joint. [6]

b) The upper end of radius:

The upper end of radius includes a head, neck and tuberosity. The head is cylindrical cup-shaped and its upper surface is shallow spherical hollow for articulation with the convex capitulum of the humerus **(Fig.1)** [8]

The upper surface of the head of the radius and its articular circumference are covered with hyaline cartilage. The upper margin of the head fits into the groove between the capitulum and trochlea, and when the forearm is flexed, it invades the radial fossa. The articular circumference joins with the radial notch of the ulna, and in the rest of its extent is surrounded by the annular ligament, within which it rotates in pronation and supination. The neck of the ligament of the bone is surrounded by the narrower lower part of the ligament but is separated from it by a protrusion of the synovial membrane of the superior radio-ulnar joint. [8]

2. Ligaments related to the lateral epicondyle and upper end of radius:

a) Radial collateral ligament.

b) Annular ligament.

c) The capsular ligament.

a) Radial collateral ligament.

It is a single flattened band attached to the humerus at the lateral epicondyle below the common extensor origin. It fuses with the annular ligament of the head of the radius. The anterior and posterior margins are merely thickened parts of the capsule. [7]

Some of its posterior fibers (the lateral ulnar collateral ligament) crossing the ligaments to the proximal end of the ulnar – supinator crest. It is intimately blended with the attachments of the supinator and extensor carpi radialis brevis**(Fig 2)**. It is taut throughout most of the range of flexion [6]

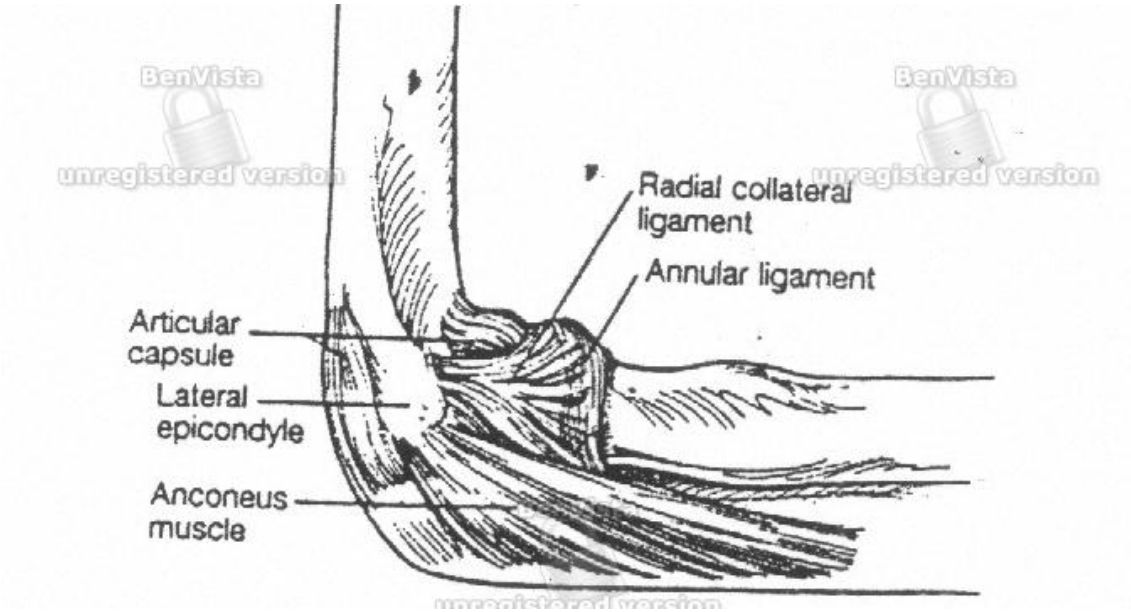

Figure (2): Attachment of annular ligament and the radial collateral ligament ***(Last, 1994).***

b) Annular ligament of the radius:

A strong and fibrous collar (annulus = a ring) clasps the head and neck of the radius and retains it in contact with the radial notch of the ulna. **(Fig.2).** It has no attachment to the radius which remains free to rotate in the annular ligament. It forms about four – fifth of the osseo-fibrous ring. In the front it is attached to the anterior margin of the radial notch. Posteriorly it broadens into several bands to attach to a rough ridge