Corticosteroids injection versus Plasma rich in platalets injection in tennis elbow management.

A thesis
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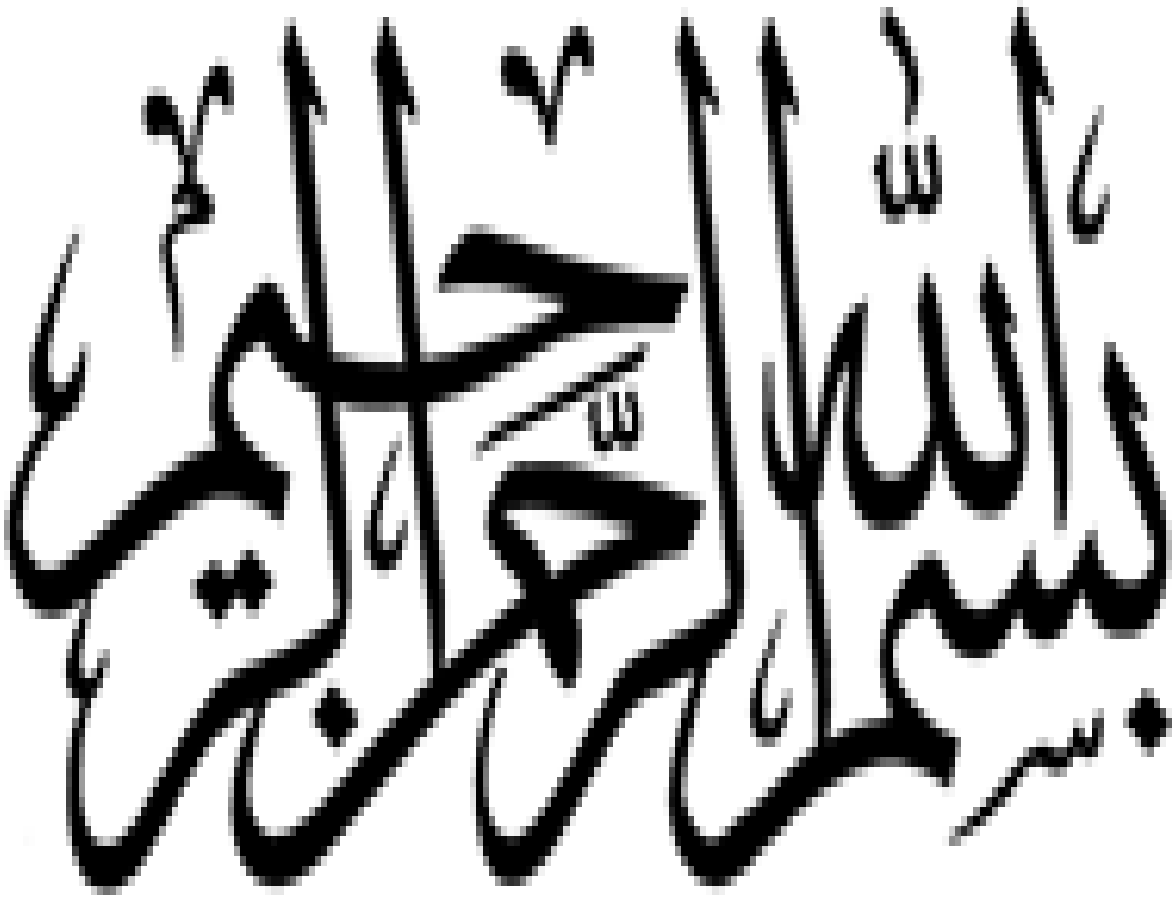
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Abstract

Lateral epicondylitis is defined as a syndrome in which pain is present in the area of lateral epicondyle. It is believed to be a degenerative process resulting in vascular proliferation and hyaline degeneration of the extensor carpi radialis brevis and extensor digitorum communis (common extensor origin) at the lateral epicondyle**.**

Corticosteroid injection at the maximal point of tenderness gave better relief in a shorter time. But the high recurrence rate after corticosteroid injection however suggests that the effect is transient and produce only symptomatic relief. The maxium number of local injection of corticosteroid is 3 times of injections and there is no need to repeat injection in a patient who had little positive effect.

In plasma rich in platelets, delivery of derived growth factors to the site of disease has also been shown to significantly help the healing process in tennis elbow. These growth factors include platelet-derived growth factor, transforming growth factor Fibroblast growth factor, vascular endothelial growth factor and epidermal growth factor. However scientific clinical evidence supporting incorporation of such modalities into routine clinical practice is scanty at present.

Key words:

1- Tennis elbow.

2- Corticosteroid injection.

3- Plasma rich in platelets**.**

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LIST OF ABBREVIATION

CEO	Common Extensor Origin
CT	Computed Tomography
ECRB	Extensor Carpi Radialis Brevis
EGF	Epidermal Growth Factor
EMG	Electro Myography
ESWT	Extracorporeal Shock Wave Therapy
FIG	Figure
FGF	Fibroblast Growth Factor
NSAIDs	Nonseroidal Anti-inflammatory Drugs
PRP	Platelet-rich Plasma or Plasma rich in Platelet
PDGF	Platelet -Derived Growth Factor
RCF	Relative Centrifugal Force
RPM	Revolution Per Minute
TGF	Transforming Growth Factor
VAS	Visual Analog Scale
VEGF	Vascular endothelial growth Factor

Introduction

Lateral epicondylitis is defined as a syndrome in which pain is present in the area of lateral epicondyle. It is believed to be a degenerative process resulting in vascular proliferation and hyaline degeneration of the extensor carpi radialis brevis and extensor digitorum communis (common extensor origin) at the 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 neurologic structures; and **III.** Intraarticular abnormalities .**[2]**

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**.** In addition to pain, patients almost always have decreased function**. [3]**

Lateral epicondylitis could be treated primarily by conservative methods. Patients seen soon after an acute onset of symptoms usually respond to restriction of movement, use of oral non-steroidal agents and ice application. Patients with more chronic symptoms are treated by several lines; the first line is the non-steroidal agents which continued for several weeks. Rest and immobilization is the 2nd line. The 3rd line is the physiotherapy. The fourth line is the local injection of corticosteroid or plasma rich in platelets(PRP). Corticosteroid injection at the maximal

point of tenderness gave better relief in a shorter time. But the high recurrence rate after corticosteroid injection however suggests that the effect is transient and produce only symptomatic relief. The maxium number of local injection of corticosteroid is 3 times of injections and there is no need to repeat injection in a patient who had little positive effect. **[2]**

In plasma rich in platelets (PRP) , delivery of derived growth factors to the site of disease has also been shown to significantly help the healing process in tennis elbow. These growth factors include platelet-derived growth factor (PDGF), transforming growth factor (TGF) Fibroblast growth factor (FGF) **,**vascular endothelial growth factor (VEGF) and epidermal growth factor (EGF). However scientific clinical evidence supporting incorporation of such modalities into routine clinical practice is scanty at present .**[4]**

The fifth line of conservative treatment is the radiotherapy. The last line is extracorporeal shock wave therapy (ESWT). It is a relatively new mode of treatment. **[5]**

On the other hand, the surgical procedures are recommended in severe pain in the epicondylar area which persists for at least 6 months in spite of using intensive conservative treatment. The surgical producers are effective in 90 percent if properly selected patient. the surgical procedures include open surgical Technique, the percutaneous option, and the arthroscopic release . **[6]**

Aim of the Thesis

Literature review of tennis elbow as regard anatomy, biomechanics, pathophysiology, diagnosis, various methods of treatment and comparison between corticosteroids and plasma rich in platelets in management of tennis elbow in attempt to evaluate these two lines of treatment.

Anatomy of the lateral epicondyle

Anatomical considerations 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.

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 **. [7]**

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 **(fig.1)**. **[8]**

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 .**[9]**

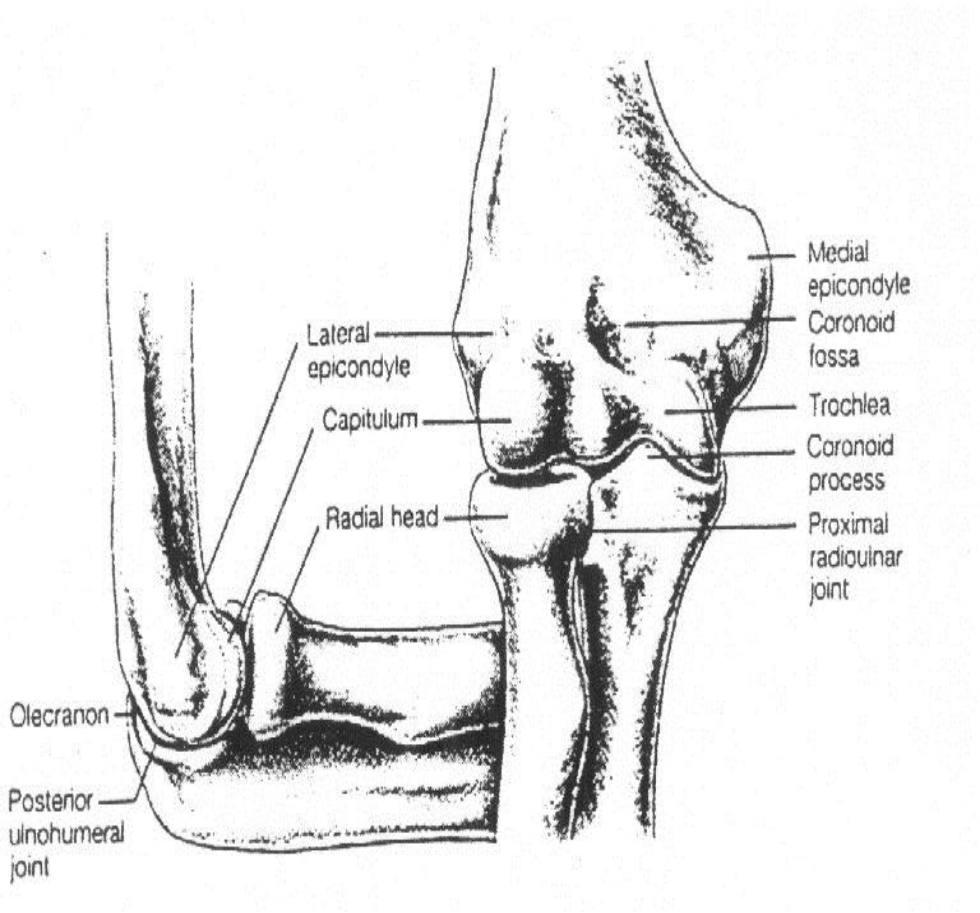

FIGURE1. Normal bony architecture of the elbow as seen from the anteroposterior and lateral directions. **[8]**

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

a) Radial collateral ligament.

Is a single flattened band attached to the humerus at the lateral epicondyle below the common extensor origin **. [7]**

b) Annular ligament of the radius:

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 on the

ulna at or just behind the posterior margin of the radial notch, outlying bands may reach the lateral margin of the trochlear notch above and the upper end of the supinator crest below. **[8]**

c) The capsular ligament.

The capsular ligament of the joint is attached anteriorly to the upper part of the radius and coronoid fossa. So that, both of these bony depressions are intra- capsular. Posteriorly it ascends to, or almost to, the upper margin of the olecranon fossa, which is therefore intra-capsular and covered with synovial membrane. Laterally it skits the lateral border of the trochlea and capitulum, lying medial to the lateral epicondyle. **[9]**

3. Bursae related to the elbow joint:

The radio-humeral bursa lies over the radio- humeral joint between the extensor digitorum communis and the supinator muscle. Radoi–humeral bursitis may occur from the irritation of the repeated violence extension of the wrist with the hand pronated "tennis elbow or lateral epicondylitis".

The interosseous bursa is related laterally to the tendon of the biceps and medially to the ulna. It lies behind the supinator muscle.

The bicipitoral bursa lies between tuberosity of the radius and the insertion of the biceps muscle. Thus the biceps tendon runs between these two bursae, either or both of which may be irritated in engagements requiring violent movements at the elbow.

The olecranon bursa lies between the dorsal surface of the elbow joint and skin. It is exposed to injury and infection from fall upon the elbow and abrasions of the skin . **[7]**