Role of Platelets Rich Plasma in Lateral Epicondylitis

Thesis

Submitted for partial fulfillment of

M.Sc Degree in Orthopedic Surgery

By

Ramy Youssef Ibrahim Bekhit
M.B.B.CH.

Supervised by

Prof. Dr. Alaa Mohy Eldin Solyman

Prof. of orthopedic surgery, Cairo University

Dr. Ihab El Desouky

Lecturer of orthopedic surgery, Cairo University

Faculty of Medicine
Cairo University

2015

abstract

Tennis elbow (latral epicodylitis) is a common problem that causing many symptoms such as pain in lateral aspect of the elbow, restriction of movement and impaired activities of daily life

Quick cessation of symptoms is important to patients and is economically advantageous. Many modalities of treatment were prescribed to relieve the symptoms such as rest, nonsteroidal anti-infl ammatory drugs (NSAIDs), bracing, physical therapy and corticosteroid injection. Newer treatment modalities have been tried, such as extracorporeal shock wave treatment, iontophoresis, and injection of botulism toxin

One novel treatment strategy is the use of local injection of platelet rich plasma
In our study twenty patient with lateral epicondylitis were considered to be injected locally by autologous platelets rich plasma (PRP). They were 13 males and 7 females. The dominant side was affected in 15 patient (12 right side and 3 left side) and only five patient had tennis elbow in the non- dominant side (5 patients in The left side) .

Patients were evaluated pre and post injection clinically. Disability of arm and shoulder and hand score (DASH), patient rated elbow evaluation (PREE) score and visual analogue scale of pain (VAS) were also evaluated pre and post injection at one ,three and six monthes. patients show improvement over the period of follow up in all outcome measures.

Finally, platelet-rich plasma should be considered before surgical intervention. Further study is necessary with randomized trials involving a larger number of patients and also studies to clarify the role adding platelet activators on the results

Key words: platelets rich plasma ,(PRP), tennis elbow, lateral epicondylitis**,**local injection

List of abbreviations

PRP... platelets rich plasma

DASH ... disabilities of arm, shoulders and hand score

PREE ... patient rated elbow evaluation

VAS ... visual analogue scale of pain

NSAIDs …Non Steroidal Anti Inflammatory Drugs

List of figures

List of tables

Contents

Acknowledgment

Firstly, I would like to thank ***ALLAH*** for his ultimate love and care.

I wish to express my deepest gratitude to ***Prof. Dr. Alaa Mohy Eldin Solyman***, Professor of Orthopaedic Surgery, Faculty of Medicine, Cairo University for his kind supervision and valuable advice, without his support and wise council this work would not have been completed.

My special thanks and deepest appreciation to ***Prof. Dr. Ihab Eldesouky***, Lecturer of Orthopaedic Surgery, Faculty of Medicine, Cairo University, for his kind supervision, indispensable remarks, continuous support and assistance during all stages of this work and he offered me most of his time and effort as well as deep experience.

Lastly, I would like to thank orthopeadic department in Kasr El-Ainy, my family and my colleagues in Kasr El-Ainy and Boulak El-Dakrour hospitals for their support.

Aim of the work

This prospective study aims at the assessment of the role of (PRP) platelets rich plasma injection in chronic lateral epicondylitis (tennis elbow).

All patients will be evaluated pre-injection according to Patient Rated Elbow evaluation (PREE), Visual Analogue Scale of pain (VAS) and DASH scores.

All patients will undergo a single local injection of PRP using peppering technique.

After injection, all patients will be reassessed by patient rated elbow evaluation, visual analogue scale of pain and DASH scores for further comparison with the pre-injection measures to detect the effectiveness of PRP in management of chronic tennis elbow.

Introduction

Tennis elbow (latral epicodylitis) is a common problem. it was first described more than 100 years ago, it refers to the pain in the outer aspect of elbow joint.

Although various theories are found to be the cause responsible of the pathogenesis of this condition, the chronic use of the radial extensors of the wrist and pronation and supination movements are considered to be a major cause of that condition.

Quick cessation of symptoms is important to patients and is economically advantageous. The goal in managing tennis elbow is to decrease the pain, and to improve the function.

Many modalities of treatment were prescribed to relieve the symptoms such as rest, limitation of activity, nonsteroidal anti-inflammatory drugs, bracing and physical therapy.

If symptoms are resistant to this simple conservative measures, minimal invasive procedures are considered such as local injection of corticosteroids, Botulinum toxin and whole blood.

Surgical solution of tennis elbow is most often recommended because of the chronic and refractory nature of the problem and the patient's inability to perform normal functions.

Another treatment involves injection of platelet-rich plasma. Powerful growth factors that help with healing can be extracted from the patient's own blood and injected into the inflammed tendon.

Biology, preparation and injection techniques of PRP will be discussed later. This technique has been shown to be effective before deciding the surgery as a modality of treatment.

In this study we used a single local injection of PRP, aiming for improving the symptoms and function.

Pre and post-injection outcome scores were used to detect the effectiveness of the procedure.

Review of literature

Relevant 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.
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 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 (fig.1)

Figure (1) Normal bony architecture of the elbow as seen from the anteroposterior and lateral directions **(2)**

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 semiflexed but with the arm in full extension the condyle is hidden in a small depression bounded by anconeus muscle medially and radial extensor muscle laterally. **(2)**

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**.** **(2)**

When the forearm is flexed the head of the radius lies 2.5 cm anterior to the lateral epicondyle. The interval separating is being occupied by the capitulum of the humerus. [(2)]

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.[(2)]

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)

The upper surface of the head of the radius and its articular circumference are covered with hyaline cartilage. 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 radius 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.[(3)]

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

a) Radial collateral ligament.

b) Annular ligament.

c) The capsular ligament.

Radial collateral ligament.

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.[(2)]

Some of its posterior fibers cross 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. It is taut throughout most of the range of flexion (Fig 2). [(1)]

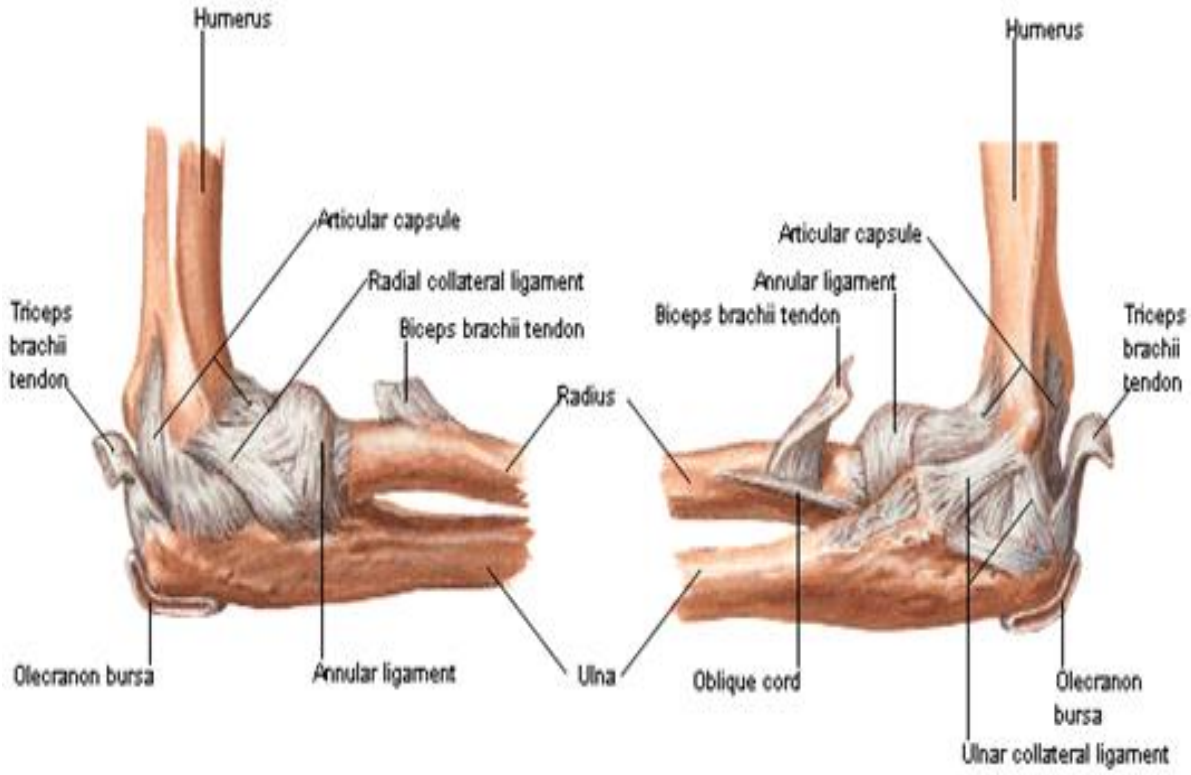

Figure (2) showing the ligaments around elbow joint (1)