

# HUMERAL EPICONDYLITIS



Vincenzo Candela

Specialist in Sports Medicine, Orthopaedics and Physiatrics.  
National Sport Medicine Institute - C.O.N.I.

(articolo pubblicato per gentile concessione dell'autore)

## INTRODUCTION

The term “tennis elbow” or humeral epicondylitis refers, generally, to a painful syndrome localised in the lateral epicondyle, and is secondary to the insult of the tendons of the extensor muscles of the wrist and hand at proximal insertion (tendinitis of the insertion).

This is a degenerative inflammatory pathology which, while being quite common and often invalidating, due to the nature of its symptomatology, is often underrated and judged as something clinically banal. In actual fact, the well-known therapeutical difficulties and frequency of relapses call for a rigorous clinical and diagnostic appraisal as well as for correct preventive measures.

## AETHIOPATHOGENESIS

The various forms of humeral epicondylitis fall into the general category of mechanical action insertional tendon pathology. Their pathological trigger may be a single trauma, or, more frequently, a repeated series of microtraumas. In the presence of humeral epicondylitis both internal and external factors must be taken into consideration. As far as the former are concerned, functional overload, especially when associated with limited extensibility or contraction of the muscles of the forearm, are important aetiological markers. As well as that, individual predisposition has been judged as an important causal factor leading not only to pathologies of the tendons in general but to epicondylitis in particular. In fact, similar exposure to trauma does not produce identical pathologies in all subjects, because the mechanical factors acting upon anatomical, bio-humeral and metabolic substrate vary from individual to individual, conditioning each one's reactions and, therefore, the onset of clinical manifestations.

Of the exterior pathogenic factors that determine humeral epicondylitis the following are the most important:

A) quality of technical movement: Epicondylitis is more frequent among athletes of low competitive status and/or occasional tennis players than among professionals, although the latter train for hours each day. It is clear that correct performance of a technical movement, supported by a proper balancing of agonistic and antagonistic muscles, reduces the risk of damage due to functional stimulation to a minimum.

B) the use of sporting equipment lacking the proper technical and/or structural characteristics (for example, a racket with a very rigid frame) may condition tissue resistance, in response to functional stimulation.

C) the size of the handle. It should be remembered that while a small handle certainly allows for better control of play, it also forces the muscles of the forearm to perform under constant isometric contraction, another cause of overload.

D) the manner of grasping the racket plays another important role as a cause of "tennis elbow". It affects the flexion/extension movements of the wrist and, as a result, determines the degree of functional overload brought to bear upon the insertional tendons at elbow level. In tennis there are three different grasp styles: continental, western and eastern. The latter is that most widely used in professional circles (see figures 1,2,3).

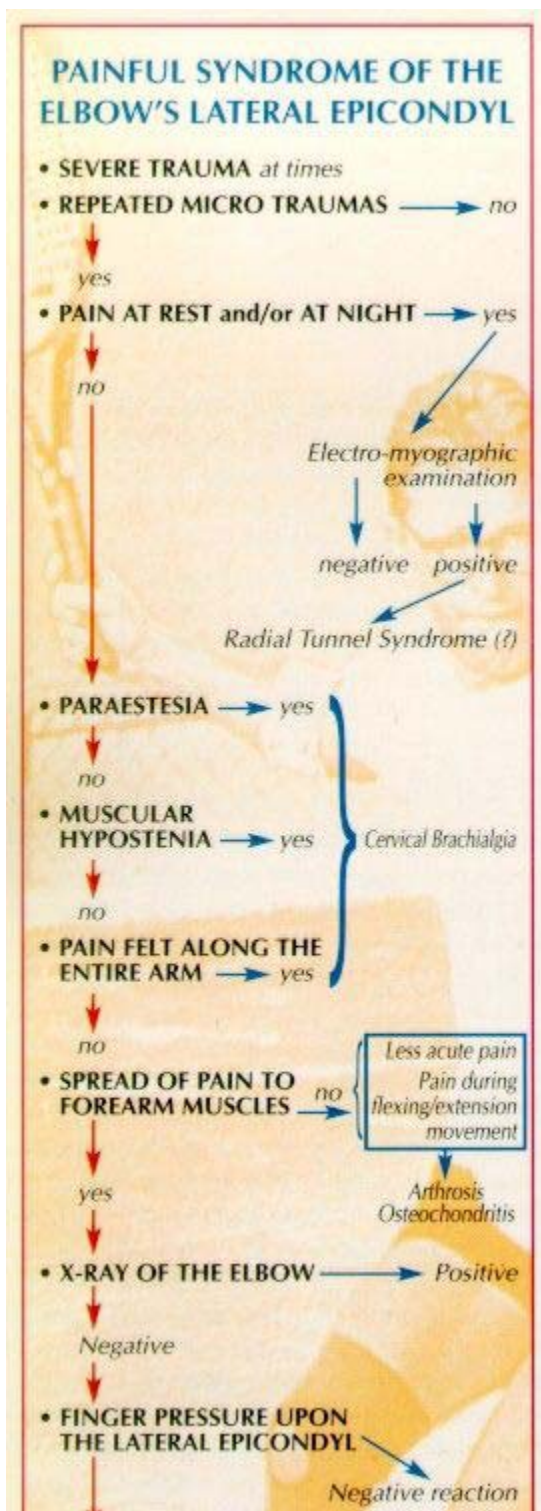


Fig. 1-2-3

E) string tension and material, ball quality may all influence the intensity of impact during play. Gut strings, for example, unlike those made of synthetic material, are capable of absorbing most of the shock vibrations caused by the impact of the ball upon the racket face.

### INCIDENCE

The age-group most frequently affected by this pathology is the so-called "mature adult" stage, that is, men and women between 30 and 50. It appears more among amateurs than among professional and semi-professional athletes. It is certainly commonest among tennis players, but is also found among golfers, fencers and those engaged in the various track and field throwing disciplines. The pathology affects other subjects outside the world of sport, such as housewives, carpenters, typists, house decorators, painters, watchmakers etc., that is, people whose professions require continual and repeated use of the extensor muscles of the wrist and hand and/or twisting and grasping movement.

The radial tunnel syndrome is characterised by compression of the posterior interosseous nerve by fibroaponeurotic formations, muscular hypertrophy and small adhesive bands.

The difference between this syndrome and epicondylitis is that in the former case pain is present even during rest and sometimes at night. An electromyographic examination will, in most cases, reveal a reduction in nerve conduction speed. During diagnosis it is easier to distinguish between epicondylitis and cervical brachialgia, arthrosis and osteochondritis of the elbow.

In the first instance (cervical brachialgia) the pain is distributed along the arm, while paraesthesia and muscular hypostenia facilitate diagnosis. In the presence of arthrosis case and osteochondritis, the pain symptoms are usually blander, increasing during flexion/extension of the elbow, particularly with full range of motion. In these cases an X-ray examination is sufficient to banish all doubts.



Fig. 4

## HUMERAL EPICONDYLITIS

### **PATOLOGY OF THE INSERTIONAL TENDONS**

### **MECHANICAL FACTORS**

MACROTRAUMA

MICROTRAUMAS

### **FACTORS FAVOURING THE ONSET OF HUMERAL EPICONDYLITIS**

#### **ENDOGENOUS**

SCARSE MUSCULAR EXTENSIBILITY  
MUSCULAR CONTRACTION  
INDIVIDUAL PREDISPOSITION

#### **EXOGENOUS**

TECHNICAL ERRORS • EXCESSIVELY RIGID RACKET  
SYNTHETIC STRINGS • EXCESSIVELY SMALL HANDLE  
GRIP TYPE

### **CLYNICAL ASPECTS**

FINGER PRESSURE UPON THE LATERAL EPICONDYL CAUSES ACUTE PAIN,  
AS DO MANOEUVRES OF RESISTED EXTENSION OF THE WRIST AND/OR THIRD FINGER

### **DIFFERENTIAL DIAGNOSIS**

#### **- RADIAL TUNNEL SYNDROME:**

PAIN FELT WHILE AT REST • ELECTRO-MYOGRAPHIC EXAMINATION POSITIVE

#### **- CERVICAL BRACHIALGIA:**

PAIN DISTRIBUTED ALONG THE ARM • PARAESTHESIA MUSCULAR HYPOSTENIA

#### **- ARTHROSIS AND/OR OSTEOCHONDRITIS:**

LESS ACUTE PAIN DURING FLEXING/EXTENSION MOVEMENT • X-RAY EXAMINATION POSITIVE

## PREVENTION OF EPICONDYLITIS

APPROPRIATE  
ATHLETIC TRAINING

CORRECTION OF  
TECHNICAL MOVEMENT

CORRECTION OF RACKET

STRETCHING OF  
THE FLEXION/EXTENSION MUSCLES  
OF THE WRIST AND HAND

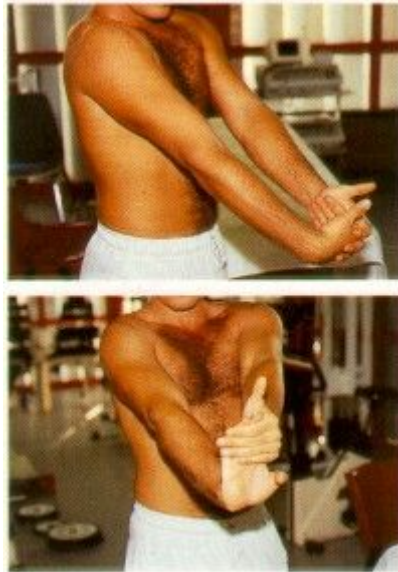
## TREATMENT OF OVERUSE EPICONDYLITIS

|               |  |   |
|---------------|--|---|
| ACTIVE REST   | AVOID MOVEMENTS THAT STRESS MUSCLES OF THE FOREARM                 | TREAT MUSCULAR CONTRACTION  |
| DRUGS         | ANTI-INFLAMMATORY AND MUSCLE-RELAXANT                              | TREAT PAIN AND MUSCULAR CONTRACTION   |
| PHYSIOTHERAPY | IONOPHORESIS; ULTRASOUNDS; TENS; LASER                             | TREAT PAIN AND MUSCULAR CONTRACTION   |
| KINESITHERAPY | FLEXION-EXTENSION OF THE MUSCLES OF THE FOREARM WITH 1-2 KG WEIGHT | STRENGTHENING THE MUSCLES OF FOREARM  |
| ORTHESIS      | ANTI-STRESS ELBOW WRAP   | RIDUCE THE VIBRATION ON THE ELBOW CAUSED BY THE IMPACT OF TENNIS BALL ON THE RACKET STRINGS |

### **THERAPY**

1) Non-steroid anti-inflammatory drugs (NSAID) taken either generally or locally (ointments, gels, plasters etc.) possibly in conjunction with cryotherapy (twenty-minute sessions twice a day, in cycles of eight to ten days) are particularly effective in cases of acute pain due to epicondylitis. During this treatment the patient must rest from the specific sporting activity and avoid everyday movements involving the muscles of the forearm.

2) Physiotherapy, above all laser therapy, is advisable in cases where the pain spreads to the muscles of the forearm. Mesotherapy, which soothes pain and reduces inflammation thanks to the greater local concentration of drugs and the virtually non-existent side-effects, is also advisable. After each mesotherapeutic session it is advisable to apply NSAID and heparianoids in gel form on the area treated, both to reduce the side-effects of the "trauma" caused by the needles and to strengthen the painkilling and anti-inflammatory effects of the treatment itself. Local infiltration of corticosteroid preparations may be of use but only in cases of prolonged illness and/or failure of the above mentioned therapies. In any case these should be kept to a minimum. It is important, even after the pain symptoms have ceased, to verify effective recovery and allow resumption of normal athletic practice only after an adequate period of readjustment to sporting activity. This should take the form of exercises aimed at the isometric and isotonic strengthening of the forearm muscles alternated with stretching (fig. 5-6).



Figg. 5-6

This reduces the risk of relapse to a minimum. Relapse remains a possibility, especially when athletes, no longer feeling pain, erroneously believe themselves cured and resume play without following the therapeutic instructions described.

Great attention must be paid to the characteristics of the racket and to performance of technical movements. The medical specialist in collaboration with the tennis coach must see to it that all possible technical precautions be taken to prevent relapse. In any case, despite adherence to the above-mentioned therapeutic modes and times, a small percentage (about 5%) of epicondylitis cases become chronic. Only in cases such as these should surgery be undertaken as a last resort.

Santilli G.: **"Le epicondiliti da sport"**, Med. Sport 22,295,1969.

Nirsche H. **"Soft-tissue injuries about the elbow"**, Clin. Sports Med. 5,637,1986.

Schatz P., Steiner C.: **"Tennis elbow: a biomechanical and therapeutic approach"**, J. Am. Orthop. Assoc. 7,778,1993.

Kelley J.D., Lombardo S.J., Pink M.: **"Electromyographic analysis of elbow function in tennis players with lateral epicondylitis"**, Am. J. Sports Med. 3,359,1994.