

# TENNIS ELBOW- WHERE WE ARE IN 2018 FOR BEST MANAGEMENT

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Tennis Elbow (or Lateral Epicondylagia) is one of the most common overload injuries that we see in the over 35s. It is characterized by pain on the outside of the elbow, usually near the prominent bone (lateral epicondyle) where the Extensor Carpi Radialis Brevis (ECRB) tendon attaches, aggravated by gripping or wringing activities. This report summarises some of the common causes, presentations, treatment myths as well as best current treatment Tips and Tricks as at 2018.

## How long does Tennis Elbow Last?

Duration of symptoms varies from 10 weeks to several years. It can be a 'self-resolving condition', becoming significantly improved within one year in approximately 83% of cases, although there are often residual symptoms. Also, recurrence rates can be high (Coombes & Vicenzino, 2015; Smidt et al, 2006). In my clinical experience, patients who have had Tennis Elbow for more than 30 days tend to develop pain and stiffness from adjacent structures such as ligaments, fascia, joints and neural structures. Furthermore, strong evidence demonstrates central sensitisation (decreased pain pressure thresholds (PPT) and thermal hyperalgesia) in those with severe or persistent symptoms (Coombes et al, 2012; Bisset et al, 2018). It is therefore a multistructural pathology which requires an individually prescriptive, multimodal, treatment approach.

## Who gets Tennis Elbow?

- Physically active people of increasing age. This includes hobbies such as gardening, pruning etc.
- People who repetitively overload their elbows in their occupation. For example, over-using the computer mouse, car mechanics, painters etc.
- Sports Men & Women who overload their tendons during excessive activity. A common example is the older keen sportsman who does no consistent activity and then crams it in when the opportunity arises (eg suddenly surfing on holiday or overtraining on weekends: the 'Weekend Warrior'). In this instance the sportsman is susceptible to a reactive tendinopathy as the tendon goes from under-load to over-load. This is different from athletes, with a controlled training program, resulting in consistent loading, which tendons prefer. If the sportsman (eg tennis player) increases his, or her training or competition levels, the tendon can react and become acutely painful during gripping activities, such as holding a racket or shaking hands.
- Men with a high BMI (increased girth around the waist) are predisposed to Tendinopathy.
- Peri-menopausal & Menopausal women as Oestrogen is tendon protective. Once the Oestrogen levels decrease, the tendons are less able to withstand load.
- The use of Quinolone antibiotics (eg Ciprobay) can predispose some patients (incidence approximately 1:400) to accelerated tendon degeneration for up to 6 months after taking the antibiotic.
- Co-morbidities such as Steroid therapy (eg renal disease), Diabetes, Hypertension and Hyperthyroidism are examples of medical conditions that have been shown to be associated with Tendinopathy.
- Poor sleep habits are a high-risk factor for multiple musculoskeletal conditions.

A combination of some or all the above (Scott et al, 2015). Very often patients present with more than one contributing factor. These need to be identified during an in-depth & detailed assessment so that a prescriptive, specific, rehabilitation & management program can be designed for each individual (Lewis, O'Sullivan, 2018).

### **What assessment tools are helpful?**

**The Patient-Related Tennis Elbow Evaluation questionnaire (PRTEE)** is a very useful validated self-report questionnaire with excellent reliability and can be accessed online (Vincent & MacDermid, 2015). Higher scoring indicates greater functional disability and perceived pain. Use this before the first treatment and every two weeks, or so, thereafter to evaluate change.

**Pain-free Grip strength (PFG)** (affected arm) vs Maximum grip-strength (unaffected arm) using a Grip Dynamometer. Measure change within & between, treatments.

**Hyperalgesia Cold test.** Apply an Ice pack to the affected area. A pain intensity of 5/10 or higher after 10 seconds application implies a 90% likelihood of cold hyperalgesia. This is an indicator of poorer recovery and a quality of life that is significantly poorer (Maxwell & Sterling, 2013). This study was conducted on patients with cervical pain, post whiplash, but seems to be useful to assess other areas in patients with suspected hyperalgesia due to central sensitisation.

**Mid-finger Resisted test.** Isolates testing (mostly) to the ECRB tendon. If this is the most positive resisted test, use this to measure change within, & between, treatments. Remind the patient not to self-test at home as this supra-threshold pain test may aggravate his symptoms if performed unnecessarily.

### **What investigations are helpful?**

In stubborn cases, an X/Ray can rule in or out a 'jointy' component to the painful elbow.

Imaging of the elbow with Ultrasound (U/S) can show tendon degeneration. However, findings on U/S do not correlate with symptoms, or outcomes, and it is emphasised that findings on imaging cannot dictate the treatment that a patient receives (Coombes et al, 2015; Chourasia et al, 2013).

A negative scan is beneficial however, as it clearly rules out a diagnosis of Tennis Elbow. Also, if the U/S picks up ligament damage to the associated lateral collateral ligament, it may explain patients who are responding poorly to conservative management. MRI arthrography may be used to pick up other pathologies such as loose bodies, Plica syndrome, cartilage damage or injury to the ligaments.

A Uric Acid Blood test can be helpful to assess for Gout.

### **What Treatment Doesn't work?**

**Cortisone injections:** They have been shown to significantly reduce pain for the 1<sup>st</sup> 6 weeks. However, good studies consistently show patients who receive one or more cortisone injections to have the worst outcomes at 1 year; even worse than the group that has had no treatment at all ('wait-and-see') (Bisset et al, 2006; Coombes et al, 2013). Also, corticosteroid injections are associated with significant long-term damage to tendon cells (Van Schie et al, 2018). Recurrence rates of 72% after one year have been reported (Bisset et al, 2006).

**Platelet Injections:** Despite anecdotal reports to the contrary, there is no evidence in well conducted trials of any benefit (Krogh et al, 2013; de Vos et al, 2014). De Vos titled his 2014 review: 'Strong evidence against platelet-rich plasma injections for chronic lateral elbow tendinopathy'.

**Extra-Corporeal Shock-wave Therapy (ESWT):** There is currently no good evidence to support its use (Bisset et al, 2005). Recent studies have had methodological weaknesses and bias. Good randomised control trials are needed.

**Electrotherapy (Ultrasound, Interferential):** There is no evidence of its benefit. In fact, preliminary evidence (animal studies) suggests that treatment to the tendon attachment with Ultrasound is damaging, acting as an Aggrecan stimulator.

**Anti-inflammatories:** Previously described as a degenerative condition, advances in immunohistochemistry have found proinflammatory agents (eg Cytokines) in damaged tendons, so that an inflammatory process may be related not only to the development of acute tendinopathy but also in chronic tendinopathy (Rees et al, 2014). This may explain why many patients report relief when using anti-inflammatory medication (NSAID). Nonetheless, use of NSAIDs, other than Brufen (see below) should be discouraged as there is no indication that use is curative, but rather that it masks the symptoms. This may cause the patient to overload & further damage their tendons.

### What treatment does help?

**Active Rest:** Avoid all aggravating movements & activities. For example, use the opposite arm to shake hands, pick up a cup, open the car door.

A 'sporting elbow' often does better than an 'occupational elbow' as one can rest from the aggravating sporting activity, but often not from the aggravating movements at work.

**Avoid sleeping with the elbow fully flexed (foetal position):** You will know this is problematic if the patient wakes in the night with elbow pain or if the elbow is stiff on waking in the morning. Place a cushion in the crook of the elbow to keep it in neutral at night.



**Elbow Cuff:** Use a Grip Dynamometer to assess if the use of an elbow cuff will be beneficial. Apply the counterforce brace on the wrist extensor mass, approximately 6-8cm distal to the lateral epicondyle. PFG should improve substantially when the Cuff is applied to warrant its use. A dynamic wrist splint is another alternative and could be considered if the patient is less compliant with avoiding aggravating activities. It is important to assess each patient as an individual as there can

be no 'One size fit All' approach to treatment.

**Manual therapy** techniques can be highly effective, especially if directed at the affected structures. This necessitates a detailed initial assessment to determine which areas and structures are contributing to the elbow pain. This includes the 3-joint complex at the elbow, as well as the shoulder, cervical spine, thoracic spine, neural components and fascial systems.

**Exercise:** The use of a progressive exercise program has been shown to be highly effective in management. It is important that exercise is prescriptive and is Painfree both during the exercise as well as 24 hours afterwards. Exercise, of the elbow, that is subthreshold (below pain threshold) is beneficial whereas supra-threshold is not (Coombes et al, 2016). Exercises start with Isometrics (sustained static holds) as these have been shown to be highly effective in pain management in tendinopathy (Rio et al, 2015). Rehab then progresses to resisted exercises during active movements of flexion and extension, as well as pronation and supination. A combination of isometric exercise, with eccentric-concentric work has shown some benefit (Stasinopolous, 2017). The use of elastic tubing is very useful in applying resistance throughout a movement.



**Brufen:** Not as an anti-inflammatory, but via a different pathway which seems to settle down a reactive tendinopathy (Aggrecan inhibitor). Therefore, the use of Transact Plasters may also help.

**Management of all associated factors:** This may include other health complaints, weight loss, cessation of smoking, stress management, participating in a graduated exercise program, possible use of HRT, improved sleep & lifestyle habits and Postural correction.

Persistent pain of a greater duration than 3 months has been shown to have an associated **Centrally mediated pain mechanism**. This results in over-firing of certain pain mechanisms, resulting in hyperalgesia (abnormal pain response to a non-painful stimulus) (Coombes et al, 2012). Recognition of this associated mechanism to the pain presentation, & education by the Physiotherapist, is an important component when managing persistent pain. Remember that treatment may not be a 'cure' in these instances but a management plan to limit the negative impact of chronic pain on the patient's well-being. Educating the patient to recognise that passive treatments (eg PRP, ESWT, joint manipulation) are not magic-bullets, may, in turn, reduce burnout & stress in many Physiotherapists who are unable to deliver on their promises (Lewis & O'Sullivan, 2018).

### **How long does it take to get Better?**

In my clinical experience, the sooner management is started (and this includes active rest), the better the outcome. Ideally, treatment should start within 30 days for the best results. Management needs to be multimodal – addressing all associated factors and co-morbidities. Most patients will resolve by 1-year post injury.

### **When should surgery be considered?**

A good surgeon will not consider Surgery until the patient has had at least 6 months of conservative management. This does not mean Physio for 6 months, but a program which covers the above issues, including weight management, active rest and a progressively loaded exercise program that is Painfree and prescriptive. Some hypothesise that Surgery is successful as it forces the patient to rest the arm for 6 weeks. Perhaps then, if the patient fully rests the arm as if they have had surgery (eg wear a sling in the initial acute phase), outcomes may be better.

**In summary:** a detailed assessment of all potential associated factors, is essential to make the correct diagnosis. This is the cornerstone for a prescriptive, individualised, treatment and management plan of this seemingly simple, but actually complex, multifactorial pathology.

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