Hand Works Occupational Therapy

Lateral Epicondylitis

By Sath Segran
Outline of presentation

- What is Lateral Epicondylitis
- Anatomy
- Epidemiology
- Aetiology
- Definitions
- Symptoms and presentation
- Assessment of Lateral Epicondylitis
- Goals of Treatment
- Available treatments
- Outcome measures
- Conclusion
What is Lateral Epicondylitis?

- Also known as Tennis Elbow
- First used in 1883
- Most common Upper Extremity Tendonitis
- Overuse phenomenon of the wrist extensor muscles during repetitive upper extremity motions.

Pathological changes occurring at the common extensor tendon origin which attaches to the lateral epicondyle.
Muscles involved

• Number one culprit = ECRB
• ECRB has a small origin
• Vulnerable to shearing stress during all movements of the forearm.
• Changes can also occur at the Common Extensor tendon origin, EDC and ECRL.
Epidemiology

- 1:1 male to female
- 30-50 years old
- Tennis players = 5%
- Majority are work related injuries
Repetitive movements of the wrist and forearm into supination/pronation

Microtearing stimulates inflammation

Repetitive microtrauma leads to incomplete healing

Micro trauma/tears to the tendon at the common extensor origin

Tendon degeneration

Aetiology
Tendon Degeneration

- This tendon degeneration is characterized as angiofibroblastic hyperplasia.
Definitions

- **Tendonitis**: Acute inflammatory response to injury of a tendon that produces the classical signs of heat, swelling and pain.
- **Tenosynovitis** is inflammation of the lining of the sheath that surrounds a tendon.
Definitions

**Tendinosis**= The term Tendinosis has been used to describe the histopathologic findings identified in Tennis Elbow.

The findings included:

- Absence of inflammatory infiltrates and tenocyte
- Fibroblast hyperplasia – Collagen synthesisation
- Endothelial cell hyperplasia
- Disorganised collagen
- Cell necrosis
- Calcification
Symptoms/Clinical presentation

- Pain over the lateral epicondyle of the humerus or during movements:
  - gripping, resisted wrist extension, supination, digital extension and wrist radial deviation.
- May present with referred pain.
- Reduced grip strength with elbow extended
- **Mild stages:** Symptoms will develop after completion of an activity.
- **Severe stages:** Symptoms will occur with minimal activity such as brushing teeth and shaking hands.
Assessment

• Initial Interview
  – Patient’s history on symptoms.
  – Previous Treatment
  – Work duties
  – Patient’s hobby and interest
Clinical Assessment

- **Wrist AROM**: Secondary to pain, ROM may be limited in wrist extension or flexion and elbow extension.

- **Grip strength**: Patient is instructed to squeeze the handle to the point where the pain starts and then stop.
  - In elbow flexion/extension
Coven’s test:

I. Examiner’s thumb stabilizes the client’s elbow at the lateral epicondyle.

II. With forearm pronated, the client makes a fist and then actively extends and radially deviates— with examiner resisting this motion.

Positive: Severe sudden pain in the area of the lateral epicondyle.
Mill’s tennis elbow test

- Originally described as a manipulation maneuver, but can be used as a clinical test.

I. Examiner palpates the lateral epicondyle.
II. Elbow pronated, the examiner fully flexes the wrist while moving the elbow from flexion to extension.

Positive: Pain at Lateral Epicondyle.

*Test should not be used on patients with significant muscular pain in the region.
Resisted Middle Finger Extension Test

- A positive test is pain with resisted middle finger.
- May elicit pain due to the extensor digitorum sharing a common tendon with the ECRB.

Pain on palpation over the common extensor tendon origin.
Assessment

• Patient Rated Tennis Elbow Evaluation
• Easy to use
• 15 Questions
• 2 subscales: Pain and Function.
• High test-retest reliability.
Assessment/Questionnaire

• Disability of the Arm, Shoulder and Hand:
  – Self-report questionnaire
  – Measures physical function and symptoms
  – Scored out of 100
  – Higher score indicating a greater level of disability

• Visual analogue scale
These two written assessment are useful:

• It allows clinician to quickly assess pain and function in patients with LE.

• Identify jobs/tasks that could be changed to decrease pain.

• Occupation focused.
Imaging

• Determines the severity of injury.
• Can show thickening of the ECRB tendon and degenerative tendinosis.
• Demonstrates increased signal intensity of the origin of the ECRB.
Superimposed upon this, is the presence of a more focal area of increased signal, consistent with a large partial thickness tear.
Goals of Treatment

• Reduce pain
• Reduce inflammation (for acute conditions)
• Regain muscle strength and AROM
• Return to normal ADL and Occupation
Treatment Options

• Little evidence out there
• More than 40 types of available management.
• Occupational Therapy key treatment’s:
  – Educating patient regarding their injury.
  – Ergonomic counselling
  – Activity modifications
  – Other lifestyle changes to reduce aggravating activities.
Example of Activity Modifications

• **Avoid** lifting with palm turn down. Hand turned up is better.

• **Avoid** lifting with a straight elbow. Maintain a bent elbow and keep item close to body when lifting.
Orthotic Intervention

• Can be used in the **acute phase**.
• Can be a **custom made** or **prefabricated**.

**Purpose of splinting:**

- Unload and rest muscles to promote tendon recovery.
- Significant reduction in electrical activity with wrist in extension during lifting activities.
Counter-force brace

- Prevents full muscular expansion
- Applied distal to ECRB origin
- Provides a compressive force
- **Significant reduction** in ECRB and EDC muscle force
- Creates a secondary origin of the extensor tendons
- Thus **unloading the true origin** at the Lateral Epicondyle.
Kinesio Tape

• Provides increased low-threshold excitement to somatosensory receptors, thereby increasing somatosensory input to CNS.

• Applied on a pronated arm, with wrist flexed.

• Not stretching the tape, apply from the origin to the insertion of ECRB.
• K-tape is believed to have therapeutic **benefits**:
  – Gather fascia to **align** the tissue in its desired position
  – Lift the skin over areas of **inflammation**, pain and oedema.
  – Decrease pressure over the **lymphatic** channels that provide a path for the removal of exudates.
Eccentric Exercises

- Remodelling at the musculotendinous junction.
- Increase fibroblast activity
- Facilitate tendon remodelling and healing.
- Evidence suggests that exercise programs can reduce pain, but the improvement in grip strength is still unclear.
Myofascial Release

- Low load pressure and stretch to a muscle unit.
- Pressure is applied on restricted fascia.
- Using thumb to slowly sink into fascia, contacting the restricted fascia.
- Fascial restrictions undue tension in the other parts of the body due to fascial continuity.
Myofascial Release

• Resulting in stress on structures that are enveloped, divided, or supported by fascia.

• By restoring length, pressure can be relieved on pain sensitive structures.

• Significantly more effective than a placebo treatment.
Laser treatment

- Widespread but controversial treatment.
- Not carried out by Occupational Therapist.
- Produces clinically meaningful improvements in a variety of soft tissue injuries.
- Alteration at cellular function occurs in absence of significant heating in cells after irradiation.
Acupuncture

• Treatment of musculoskeletal conditions in Western countries.
• Thought to confer an analgesic effect
• By increasing the release of b-endorphins in the lumbar spine.
Acupuncture

• Overriding of the pain stimulus by the biochemical lines of acupuncture in the transmitting process of the CNS.

• Significant longer duration of pain relief compared to a placebo treatment.

• Also not carried out by OT’s however they are some who perform dry needling.
Non-steroidal anti-inflammatory drugs

- Proven to relief pain
- Temporary solution
- No literature evidence on long term benefits
Medical Management

Corticosteroid Injections

• Greater perception of benefit at 4 weeks than receiving oral NSAIDs
• **Short term** benefits in:
  - Pain reduction
  - Grip strength

*Long term effectiveness and advantages over other conservative management are still uncertain.*
Medical Management cont.

Autologous blood injection

- May trigger the inflammatory cascade and initiate healing.

*No significant differences in pain, grip strength and general improvement between ABI and placebo.*
Platelet Rich Plasma Injection

• Slightly similar to the ABI.
• Difference = Blood is placed in a centrifuge.
• Platelets are then selectively removed and used for injection.
Platelet Rich Plasma Injection cont.

• A greater concentration of platelets delivered into the damaged body part
• **Platelets** play a **significant role** in the repair and regeneration of connective tissue.

*No scientific research documenting this benefit at the moment*
Surgical Management

- Option ONLY after 6 to 12 months of conservative management.
- 8% will require surgery.
- Excision of abnormal tissue within the CETO, release and/or reattachment of the tendon
- Still no consensus on which operative procedure offers the best results.
Due to the lack of methodological sound studies, researchers have been unable to identify a single treatment that has provided significant improvements for patients with Lateral Epicondylitis.
Conclusion

**Key points:**

- LE is usually not an inflammatory condition, it involves **tendinosis** and **tendon degeneration**.
- Imperative to provide **patient education** on appropriate lifting techniques and other **activity modifications** to prevent exacerbation and re-injury.
- Our role is to **facilitate** healing, increase or maintain patient’s function and return patients to their **daily occupations**.
Questions?


