Treatment of Lateral Epicondylitis Vs. Radial Tunnel Syndrome

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Purpose
The purpose of this poster is to present a range of treatment options for the management of Lateral Epicondylitis & to differentiate the treatment options for lateral epicondylitis from the treatment options for radial tunnel syndrome.

Background
Lateral Epicondylitis has been talked about in depth, however, more is needed that explains the different options for the treatment of this injury and assessment of potential radial nerve involvement.

TRADITIONAL TREATMENT INCLUDED
Modalities, therapeutic exercises, & splinting / orthotic.

LATERAL EPICONDYLITIS DIVIDED BY DIFFERENT STAGES
Acute stage described as an extreme flare up with severe tenderness over lateral epicondyle, causing extreme pain VAS 7-9 with wrist or elbow movements. The pain may occur after a triggering activity with or without prior history of pain. If left untreated or incompletely treated, may progress to sub-acute or chronic stages.

Sub acute state refers to lingering symptoms for 3+ months, pain may range from 4-6 with functional activities.

Chronic stage may present with long term dull aching pain or may have tears which could mimic symptoms that resonate with the acute stage.

COMPONENTS OF LATERAL EPICONDYLITIS
Lateral Epicondylitis may present in an acute (itis) form or as a Tendinosis (wear and tear) of the ECRB, ECRL, and EDC. It may also be caused by overuse or as an idiopathic condition. Lateral Epicondylitis may present in an acute (itis) form or as a Tendinosis (wear and tear) of the ECRB, ECRL, and EDC. It may also be caused by overuse or as an idiopathic condition.

TREATMENT DIVIDED BY STAGES
Acute stage: Goal is pain modulation. It can be achieved by:

• Activity analysis should be completed for other triggering activities (sports/hobbies) for appropriate modifications.
• Shoulder Strengthening: shoulder weakness along with poor postural control is often an associated component with Lateral Epicondylitis involvement.
• Weak postural muscles will impair the correct positioning of the scapula, which in turn may lead to weakness of rotator cuff muscles by decreasing the rotator cuff interval. If the external rotators are affected, it will impact lateral rotation of the shoulder, which is compensated for by reaching away from the body with an extended wrist. This excessive use of the wrist in extension results in overuse of the extensors resulting in pain & swelling at the elbow. Treating the shoulder is crucial in the treatment of lateral epicondylitis.
• The proximal postural muscles are treated by performing eccentric shoulder exercises. The exercises are first done in prone position on the table, then moved to a ball for added core exercises.
• Prone Rows: Shoulder blades are held in retraction and depression with patient in prone position on the table. The patient then slowly moves to perform rowing motion (high rows) while letting the scapula relax/drop. Similar exercise is done performing arm extension (Low rows). This is initially done without weights, & then adding cuff weights. Reasoning: We do activities in front of this position causes scapular protraction thus resulting in poor posture. Eccentric strengthening of scapular muscles enables us to maintain good posture with activities thus preventing weakness in the shoulder musculature & compensation.

External Rotation exercises are added initially in side lying with cuff weights & then progressed to T-Bands. When performing shoulder exercises with T-Band, cuffs are fabricated to prevent gripping the band.

Activity modification: Ergonomic setup of the patients workstation must be assessed. Modifications include Mouse as large as the hand so that the entire hand is on the mouse & patient cannot use wrist as a lever to pivot on with wrist extended. Set up to keep activities close to prevent loading the tendon.

Patient is also taught to lift with palm up & elbow by their side.

• Splinting of the wrist to calm the “itis” down.
• Iontophoresis (mobile patches) to calm the “itis” down & to get to the second phase of stretching & strengthening. It may be used by itself or in combination with leuko taping to the wrist.

• Modalities ultrasound, electrical stimulation, Ice massage/ Ice packs to reduce pain & tenderness.

• Gentle Stretching for wrist & finger extenders / Radial Nerve glides

External Rotation exercises are added initially in side lying with cuff weights & then progressed to T-Bands. When performing shoulder exercises with T-Band, cuffs are fabricated to prevent gripping the band. Foam roll exercises (Snow Angels) are incorporated to correct the structural component of postural issues, lengthen tight pectoralis muscles & promote healing by releasing neural tension.

• Nerve glides may also be added to reduce neural tension, decrease pain & enhance healing.

• Taping of the wrist as the splint is weaned to minimize habits of performing activities with wrist in extension.

• Leuko taping is done on the volar aspect of the wrist to prevent repetitive wrist extension with activities. Pt. is instructed to stop or modify the activities as soon as he/she feels the pull on it. This encourages change in behavior thus decreasing the repetitive nature of this problem.

• Leuko taping is also done if a component of radial tunnel syndrome is assessed. The taping is done 1" below the lateral epicondyle, measured horizontally from radius to ulna. The tape starts at the radial end while pulling the mobile wad (ECRL/B, Brachioradialis) & then attaching the tape to the ulna. The patient will experience instant relief of pain if radial nerve is involved.

• Myofascial release with radial nerve glides have to be incorporated for patients with radial tunnel involvement.

If treating pure lateral epicondylitis, then myofascial (Cyrix technique) is used along with techniques to improve flexibility.

• Eccentric strengthening for wrist & elbow are added when the pain has reduced to 2-3/10. Wrist counterforce brace (Nirchill) is used with exercises. Nirchill’s brace is preferred as it does not have a pad that adds pressure to the radial tunnel. This brace is contoured to fit the forearm thus preventing uneven pressures on the forearm & has a non neoprene wrap which does not add excessive pressure. Patient is asked to make a fist & then tighten the brace placing it 1 finger below the elbow joint. However, if radial tunnel symptoms are present, the counter force brace is not used.

The patient is instructed on eccentric exercise as follows:

Wrist: Starting position is in slight extension. Slowly lower to full wrist flexion & then use other hand to assist hand back to starting position. If it takes you 2 counts to go up it should take 4 counts to come down. Start with 1lb x 10 reps then go to 2 lbs, then to 3 reps.

Once able to perform 30 reps without discomfort go to 2 lbs x10 reps & then continue up to 4lbs. Remember to raise wrist up to starting position with the other hand (no active extension only eccentric contraction into flexion).

Elbow: Once patient is able to master exercise at the wrist, the elbow component is added. Keeping the wrist straight with elbow by side, elbow is bent to 90 deg passively, & then actively lowered slowly, similar to wrist eccentric exercise.

• Stretching of the wrist extensors is done including finger extenders. Elbow is kept straight, while flexing the wrist & fingers. Pt. is instructed to not create pain, if patient experiences pain on release, he is instructed to ease on the stretches. Stretches are done 3-4 reps/ waking hr.
Case Study 1

Radial Tunnel with Lateral Epicondylitis - Conservative Management

43 year old female who works full time as an OT supervisor in pediatrics setting. Job setting requires extensive UE use for patient treatment using NDT approach as well as prolonged periods of computer use to complete administrative/supervisory duties. Other contributing factors include patient’s hobbies of horseback riding & gardening as well as home environment living in a rural ranch setting.

Patient developed bilateral lateral epicondylitis. Initial presentation on right dominant side with subsequent involvement of the left side. Patient was treated surgically on the right side (due to significant tear) & conservatively on the left side. The following is a case study of the left side which included a radial tunnel component in addition to the epicondylitis.

Initial Treatment - Patient treated at another facility while receiving PT for ankle injury May 2011. Treatment included ultrasound, MFR & strengthening in pool with some initial improvement (VAS 7 reduced to VAS 4-5) but unable to obtain full relief of symptoms & therefore unable to progress.

Symptoms continued to increase through Fall/Winter 2011 & patient sought out surgical consult due to increase in pain to VAS level 8-9, especially in forearm. Based on description of symptoms & location of pain radial tunnel involvement was suspected. A differential block with a cortisone injection to the ECRB origin was completed to examine effects on pain. Patient experienced partial relief with complete elimination of pain at lateral epicondyle, but continued pain in forearm over radial tunnel thus supporting secondary diagnosis of radial tunnel syndrome.

Treatment – Patient began therapy at “Hands on Care” 1 week after cortisone injection. Initial pain level reported as VAS level 8-9, especially in forearm. Treatment initiated using protocol for radial tunnel syndrome with forearm Leuko taping. Patient experienced complete relief with tape applied (VAS 0) & began above treatment protocol with shoulder strengthening & nerve glides. Patient was able to gradually wean off forearm taping over 2-3 week period with no recurrence of forearm pain over radial tunnel as thus able to progress to eccentric wrist strengthening as outlined above.

Results/Discussion – In this case, the patient did not have good results with initial treatment approach as component of radial tunnel syndrome was not addressed & patient began strengthening before decreasing pain to VAS level 2-3. Once radial tunnel symptoms addressed patient was able to progress & begin achieving results. The timing of treatment was also crucial in the patient’s success with conservative management of the condition. The patient needed initially for surgical management of her right sided injury as the left side was treated early & no “tearing” of tendon was present.

Case Study 2

Lateral Epicondylitis -Conservative Management

47 year old female who works as a school based pediatric speech language pathologist. Contributing factors included prolonged periods of computer use. Patient developed lateral epicondylitis of her dominant hand.

Upon evaluation at Hands-On-Care in Dec 2010 patient had been experiencing symptoms since 2002 and had been treated for these symptoms at 2 other facilities. On evaluation VAS picture of patient at 8-9 pain activity.

Patient had minimal to no relief of symptoms with prior treatment but was still resistant to consider surgical intervention.

Initial Treatment: Myofascial release (drainage/release), ultrasound, electric stimulation, flexibility, ioniophoresis patch. Unable to achieve adequate relief of symptoms to progress to eccentric strengthening. Patient was initially reluctant to undergo taping, however due to lack of progress therapist was able to persuade patient to try leuko taping technique to limit wrist extension. Through the proprioceptive feedback that was provided by the taping, the patient quickly realized her tendencies to utilize improper mechanics of excessive wrist extension with every activity. This allowed her to change her learned motor pattern (wrist extension) which resulted in decreased pain: VAS levels 2-3/10 thus allowing her to progress to the strengthening phase.

Results/Discussion – In this case the patient’s unsuccessful results with conservative treatment needed to be evaluated further to determine the causative factors. The taping technique allowed this client to learn new movement patterns and therefore discontinue the repetitive wrist extension that was causing her symptoms. Ego assessment was done using picture of patients workstation & taping was used to correct the patients techniques with typing & mousing to minimize the repetitive trauma. Taping was also used to correct patients daily activities where patient used excessive wrist extension habitually.

Results

The treatment of lateral epicondylitis does take some time. However, patients can achieve complete relief & return to prior activities if they comply with the treatment program & recommended activity modification.

• Patient education is crucial for maintaining results. Ongoing support and reeducation of the patient is needed initially to prevent recurrence of symptoms. Additionally, the better the patient understands the mechanism of injury & how to modify triggering activities the better success they will have with long term management.

• Recurrence of symptoms then may respond to conservative treatment or may require surgical intervention.

• Chances of success depends on correct early intervention. If left untreated micro tears can occur & increase in size decreasing likelihood of success without surgical intervention.

Discussion

• Surgery- Surgical intervention should be considered if patient does not show improvement in 3 months of therapy, if symptoms get worse or if MRI reveals a significant “tear”.

• Nirschl Approach- Excision of damaged tissue, decortication of lateral epicondyle & repair of longitudinal defect. Nirschl approach is used by many, where the tendon is reattached.

• Release of common extensor origin- Excision of damaged tissue at extensor tendon origin. Advantages include no post operative immobilization, early ROM, strengthening. Disadvantages include possible decreased strength, however this typically can be regained with strengthening exercises.

• Therapy Considerations: Imperative for the therapists to fully understand the type of procedure performed in order to determine appropriate post operative protocol.

• Release with reattachment requires slower progression rather than debridement. For example: Flexibility, strengthening & ROM.

• Radial Tunnel Release – release of the nerve at the arcade of Frohse. Early nerve gliding with myofascial technique to prevent adherence of the nerve in the scar tissue. Corticosteroid(s)- The use of corticosteroids is controversial. Some physicians (patients) may find a single injection beneficial to decrease pain enough to begin a rehab program.

• However, caution is advised as use of corticosteroids is thought to further weaken & degrade tissues. 10nophoresis patch (mobile) may help modify triggering activities the better success they will have with long term management.

• Corticosteroids may also be used as a diagnostic tool to differentiate between true lateral epicondylitis & radial tunnel syndrome. Injection can be given at the radial tunnel area, if this alleviates the symptoms then a diagnosis of lateral epicondyle can be ruled in or out & vice versa.

• Timing of conservative management (i.e. tendinosis vs. tear): Patients referred to therapy early may be able to regain full use of arm without recurrence of symptoms, if treated correctly. However, chronic symptoms may take longer along with conscious effort to change habits. Patients with chronic symptoms tend to continue with the incorrect habits as they are accustomed to pain. Taping plays a major role in their education & resolution of symptoms.

• Counterforce brace recommendations: A neoprene counterforce brace may stretch too much & add pressure on the proximal forearm increasing symptoms. If a pad is present, it may result in pressure on the radial nerve & increase the symptoms if radial tunnel syndrome is present. The counter force brace should be contoured to accommodate the conical shape of the forearm, thus providing equal pressure on the proximal forearm & decreasing the load on the tendon at its origin. This type of brace should only be used with lateral epicondylitis & not in cases where radial tunnel syndrome is present.

• Radial tunnel vs. Lateral epicondylitis taping: When treating radial tunnel the horizontal taping is used, compared to the wrist taping in pure lateral epicondylitis. Reasoning: Radial tunnel taping technique is to reduce the pressure on the nerve, while wrist taping technique is to modify the habit of over using wrist in extension thus decreasing stress on the tendon origin.

References


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Differential Diagnosis

Location of Pain

Lateral Epicondylitis
- Mills (passive wrist flexion)
- Cozen (Resistive Wrist extension)
- Grip strength test (GH – IR, extend elbow, pronate forearm, dynamometer grip by side)

Radial Tunnel
- Middle finger extension test
- Repetitive resistive supination x 10
  - Re-test middle finger
  - Look for pain / weakness

Differential Diagnosis assessment techniques are taught in our Hands-On courses with Advanced Rehab Seminars. Log on to www.AdvancedRehabSeminars.com for dates and location.
Diagnosis

Lateral Epicondylitis

- Acute
  - Pain Modulation
  - Activity Modification (Assessing setup, Taping)
- Sub Acute
  - Symptom Control (Ionto, US, Ice, Laser PRN, use of cournte R Force)
  - Symptom Control (Ionto, US, Ice, Laser PRN, use of cournte R Force)
- Chronic
  - Proximal Strengthening (eccentric shoulder strengthening of scapular stabilizers)
  - Soft Tissue mobilization (Drainage, MFR)
  - Soft Tissue mobilization (Drainage, MFR)

Radial Tunnel

- Rest/Splinting
  - Modalities (Ionto, US, Ice, Laser, use of cournte R Force)
- Flexibility (Pectoralis, Wrist extensors)

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