

Medial & Lateral Elbow Injuries

Contributors

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Overview

Medial and lateral elbow pain is a common presentation in both athletes and non-athletes.¹ The location of the patient's pain can help guide to a number of possible differential diagnoses [Table 1].²

Table 1: Key differential diagnoses of lateral and medial elbow pain	
Lateral elbow pain	Medial elbow pain
Lateral elbow tendinopathy	Medial elbow tendinopathy
Radial tunnel syndrome	Cubital tunnel syndrome
Osteochondral defect	Ulnar collateral ligament injury

Elbow tendinopathy is the most common cause of medial and lateral elbow pain.³ Tendinopathy describes “persistent tendon pain and loss of function related to mechanical loading”.⁴ Tendinopathy occurs when a tendon is unable to cope with the demands placed on it and it fails to heal properly.⁵ Medial elbow tendinopathy (‘Golfer’s elbow’) occurs at the common flexor tendon origin on the medial epicondyle and lateral elbow tendinopathy (‘Tennis elbow’) at the common extensor origin on the lateral epicondyle.

Elbow pain can also be caused by peripheral nerve syndromes. The ulnar and radial nerves pass through tight anatomical spaces around the elbow where they can be compressed causing elbow pain.

Medial elbow pain is a common presentation in sports involving repetitive overhead throwing e.g. baseball, javelin or volleyball.⁶ The ulnar collateral ligament (UCL) is the main structure stabilising the elbow joint against the valgus forces across the elbow during overhead throwing.^{2,6} The UCL can be injured acutely during a throw or chronically with repetitive throwing leading to medial elbow pain.

Osteochondritis dissecans is the separation of the articular cartilage and subchondral bone from the rest of the joint. At the elbow this can affect the radio-capitellum joint of the elbow and occurs because of repetitive compressive forces through the elbow which damage the articular cartilage and subchondral bone.² This most commonly affects athletes doing gymnastics or baseball.⁷

It is also important to consider cervical radiculopathy as a cause of medial or lateral elbow.⁵ Finally elbow fractures caused by trauma e.g. a fall onto an outstretched hand, are an important cause of elbow pain that should always be considered.

Case Study

A 55 year old female presents to her general practitioner with lateral elbow pain. Her pain started gradually around 4 weeks ago and it feels ‘achy’. She has had no trauma to the elbow. She has not been working or playing sport recently because she has just had a baby. Her elbow pain is worst during and after picking up her baby. She has no pain or change in sensation in her fingers. On examination the elbow is not deformed, there is no swelling or skin changes. She has a normal elbow range of movement but is very tender just distally to the lateral epicondyle. Her shoulder and cervical spine range of motion are normal. You ask the patient to hold her wrist straight as you try to flex it, resisting this force reproduces her pain. You diagnose her with lateral epicondylitis.

Anatomy

The elbow joint is formed by articulations between the distal humerus and the proximal radius (radial head) and ulna.⁸ The medial and lateral epicondyle are bony prominences on either side of the distal humerus. The lateral epicondyle is the origin of the common tendon of the muscles which extend the hand and wrist and the medial epicondyle is the origin of the common tendon of the muscles which flex the hand and wrist.

The elbow joint is stabilised medially by the ulnar collateral ligament (UCL), laterally by the radial collateral ligament and posteriorly by the elbow joint capsule.

The ulnar and radial nerves pass closely to the elbow joint where they can become compressed or damaged.⁹ The ulnar nerve passes down the medial side of the humerus and then behind the medial epicondyle.¹⁰ It then travels along the border of the ulna towards the wrist. The radial nerve passes from the axilla laterally across the humerus towards the lateral epicondyle. It passes anteriorly to the lateral epicondyle and then splits into the superficial radial nerve and the posterior interosseous nerve (PIN).¹¹ The PIN then passes through a tunnel of muscles in the lateral forearm (the radial tunnel) as it travels to innervate most of the forearm extensor muscles.¹²

Aetiology - think causes!

Both lateral and medial elbow tendinopathy are common with a prevalence of around 1% in the general population.¹ Elbow tendinopathy is most commonly caused by occupational activities e.g. construction or assembly line work, rather than sport e.g. tennis, kayaking, rock climbing.¹⁻³ Risk factors for elbow tendinopathy include: smoking, obesity, age 45-54, regular repetitive elbow movement, and elbow movement against resistance e.g. manual work or weight lifting.¹

Common causes of cubital tunnel syndrome are direct compression of the nerve e.g. extended leaning on the elbow (students, administrative workers) or repetitive elbow flexion and extension in manual workers and athletes.¹³ The radial nerve can be compressed at multiple sites within the radial tunnel.¹² The cause of compression can be because of overuse of the forearm muscles for example in manual labour or factory workers.¹²

Poor throwing mechanics are a key risk factor for UCL injury.⁶ The exact aetiology of osteochondritis dissecans is unclear but repetitive compressive forces over a specific part of the joint are thought to lead to ischaemia and breakdown of the affected bone.¹⁴

Clinical Features

Patients with elbow tendinopathy complain of insidious onset elbow pain which has lasted for weeks to months and limits their activities, such as work, sport or daily tasks.¹⁶ Patients' symptoms are classically exacerbated by repetitive elbow or wrist movements.¹⁶ In lateral elbow tendinopathy patients are most tender just distally to the lateral epicondyle.³ This tenderness can be reproduced by asking the patient to resist the examiner trying to flex their wrist.³ In medial elbow tendinopathy patients present with localised tenderness over the common flexor tendon just distally to the medial epicondyle and resisting wrist extension reproduces their symptoms. In both elbow tendinopathies patients may have a weakened grip strength.²

In radial tunnel syndrome patients present with insidious onset generalised lateral elbow pain that occurs during repetitive forearm supination and pronation.² Patients may be tender just distal to the lateral epicondyle and forearm supination and extension of the middle finger can be weak and/or reproduce patients' symptoms [Table 2]. In cubital tunnel syndrome patients will present with medial elbow pain that occurs during repetitive activity. On examination patients will be tender just laterally to the medial epicondyle.² In addition, patients may have numbness and decreased sensation in the ulnar border of their forearm and hand, and in the ring and little fingers.^{2,17} Patients presenting with chronic symptoms may have weakness of the intrinsic muscles of the hand. In either peripheral nerve syndrome patients may describe their symptoms as a burning or electric pain that radiates down their arm. Their symptoms may also be worse at night and so interfere with sleep.¹²

If the patient presents with any numbness or muscle weakness in the arm then consider whether the problem is in the neck.³

Injuries to the UCL can be acute presenting with sudden onset pain, a sensation of a ‘pop’ during a throw. However, patients can also present with a chronic injury with insidious onset medial elbow pain and decreased throwing accuracy or speed.^{2,6} The UCL can be assessed clinically with a valgus stress test (similarly to how the MCL of the knee is assessed), however, the most sensitive test for diagnosing a UCL injury is the valgus stress test [Table 2].¹⁸

In osteochondritis dissecans patients present with progressively worsening diffuse lateral elbow pain and may experience locking. On examination patients may be tender over the posterior aspect of the lateral elbow in full flexion and have a decreased range of elbow flexion.^{2,6}

If a patient has a reduced range of motion this suggests a joint pathology.¹⁹

Table 2: Clinical tests at the elbow				
Clinical test	Positioning	Movement	Positive result	Diagnosis
Moving valgus stress test	Shoulder abducted to 90deg and externally rotated.	Examiner applies a constant (valgus) force to the lateral part of the elbow whilst quickly flexing and extending the elbow.	Pain whilst the elbow joint is between 70 to 120 degrees of flexion	UCL injury.
Tinel test	-----	Gentle repeated tapping just distally to the posterior side of medial epicondyle	Reproduction of patients’ symptoms e.g. peripheral tingling and paraesthesia	Cubital tunnel syndrome
		Gentle repeated tapping just distally and anteriorly to the lateral epicondyle		Radial tunnel syndrome
Middle finger test	Arm outstretched (elbow extended) in front of the patient, forearm pronated, fingers extended	Patient resists finger flexion	Weakness or inability to sustain finger extension.	Radial tunnel syndrome
			Reproduces lateral elbow pain	Lateral elbow tendinopathy

The Tinel test can help distinguish between medial elbow tendinopathy and cubital tunnel syndrome because in medial elbow tendinopathy the test would be negative. However, remember that 50% of patients with medial elbow tendinopathy have an element of cubital tunnel syndrome.²⁵⁻²⁷

Investigations

X-rays (2 views) should be requested for any patient presenting with elbow pain following trauma to assess for fractures.¹⁶ X-rays should also be requested for patients with persistent or worsening elbow pain performed to assess for osteoarthritis and other bony injuries e.g. fractures and loose bodies.¹⁶

Elbow tendinopathy can be diagnosed clinically based on the clinical features and so imaging, e.g. ultrasound, and referral can be reserved for patients presenting with unusual symptoms.^{3,15,19} On ultrasound a tendinopathic tendon may show thickening, partial tears or neovascularisation.⁵

In peripheral nerve syndromes nerve conduction studies can help confirm the diagnosis.^{12,20} To investigate for a UCL injury an ultrasound scan or MRI can be requested.⁶

Ultrasound or X-rays can be used to diagnose osteochondritis dissecans, however, x-rays can miss nearly half of all osteochondritis lesions.⁶ CT and MRI are used to characterise lesions into stable (just flattening of an area) and unstable lesions (where there is separation of part of the cartilage).¹⁴

Management Options

Rehabilitation with eccentric exercises is now considered the mainstay of treatment for most tendinopathies.¹⁹ Patients with elbow tendinopathy can initially be advised to reduce any activities aggravating their symptoms and to try simple analgesia (paracetamol or short course of NSAID if not contraindicated). Patients can then be referred to a physiotherapist to begin a rehabilitation programme consisting of eccentric exercises to strength the tendon. Corticosteroid injections (CSI) provide short term pain relief but should not be used in most situations because patients who receive a CSI have a worse long term outcome (e.g. residual pain) than those receiving rehabilitation or no treatment.²¹ Glyceryl trinitrate patches can be used as an analgesic adjunct, but the brand of patches prescribed should be a type that can be cut into small patches because the required dose is less than required to treat angina.¹⁹ However, prescribing glyceryl trinitrate patches in this way is done “off label”. There has been much recent research focused on investigating the effectiveness of injecting other substances to treat elbow tendinopathy e.g. platelet-rich plasma or hyaluronan gel but as yet there is no definitive evidence to support their use.^{22,23}

Patients with cubital tunnel syndrome who have mild to moderate symptoms can initially be managed conservatively with activity modification and education about avoiding prolonged elbow flexion and pressure on the elbow.²⁴ Nocturnal elbow splints to limit elbow flexion can also be used.²⁴ If the patient has persistent paraesthesia, objective muscle weakness or if there is no improvement in symptoms after 6-12 weeks of conservative management then the patient should be referred to an orthopaedic surgeon for consideration of surgical management e.g. decompression.²⁰ Similarly, patients with radial tunnel syndrome can initially be managed conservatively with activity modification (avoiding prolonged elbow extension and repetitive forearm pronation and wrist flexion), anti-inflammatory medication and rehabilitation.¹² However, patients with persistent symptoms (>3 months) should be referred for consideration of surgical management e.g. decompression.¹²

UCL injuries can initially be managed conservatively with physiotherapy (flexibility and strengthening of shoulder and forearm muscles). Patients with persistent symptoms can be referred to an orthopaedic surgeon for consideration of UCL repair or reconstruction.⁶

The management of osteochondritis dissecans is determined by the nature of the lesion. Stable lesions can heal with conservative management with monitoring every 3-6 months to assess healing. Patients with a loose body, an unstable lesion or a non-healing stable lesion requires surgery.⁶

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