ELBOW PAIN:
THE 10 MINUTE ASSESSMENT

This article describes a quick and effective assessment process for elbow pain that can be carried out in just 10 minutes. Although tendinopathy accounts for the elbow pain of most patients seen in the primary care setting, there are many other possible causes. This article covers the causes of pain at the different areas of the elbow, the mechanical injuries associated with certain sports as well as history taking, examination, investigations and management. It is accompanied by 14 tables and figures that will help you to make a detailed and accurate diagnosis for your patient. Read this online http://spxj.nl/2s76MKv

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BACKGROUND

Elbow pain is a common presentation seen in the primary care setting by general practitioners, physiotherapists, personal trainers and musculoskeletal physicians. Although tendinopathy accounts for most of these cases, there are many causes of elbow pain (1). Sick days due to elbow pain have resulted in significant financial implications for the individual and society in general (1,2). It is important that clinicians are able to quickly and accurately identify the reason behind any elbow issues and also understand management pathways.

NOMENCLATURE

The term 'tennis elbow' is sometimes used to generalise any cause of elbow pain. Determining the underlying aetiology of elbow pain can be difficult because of the complex anatomy. However, fundamental knowledge of the structure and function of the elbow is key in the process of coming to an accurate diagnosis, which in turn will lead to appropriate management (Fig. 1).

The elbow joint is made of three articulations:

1. Radiohumeral: capitellum of the humerus with the radial head
2. Humeroulnar: trochlea of the humerus with the ulna
3. Radioulnar: radial head with the ulna.

Although the elbow is a hinge joint, it is able to rotate the distal arm in pronation and supination (3). The radiohumeral joint is a combined hinge and pivot joint that allows flexion and extension together with rotation of the radial head on the capitellum. The humeroulnar joint is a hinge joint that allows flexion and extension and the radioulnar joint allows rotation during supination and pronation.

Stability of the elbow is provided by the medial and lateral ligament complexes. The ulnar collateral ligament (UCL) is part of the medial (or ulnar) ligament complex, which provides valgus stability. The radial collateral ligament is part of the lateral ligament complex, which provides varus stability.

The three main flexor muscles at the elbow are the brachialis, brachioradialis and biceps brachii. The main extensors are the triceps brachii and anconeus. The biceps brachii and supinator muscles supinate the elbow joint, and the pronator quadratus, pronator teres and flexor carpi radialis muscles pronate the joint. The common flexor tendon is a tendon that attaches to the medial epicondyle of the humerus and is an attachment point for the superficial muscles of the anterior forearm (pronator teres, flexor carpi radialis, palmaris longus, flexor digitorum superficialis, flexor carpi ulnaris). The common extensor tendon is a tendon that attaches to the lateral epicondyle of the humerus and is an attachment for the superficial muscles of the posterior aspect of the forearm (extensor carpi radialis brevis, extensor digitorum, extensor digiti minimi, extensor carpi ulnaris).

The three nerves that are found within the elbow complex are the median, radial and ulnar nerve. The median nerve crosses the elbow medially and passes through the two heads of the pronator teres. The radial nerve proceeds down the elbow and arm laterally, where it splits into a deep posterior interosseous nerve and superficial sensory branch. The deep branch passes through the arcade of Frohse. Knowledge of the pathways of these nerves allows us to understand where they may be compressed.

Before taking a history from a patient with elbow pain it is imperative that the clinician has a framework in mind to help guide them as to what may be causing the problem. The elbow should be thought of as four areas: the anterior,

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TABLE 1: Causes of elbow pain (R. Chatterjee, 2016) - http://spxj.nl/2s76MKv

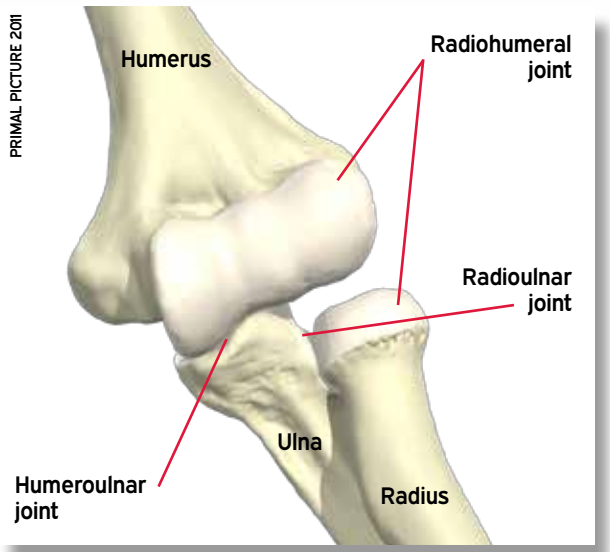

Figure 1: Anatomy of the elbow

posterior, lateral and medial parts (Table 1; available online http://spxj.nl/2s76MKv). The interviewer should also be aware as to what problems may occur with which sports (Table 2). With this knowledge, more specific, guided questioning may take place.

HISTORY

At the start of a consultation with an individual with elbow pain, it must first be established if the pain will need urgent or immediate treatment. Those who are suspected of having infection, fracture or cancer as the cause of elbow pain must be referred and seen promptly by the appropriate services. History and examination must be focused to determine the severity of the cause of pain (Fig. 2). Only once these 'red flags' have been excluded can the clinician move on and determine the cause of pain. Initially the pathological process behind the cause of pain must be established, eg. mechanical, arthritic, congenital (Table 1). Asking pertinent questions regarding the nature of the pain is crucial in this process (Fig. 3). Some questions are specific to elbow pain and they must be asked in every instance (Fig. 4). Once a thorough history has been obtained the aetiology of the pain can be deduced and this will lead to appropriate investigations to confirm the diagnosis (Fig. 4 and Tables 4 and 5).

EXAMINATION

Before any examination, consent must be obtained and the clinician should wash their hands. The next stage is to stand directly in front of the patient and carefully inspect the individual. Eagle-eyed observation can often produce several clues that can lead to the diagnosis (Fig. 5). In order to inspect the patient appropriately, the patient should ideally expose their upper body and then stand in the anatomical neutral position. Asymmetry should be noted as well as any bruising, rashes, scars, muscle wasting and winging of scapulae. The olecranon process should be looked at in particular in case of an obvious bursitis. The olecranon tip, lateral epicondyle and radial head form the posterior–lateral triangle. The olecranon bursa may bulge into this posterior triangle. Joint effusions may consequently be visible in the antecubital fossa.

The carrying angle should also be noted. This is the angle of the elbow and forearm when the patient is stood in the anatomical neutral position with forearms supinated. The angle is 5–10° in males and 10–15° in females. Injury

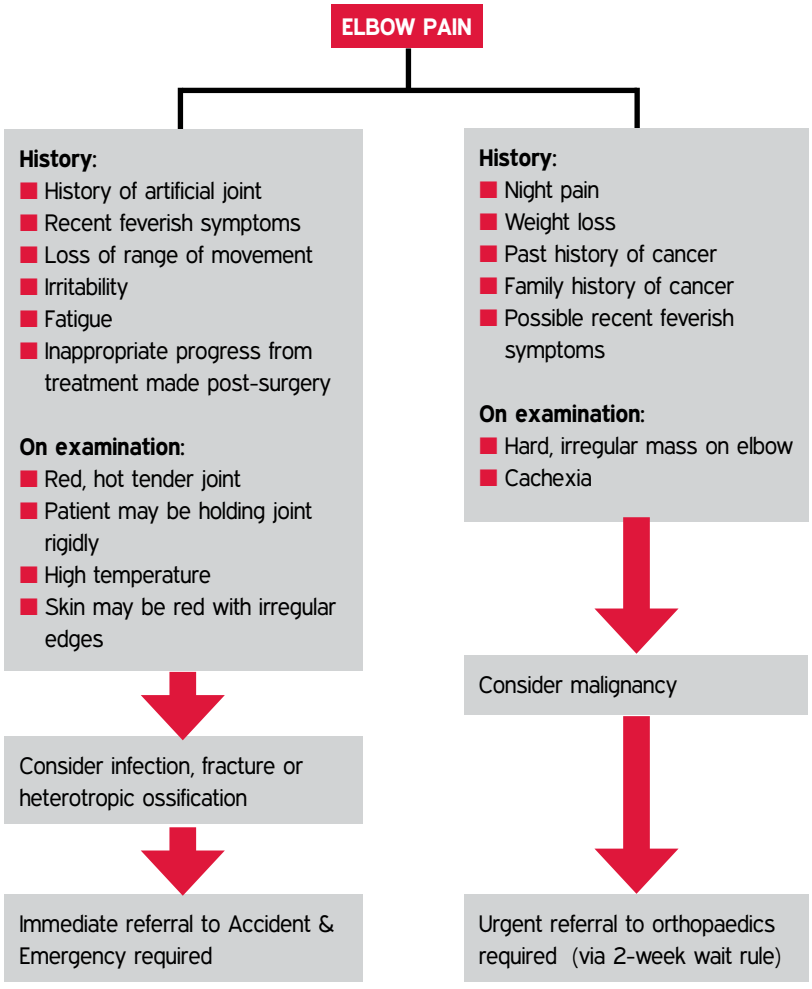

Fig. 2: Determine whether cause of elbow pain needs immediate or urgent management (R. Chatterjee, 2017)

TABLE 2: MECHANICAL ELBOW INJURIES ASSOCIATED WITH CERTAIN SPORTS
(R. Chatterjee, 2017)

SPORT	ASSOCIATED INJURY
Golf	■ Medial epicondylitis ■ Radial tunnel syndrome
Tennis, badminton, squash	■ Lateral epicondylitis ■ Olecranon stress fracture ■ Medial epicondylitis ■ Triceps tendinopathy ■ Pronator syndrome ■ Radial tunnel syndrome
Swimming	■ Radial tunnel syndrome
Skiing	■ UCL* injury ■ Cubital tunnel syndrome
Lawn bowls or ten pin bowling	■ Biceps tendinopathy ■ Radial tunnel syndrome
Boxing	■ Triceps tendinopathy
Gymnastics	■ Biceps tendinopathy ■ Triceps tendinopathy
Rowing	■ Radial tunnel syndrome
Weightlifting	■ Biceps tendinopathy ■ Triceps tendinopathy ■ Radial tunnel syndrome ■ Cubital tunnel syndrome ■ UCL* injury
Cricket (bowling), javelin, shot put, discus, baseball (pitching), softball (pitching)	■ Little league syndrome ■ UCL* injury ■ Cubital tunnel syndrome ■ Pronator syndrome ■ Triceps tendinopathy ■ Olecranon stress fracture ■ Medial epicondylitis ■ Osteochondral defect

* UCL – ulnar collateral ligament

or infection may change the angle. An increased angle is found in cubitus valgus and a decreased angle is seen in cubitus varus (gunstock deformity).

After the initial inspection, the neck and shoulder should be crudely examined to rule out radiculopathy, shoulder weakness or referred pain (21).

- Onset: did the pain start gradually or suddenly?
- Radiation: does the pain move anywhere and if so then where and how?
- Description: is it burning, stabbing, sharp or dull?
- Is there any associated numbness or paraesthesia?
- Has the individual had this kind of pain before and if so then what caused it?
- What are the relieving and exacerbating factors, eg. occupational pain, throwing etc?
- Where in the elbow is the pain?
- Is the pain continuous or intermittent?
- At what time of day does it get better or worse?
- Is there pain at rest?

Fig. 3: Questions that need to be addressed regarding the nature of pain in an elbow pain consultation (R. Chatterjee, 2017)

- Does throwing ever exacerbate your symptoms and do you think your symptoms are related to throwing?
- Does the pain change with gripping activities?
- Do you feel as though your elbow is unstable and may slip out of place?
- Was your elbow fully or over-extended when you sustained your injury?
- Does movement of the neck or shoulders affect the elbow pain?
- Do you have associated numbness or paraesthesia of the hand?

Fig. 4: Specific questions that should be asked in cases of mechanical elbow pain (R. Chatterjee, 2017)

- General posture of upper body and upper limbs: consider proximal factors which may cause elbow symptoms
- Winging of scapulae
- Swelling, deformities, bruising or scarring
- Muscle wasting
- Carrying angle: normally 5–10° in males and 10–15° in females

Fig. 5: Observations to note during inspection of the elbow (R. Chatterjee, 2017)

- Flexion: 150°
- Extension: 180°
- Pronation: 180°
- Supination: 90°

Fig. 6: Normal range of motion of the elbow (R. Chatterjee, 2017)

Spurling's test (pain when extending and rotating the head to the affected side while pressing down on the head) may be performed to exclude cervical nerve root compression (21).

Following this, range of movement of the elbow joint is assessed (Fig. 6). Should the individual have full range of motion, any elbow fracture would be unlikely.

Resisted flexion, extension, supination and pronation will allow the examiner to determine the strength of the elbow joint.

The elbow joint should be palpated in order to find any pain or swelling. Specifically, the distal biceps tendon, triceps tendon, lateral and medial epicondyles, olecranon process and radial head should be felt.

There are a number of special tests that can be performed to further help to diagnose the cause of elbow pain (Table 3).

INVESTIGATIONS

Many of the causes of elbow pain can be diagnosed by history and examination alone. However, sometimes further investigations may be required to confirm the diagnosis. Blood tests are performed first, before any imaging, to rule out many conditions that may cause bone or joint pain (Table 4). Anti-cyclic citrullinated (anti-CCP) antibodies can be looked for if rheumatoid arthritis is thought to be causing the symptoms. Acute and chronic inflammatory markers [C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR), respectively] will be raised in most cases of elbow pain and so will not help with determining the reason behind the pain. Vitamin D levels should also be checked as hypovitaminosis D is known to cause bony pain especially in areas with low sunlight and in the Asian and Afro-Caribbean communities (30).

There are several modes of imaging that can be used to help to identify the cause of elbow pain (Table 5). The clinician must decide which form is most appropriate based on the information gathered from the patient.

MANAGEMENT

Appropriate management of elbow pain in a primary care setting often results in the elbow returning to its pre-morbid state without requiring any invasive or surgical measures. Having knowledge of the ideas, concerns and

TABLE 3: SPECIAL TESTS CONDUCTED

TEST
Cozen's test [Physiotutors 2015. YouTube video: https://www.youtube.com/watch?v=8K7jzDlUpLI (22)]
Mill's test [Geoffroy. Can Fam Physician 1994;40:73 (23)]
Maudsley's test [Physiotutors 2015. YouTube video: https://www.youtube.com/watch?v=BaxgmHT_2eQ (24)]
Varus stress test [Dutton. Orthopaedic examination, evaluation, and intervention. McGraw-Hill Education 2016 (25)]
Valgus stress test [Dutton. Orthopaedic examination, evaluation, and intervention. McGraw-Hill Education 2016 (25)]
Moving valgus stress test [Dutton. Orthopaedic examination, evaluation, and intervention. McGraw-Hill Education 2016 (25)]
Milk manoeuvre [Kane. Am Fam Physician 2014;89(8):649 (26)]
Golfer's elbow test [Kane. Am Fam Physician 2014;89(8):649 (26)]
Reverse Mill's test [MediSavvy 2017. https://medisavvy.com/reverse-mills-test/ (27)]
Hook test [Vidal. Clin Sports Med 2004;23(4):707 (28)]
Tinel test [Shapiro. Med Clin North Am 2009;93(2):285 (29)]
Middle finger test [Kane. Am Fam Physician 2014;89(8):649 (26)]
Elbow extension test [Kane. Am Fam Physician 2014;89(8):649 (26)]

IN EXAMINATION OF ELBOW PAIN (R. Chatterjee, 2017)

WHY	HOW
Test for lateral epicondylitis	■ Examiner stabilises patient's elbow with his/her thumb while palpating lateral epicondyle. ■ Patient actively makes a fist while pronating forearm and radially deviating and extending wrist against resistance being applied by examiner. ■ Test is positive if pain reproduced at lateral epicondyle.
Test for lateral epicondylitis	■ Lateral epicondyle is palpated while passively pronating forearm, flexing wrist and extending elbow. ■ Positive test is reproduction of lateral elbow pain.
Test for lateral epicondylitis	■ Resisted extension of 3rd digit of hand, stressing the extensor digitorum muscle and tendon, whilst palpating the lateral epicondyle. ■ Positive test is reproduction of lateral elbow pain.
Test for integrity of lateral collateral ligament (LCL)	■ With patient standing, the examiner places the patient's elbow in 20° of flexion while palpating the humeroulnar joint line. ■ Varus force is then applied to the elbow. ■ If pain or excess laxity in comparison to the contralateral side is experienced then test is positive.
Test for integrity of medial collateral ligament (MCL)	■ With the patient standing, the examiner places the elbow in 20° of flexion whilst palpating the medial joint line. ■ Distal humerus is stabilised with one hand while valgus stress to elbow is applied with other hand. ■ If pain or excess laxity in comparison to the contralateral side is experienced then test is positive.
Test for integrity of medial collateral ligament (MCL)	■ With the patient seated, the shoulder is abducted to 90° and then externally rotated with the palm facing upwards. ■ While the examiner applies and maintains valgus stress to the elbow, the elbow is quickly flexed and extended. ■ The test is positive if pain occurs between 70 and 120° of elbow flexion.
Test for integrity of medial collateral ligament (MCL)	■ The patient is seated. ■ Shoulder is flexed at 90° abduction with the elbow flexed to greater than 90° and the forearm supinated. ■ The examiner pulls the patient's thumb posteriorly causing increased valgus stress at the elbow. ■ If pain or excess laxity in comparison to the contralateral side is experienced then test is positive.
Test for medial epicondylitis	■ While seated, the patient should flex their fingers into a fist position. ■ The examiner palpates the medial epicondyle with one hand and grasps the wrist with the other hand. ■ The examiner then passively supinates the forearm and extends the elbow and wrist. ■ The test is positive if the patient has pain around the medial epicondyle.
Test for medial epicondylitis	■ While the patient is seated, the examiner extends the patient's elbow, wrist and fingers. ■ This stretches the common flexor tendon at the medial epicondyle. ■ The test is positive if there is any pain around the medial epicondyle.
Test for distal biceps tendon rupture	■ Shoulder is abducted to 90° with the elbow in 90° of flexion. ■ The examiner attempts to use his or hers index finger to hook behind the distal biceps tendon. ■ The test is positive if finger does not hook onto the biceps tendon
Test for either cubital tunnel syndrome or radial tunnel syndrome	■ Elbow flexed to 20°. ■ Examiner gently taps over the course of the superficial nerve (ulnar nerve: groove between olecranon and medial epicondyle; radial nerve: anterior to the lateral epicondyle and then through the cubital fossa, where the nerve divides into a deep branch and superficial branch) ■ Positive test if paraesthesia is elicited over the distal course of the nerve.
Radial tunnel syndrome (posterior interrosseous nerve syndrome)	■ Patient attempts to extend middle finger against resistance while arm is outstretched. ■ Positive test if patient demonstrates weakness or inability to resist force.
Test to determine if patient has elbow trauma	■ Patient is asked to fully extend elbow. ■ Test is positive if patient unable to fully extend elbow. ■ May need X-ray or further investigations.

"MANY OF THE CAUSES OF ELBOW PAIN CAN BE DIAGNOSED BY HISTORY AND EXAMINATION ALONE"

> APPROPRIATE MANAGEMENT OF ELBOW PAIN IN A PRIMARY CARE SETTING IS OFTEN SUCCESSFUL WITHOUT REQUIRING ANY INVASIVE OR SURGICAL MEASURES

TABLE 4: BLOOD TEST RESULTS IN CERTAIN AILMENTS THAT MAY CAUSE ELBOW PAIN
(R. Chatterjee, 2016)

	Alkaline phosphatase	Calcium	Phosphate
Osteoporosis	N	N	N
Paget's disease	↑↑	N	N
Osteosarcoma	↑	N	N
Sarcoidosis	N	↑	–
Myeloma	N	↑	–
Osteomalacia	↑	↓/N	↑
Primary hyperthyroidism	↑/N	↑	↓
Secondary hyperthyroidism	↑/N	↓/N	↑/N
Tertiary hyperthyroidism	↑	↑	↑
Hypoparathyroidism	N	↓	↑

N, Normal; ↑ Raised; ↓ Lowered.

expectations of the patient is paramount in achieving a satisfactory outcome. Each individual will have a different idea as to what constitutes an acceptable result. For some, an early return to sport or activity is considered a successful outcome whereas for others, merely a reduction in pain is an acceptable goal. By addressing any preconceptions or misinformation that the patient may have, compliance with rehabilitation or analgesic programmes is far more likely. For those with non-mechanical causes of elbow pain, early referral to an appropriate discipline is required. Once the source of pain has been determined to be mechanical, a stepwise approach to management is needed (Fig. 7).

Step 1 is application of the PRICE (protection of joint, rest, ice, compression, elevation)/POLICE (protect, offload, ice, compress, elevate) protocol for a period of 48 hours. As overuse of the joint is a major factor in most of the mechanical pathologies, it makes sense to rest the joint, ie. offload it.

In step 2, the multidisciplinary team (MDT) should be involved as soon as possible. This includes physiotherapists, GP, dieticians, occupational therapists, psychologists and counsellors. The first issues that need to be addressed are lifestyle modifications that may provide symptomatic relief. Measures such as weight loss, change in training regime, improved diet or workplace modifications are sometimes enough to significantly reduce the elbow pain. If the patient plays sport, then changing technique involving the elbow would be advisable. Overload and underload are both bad for tendons (14). The underlying principle in management of overuse injury of the elbow should be to load (ie. exercise) the tendon to as close to its limits as possible, without exceeding them (14). Eccentric exercises are the mainstay of rehabilitation of elbow (and other) tendinopathies. The partial loading provided by the eccentric exercises aid in the repair of a degenerative tendon and prepares it for future load (14). The MDT will be able to provide advice on padding and strapping of the joint if needed, home physical therapy, appropriate use of oral analgesics and anti-inflammatories, stretching exercises and psychological support. The FITT (frequency, intensity, time, type) principle is used to specifically prescribe exercise. Counterforce bracing and cock-up wrist splints provide symptomatic relief by reducing extensor muscle activity (19,31).

Optimisation of analgesia will allow the patient to actually perform the stretches and exercises prescribed at home. A step-up method of analgesia is preferred where weaker topical agents are initially prescribed with stronger oral medications only being given if pain persists (Table 6). There is some debate as to whether non-steroidal anti-inflammatory drugs (NSAIDs) should be given in bony pain. Studies have shown that there may be delayed bone healing or non-unions associated with NSAID exposure. However, a recent systematic review on this topic has advocated its use, as withholding NSAIDs does not have any proven scientific benefit to patients and may even cause harm by increasing the requirement for stronger, more addictive medications (32).

ESWT, *extracorporeal shockwave therapy;* **GTN**, *glyceryl trinitrate;* **MDT**, *multidisciplinary team;* **NSAIDs**, *non-steroidal anti-inflammatory drugs;* **PRICE** *(protection of joint, rest, ice, compression, elevation);* **POLICE** *(protect, offload, ice, compress, elevate)* **PRP** *(platelet-rich plasma);* **SEM** *(sports and exercise medicine).*

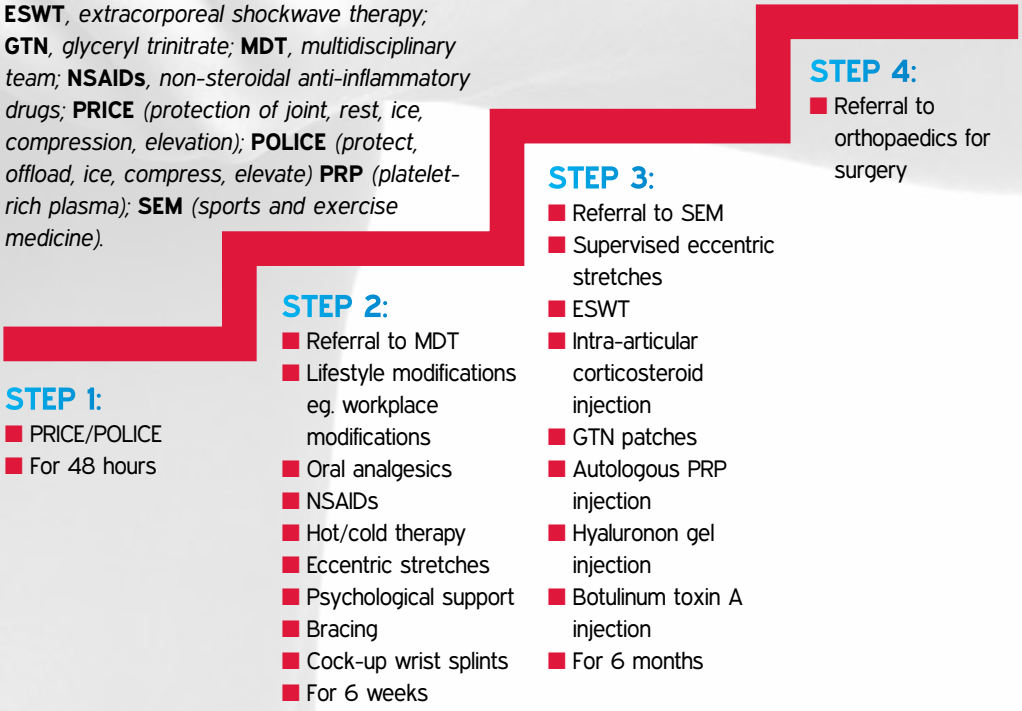

Fig. 7: Stepwise management of tennis elbow in particular, but also mechanical, non-fracture elbow pain in general (R. Chatterjee, 2017)

TABLE 5: IMAGING THAT MAY BE USED IN THE INVESTIGATION OF ELBOW PAIN (R. Chatterjee, 2017)

Mode of imaging	Advantages	Disadvantages
X-ray (plain radiographs)	■ Low cost ■ Readily available ■ May help identify fractures or bony deformities including degenerative changes ■ Osteophytes, joint space narrowing, soft tissue swelling, osteochondral defects, enthesophytes and joint effusions can also be identified	■ Exposure to radiation ■ Abnormalities that are identified by X-ray may be unrelated to cause of pain, eg. incidental osteophyte ■ Extent of soft tissue swelling may not be visible on X-ray
Magnetic resonance imaging (MRI)	■ No radiation exposure ■ Preferred over CT if soft tissue needs to be identified ■ Often the investigation of choice as can identify pathological conditions such as tendinopathy, inflammation, nerve entrapment, joint effusion and bone marrow oedema ■ Can identify ligament tears, osteochondral defects or loose bodies in those without joint effusion	■ Expensive ■ Often long waiting time to get MRI ■ Tissue calcification cannot be identified on MRI as bone and calcium do not show up
Computed tomography (CT)	■ Preferred over MRI if bony anatomy needs to be identified ■ Used to identify fracture if radiograph normal but fracture still suspected ■ Can detect soft tissue calcification, eg. myositis ossificans or intra-articular loose bodies	■ High exposure to radiation ■ More incidences of allergic reaction to CT contrast than MRI contrast
Ultrasonography	■ Inexpensive ■ Can be done in clinic ■ Allows dynamic evaluation ■ Can identify medial and lateral elbow tendinopathy	■ Operator dependent
Bone scan	■ Used to identify stress fractures, bony metastases, infections or occult fractures	■ Generally non-specific in identifying cause of pain

TABLE 6: MEDICATIONS FOR ANALGESIA IN ELBOW PAIN
(R. Chatterjee, 2016)

Type of analgesic	Name of drug	Mode of administration
Simple analgesics	Paracetamol Capsaicin	Oral Topical gel
NSAIDs	Ibuprofen Diclofenac Naproxen	Oral or topical gel Oral or topical gel Oral
COX-2 inhibitors	Celecoxib Valdecoxib Etoricoxib	Oral Oral Oral
GABA inhibitors	Gabapentin Pregabalin	Oral Oral
Tricyclic antidepressant (TCA)	Amitriptyline	Oral
Weak opioids	Codeine Co-codamol Co-dydramol	Oral Oral Oral
Strong opioids	Tramadol Buprenorphine Fentanyl Oxycodone	Oral Topical patch Topical patch Oral or topical patch

Heat and cold therapies are both useful conservative measures that should be encouraged in addition to pharmacological treatment in the primary care setting (Table 7). This is because, although there is limited evidence regarding its efficacy, these therapies are non-invasive, cheap, readily available and have relatively few side effects (33).

Should the patient still be symptomatic then step 3 commences with referral to a sports and exercise medicine (SEM) specialist. In conjunction with the other members of the MDT as well as the patient, further supervised eccentric stretches and physical therapy is offered. Alternate therapies

> “STABILITY OF THE ELBOW IS PROVIDED BY THE MEDIAL AND LATERAL LIGAMENT COMPLEXES”

TABLE 7: HEAT AND COLD THERAPY AS ANALGESIA (R. Chatterjee, 2016)

	Heat therapy	Cold therapy
Mechanism of action	■ Opens up blood vessels which increases blood flow and therefore oxygen, nutrients and natural anti-inflammatories to area of pain. ■ Decreases muscle spasms	■ Reduces speed of blood flow to area where cold is applied. ■ This results in reduced pain and swelling.
Method of application	■ Hot water bottle ■ Heat pack/pad ■ Hot shower ■ Hot bath ■ Sauna/steam room ■ Heat should not be so hot that it burns skin. ■ Moist heat tends to penetrate area better than dry heat.	■ Ice cubes ■ Bag of peas ■ Frozen bag of food ■ Ice pack ■ Gel pack
Frequency of application	■ As many episodes as possible with each episode lasting up to 20 minutes. ■ Should be a minimum 10-minute intervals between episodes of application.	■ As many episodes as possible with each episode lasting up to 20 minutes. ■ Should be minimum 10-minute intervals between episodes of application.
When and how to use it	■ Do not apply directly to skin. Wrap heat device in cloth or towel first. ■ Do not use on open wounds. ■ Do not lie down on hot device as patient may fall asleep and burn themselves. ■ Avoid in first 48 hours after trauma or injury.	■ Do not apply directly to skin. Wrap cold device in cloth or towel first. ■ Should be used in first 48 hours after trauma or injury.

may be offered at this point. These include: extracorporeal shockwave therapy (ESWT), corticosteroid joint injection and platelet-rich plasma (PRP) injections. There is limited evidence of the efficacies of these procedures and so they should only be offered after all other avenues have been exhausted (34). Non-operative management of tennis elbow and other tendinous elbow injuries will result in successful resolution of symptoms in 90% of patients (35). Finally, if after step 3 there is still no improvement, referral to an orthopaedic surgeon is made. Surgical options include percutaneous, open and arthroscopic techniques (36). Stages 1 to 3 should be attempted for at least 6–12 months before surgical intervention.

CONCLUSION

Elbow pain is commonly seen in the primary care setting. A systematic framework can help the clinician to investigate and diagnose the cause of pain. Mechanical causes of elbow pain are managed in a stepwise fashion. Patient education and addressing the ideas, concerns and expectations of the individual are key concepts in ensuring good compliance with a treatment regimen and thus an optimal outcome.

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KEY POINTS

- **Although tendinopathy accounts for many instances of elbow pain, there are many other causes.**
- **The elbow is a hinge joint but is also capable of rotation, which allows pronation and supination of the distal arm.**
- **When making a diagnosis, it is helpful to think of the elbow as four areas: the anterior, posterior, lateral and medial parts.**
- **The first stage of assessment is a detailed visual examination of the elbow as well as a crude examination of the neck and shoulder area.**
- **Be aware of the mechanical elbow injuries that are associated with certain sports.**
- **If the patient has full range of motion in the elbow, fracture is unlikely.**
- **There are a number of special tests that can be used to help diagnose the cause of elbow pain.**
- **Good communication with the patient about their expectations and concerns is crucial to achieving a successful treatment outcome.**
- **Mechanical elbow pain is managed in a stepwise approach.**
- **Non-operative management of elbow tendinopathies is successful in 90% of patients.**

THE AUTHOR

Dr Chatterjee is a specialist registrar (ST4) in sports and exercise medicine (SEM) and also a GP with a special interest (GPwSI) in SEM. He first became interested in SEM when he gained experience in hyperbaric medicine, cardiopulmonary exercise testing and chronic musculoskeletal pain management while working as an anaesthetist in Australia. He currently works as a medical officer at the Defence Medical Rehabilitation Centre at Headley Court, London Broncos Rugby League and Musculoskeletal Interface Clinical Assessment Service (MICAS) at Battersea Health Centre. He has recently received the Dr Vivien Lane Foundation Scholarship for his research investigating the effects of low vitamin D on chronic non-specific low back pain and has been appointed on the research committee for European College for Sports & Exercise Physicians (ECOSEP).

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DISCUSSIONS

- **How have you been dealing with patients with elbow pain and, after reading this article, is there anything that you would change? If so, what?**
- **What symptoms indicate the need for urgent or immediate treatment?**
- **How would you decide what constitutes a good treatment outcome?**

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