

Radial Sided Wrist Injuries

Contributors

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Overview

Radial sided wrist injuries are common amongst the athletic population and can arise due to a range of pathology that can readily be differentiated through a clear clinical history and examination. The structures of the first and second dorsal compartments are particularly susceptible to overuse and overtraining injuries such as De Quervain's tenosynovitis and Intersection Syndrome respectively.

Differential diagnosis: De Quervain's tenosynovitis, Intersection syndrome, Radial styloid fracture, scaphoid fracture, osteoarthritis, ligamentous injury and radial nerve injury

Always make sure you have excluded a fracture in all acute presentations of wrist pain or in those with a suspicious mechanism of injury.

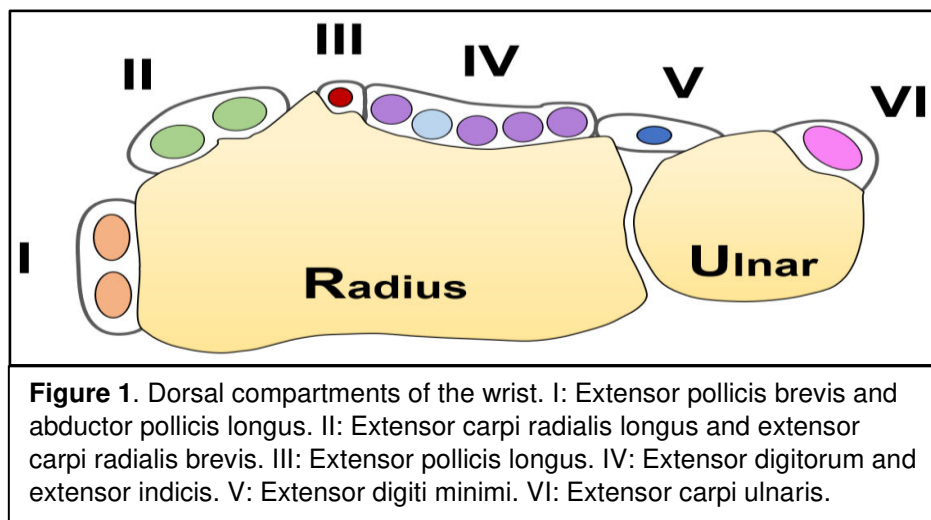
Case History

A 36-year-old amateur female golfer presented with a gradual onset of left radial wrist pain. She is right hand dominant but has had difficulties following her recent return to training and match play following the birth of her son a few months ago. She now experiences pain with all lifting tasks. Clinical examination demonstrated localised tenderness and swelling lateral over the lateral aspect of the radial styloid and a positive Finkelstein test with no neurovascular compromise. She found symptom resolution after a period of splinting with a graduated stretching and strengthening programme.

A 25-year-old elite male rower presented with right forearm pain, 6 weeks out from a national championship competition. He is right hand dominant and recently switched to stroke side prior to starting an intense pre-competition training programme. Clinical examination revealed tenderness on the dorsum of the wrist just lateral and a few centimetres proximal to Lister's Tubercle on the radial styloid and reproduction of pain with ulnar deviation and wrist extension. The patient was able to successfully compete after a period of immobilisation with a splint, training load modification and re-assessment of his technique.

Anatomy

A clear understanding of the arrangement and function of the extensors of the wrist is important to clinically differentiate between radial sided wrist pathology. The extensor tendons pass through fibro-osseous tunnels on the distal radius to form six dorsal compartments to prevent bow stringing during muscle contraction (see Figure 1). The first compartment is the most lateral and located over the radial styloid, where the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) tendons pass through. Medially, the second compartment contains the tendons of extensor carpi radialis longus (ECRL) and extensor carpi radialis brevis (ECRB)⁽¹⁾.



Aetiology

De-Quervain's tenosynovitis is the leading cause of radial sided wrist pain amongst golfers and within the general population is a disease of middle age, disproportionately affecting women, particularly post-partum⁽²⁻⁴⁾. Pain is caused by repetitive gliding of tendons through the first dorsal compartment, particularly during thumb hyperabduction causing microtrauma which leads to abnormal thickening and swelling, ultimately impinging APL and EPB. Athletes prone to the condition participate in activities requiring forceful grasping coupled with ulnar deviation or repetitive thumb use in sport such as golf, fishing and certain racquet sports⁽⁵⁾.

In contrast, intersection syndrome produces pain from the second dorsal compartment due to either friction between the muscle bellies of EPB and APL, onto the tendon sheath of ECRL and ECRB or entrapment of the latter from stenosis of the second compartment⁽⁶⁾. In comparison to De-Quervain's tenosynovitis, intersection syndrome is far less common and typically associated with sports that require a combination of repetitive wrist flexion and extension in association with compressive forces^(5,7). As a result, it is typically seen in rowers, skier's, racquet sports and weight lifters^(7,8).

Clinical Features

	De Quervain's Tenosynovitis	Intersection Syndrome
History	Subacute/ chronic radial sided wrist pain exacerbated by grasping activities which sometimes radiates into the forearm or thumb	Subacute / chronic distal forearm pain that usually develops after a change in technique or training intensity
Inspection	Typically unremarkable but swelling can be seen over the radial styloid	Swelling to the first compartment musculature
Palpation	Pain to palpate over the radial styloid and first dorsal compartment. Can be associated with Dorsal ganglion cyst.	Pain 4-8cm proximal to the radial styloid process Localised erythema
Movement	Pain with ulnar deviation and grasping	Pain with ulnar deviation and wrist extension. Crepitus can be felt in the affected area.
Special tests	Finkelstein's test is pathognomonic and produces fewer false positives than Eichoff's test.	No specific test.

Figure 2. A comparison of the clinical features of De Quervain's tenosynovitis and Intersection syndrome^(4,6,8).

Investigations

Both De Quervain’s tenosynovitis and Intersection syndrome are a clinical diagnosis⁽⁹⁾. However, further investigation might include ultrasound initially, which can confirm swelling and inflammation around the tendons and surrounding sheath. Furthermore, in De Quervain’s it can identify an underlying anatomical variation, which may be causative, and lead to failure of landmark guided injections^(10,11).

An MRI scan may be used if there is clinical uncertainty of the diagnosis or if the patient has failed to respond adequately to conservative treatment^(12,13).

Management

The initial management of both De Quervain’s tenosynovitis and Intersection syndrome follow that of any overuse type injury following the POLICE principles and educating the patient⁽¹⁴⁾. This can be achieved through specific wrist splints, activity modification and simple analgesia. After the acute phase patients can engage in a structured progressive rehabilitation programme and can also address any technical deficiency that might have pre-disposed to injury.

However, in patient’s who fail to maintain satisfactory progress a corticosteroid injection can be considered. This is particularly effective for De Quervain’s tenosynovitis but an ultrasound guided technique is preferable as patients who don’t respond to an initial corticosteroid often show altered anatomy of the first dorsal compartment highly predictive with ultrasound^(4,11,15). Very few patients will require surgical decompression for either De Quervain's or Intersection syndrome but is more common in the latter case, where those operated on can expect a good outcome and a quick return to sport^(4,8).

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