

Ulnar Wrist Pain

Structures of Stability

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Pain on the ulnar side of the wrist has traditionally been difficult to diagnose and treat. Recent improvements in the knowledge of anatomy, biomechanics and imaging techniques have lead to a better understanding of clinical problems in this area.

The sources of pain on the ulnar side of the wrist can be organized according to the anatomical structures involved (*i.e.*, bone, ligament, cartilage, *etc.*) (Table 1). The two main joints are the distal radioulnar joint and the ulnocarpal joint. Tendinous structures include the *extensor carpi ulnaris* dorsally and the *flexor carpi ulnaris* palmarly. The ulnar artery and nerve lie in Guyon's canal adjacent to the hamate and are subject to compression in this area. The dorsal sensory branch of the ulnar nerve supplies sensation to the ulnar aspect of the dorsal side of the wrist and hand.

Figure 1 shows a simplified drawing of the triangular fibrocartilage complex (TFCC).¹ This structure is critical for maintaining the stability of the distal radioulnar joint and is frequently implicated in ulnar wrist pain scenarios. The meniscus homologue is a disc-shaped cartilaginous structure that has been likened to a

Tom's case

- Tom, 35, is a carpenter presenting with a six-month history of ulnar-sided wrist pain.
- He recalls an injury when a drill jammed causing a sudden and forceful twisting of his wrist.
- He has pain on rotation and ulnar deviation of the wrist and it often clicks. He experiences no swelling or numbness.
- Physical exam confirms no swelling, but there is tenderness over the dorsal ulnar aspect of the wrist.
- There is full range of motion with discomfort at the extremes of pronation and supination.
- A positive ulnar impingement test is noted.
- Plain X-rays and an arthrogram are shown. The plain films are normal but the arthrogram shows leakage of dye into the distal radioulnar joint and into the midcarpal joint, suggesting a triangular fibrocartilage complex tear and an attrition rupture of the lunotriquetral ligament.



What do you suggest?

This is a difficult problem that may respond to arthroscopic debridement, but may require more extensive procedures, such as a partial resection of the distal ulna or an ulnar shortening osteotomy.

Table 1

Ulnar wrist pain sorted by anatomical structure

Cartilage	Bone	Ligament	Tendon	Nerve	Joint
TFCC tear	Ulnar styloid nonunion	Lunotriquetral ligament tear	ECU subluxation	Ulnar nerve compression	Pisotriquetral arthritis
	Hook of hamate fracture	DRUJ instability	Tendonitis ECU or FCU		Ulnar impaction syndrome
					DRUJ arthritis

TFCC: Triangular fibrocartilage complex
ECU: Extensor carpi ulnaris

DRUJ: Distal radioulnar joint
FCU: Flexor carpi ulnaris

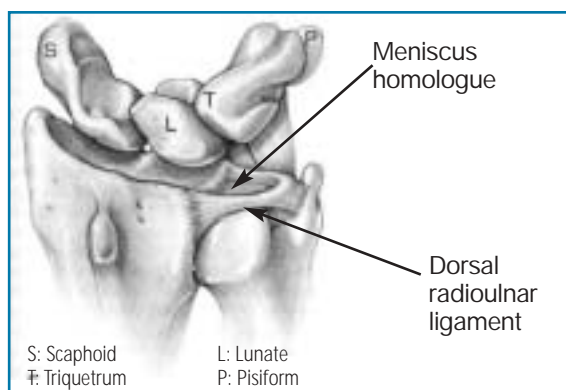


Figure 1. Triangular FibroCartilage Complex

trampoline for the ulnar carpus to bounce on. It can be torn as a result of twisting injuries to the wrist.

Clinical evaluation

When assessing a patient with ulnar wrist pain, a history of trauma (*i.e.*, a twisting injury) should be queried. Patients may be able to localize pain quite specifically and should be asked about clicks and clunks associated with movement. Participation in sports and possible occupational stresses are other important factors. Swelling is typically seen in inflammatory conditions, such as tendonitis.

Numbness and tingling should be inquired about with an attempt to localize the neurologic

symptoms, if possible. This can help to differentiate a peripheral nerve compression from a more proximal problem, such as cervical disc disease.

Rheumatoid arthritis commonly afflicts the *extensor carpi ulnaris* tendon and may cause instability of the distal radioulnar joint. The ulna tends to sublux dorsally, resulting in a characteristic deformity and often causing tendon ruptures.

The physical exam should look for localized tenderness and a range-of-motion restriction, particularly in the rotational plane (pronation/supination). The piano key sign is elicited by stabilizing the distal radius with one hand and attempting to translate the distal ulna in the dorsovolar plane. Unusual excessive movement is an indication of instability.

The ulnar impingement test for TFCC tears is performed by grasping the patient's hand and rotating it firmly against the distal ulna, while also deviating the ulnar side of hand. It is analogous to the McMurray test in the knee and is positive when a click is felt.

Ulnar nerve compression may result in an altered sensation of the small and ring fingers and a weakness and wasting of interossei (adduction and abduction of the digits). A Tinel's sign may be noted by tapping over the nerve adjacent to the pisiform on the palmar aspect of the wrist.


Imaging

Imaging should always begin with plain X-rays (Figure 2). These may reveal abnormalities, such as ulnar styloid nonunion, erosive arthritic changes or shortening of the distal radius (after fracture), resulting in a relatively long ulna. The relatively long ulna may rub on the TFCC, causing attrition ruptures of the meniscus homologue and lunotriquetral ligament. Nuclear medicine scanning may be helpful in identifying more subtle injuries, such as hook of hamate fractures/nonunions.

Triple injection wrist arthrography (Figure 3) is useful in evaluating intercarpal ligament damage and TFCC tears. However, this is an invasive test that is being largely supplanted by magnetic resonance imaging with appropriate surface coils.

Treatment

There are many treatment options for the various causes of ulnar wrist pain. The first step is to make an accurate diagnosis using the history and the physical and necessary imaging as outlined previously. Modalities frequently applied include avoidance of offending activities, splinting, physiotherapy, anti-inflammatory medications and corticosteroid injections. Surgical procedures are beneficial in certain cases and can include diagnostic and therapeutic arthroscopy, as well as open procedures.

Excellent results can be obtained in the majority of these patients, although there are some problems that are not completely remediable. A small group of patients has ongoing disability that cannot be completely resolved and may be an issue with work status, especially heavy and/or repetitive work. 

References

1. Palmer AK, Werner FW: The triangular fibrocartilage complex of the wrist-anatomy and function. *J Hand Surg* 1981; 6(2):153-62.



Figure 2. Plain X-ray.

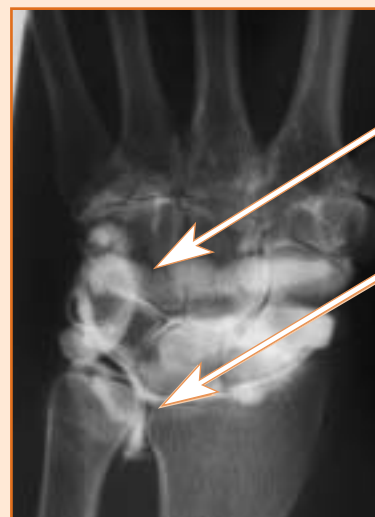


Figure 3. Triple injection wrist arthrograph.

Dye in midcarpal row

Dye in distal radioulnar joint



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