

# Extensor carpi ulnaris syndrome

## Findings in 43 patients

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We report a distinct clinical entity—extensor carpi ulnaris syndrome—in 43 patients with pain on motion and tenderness in the region of the 6th dorsal compartment. 40 patients responded to non-operative treatment. In 3 patients who did not respond to treatment, release of the 6th compartment gave a satisfactory outcome. In 2 of these cases, an anomalous accessory extensor carpi ulnaris tendon was observed, which was found in 2 of 7 cadaveric wrists. One cause of this syndrome may be tenovaginitis of the extensor carpi ulnaris tendon in the 6th compartment induced by overuse.

The diagnosis of dorsal wrist pain may be difficult. We analyzed 155 patients and found 43 patients whose pain was probably caused by tenovaginitis of the extensor carpi ulnaris tendon in the 6th compartment.

### Patients

Of 155 patients with dorsal wrist pain, 43 (mean age 31 (14–58) years, 20 men; 26 right hands) had pain on motion and tenderness only in the 6th dorsal compartment for an average of 6 (1–25) months. Plain radiographs, arthrography and arthroscopy were normal in all patients.

Pain increased on forced wrist flexion plus forearm pronation as well as supination in all cases (Figure). No patient had a history of violent trauma of the wrist, but all had a history of repetitive overuse before the onset of symptoms. Associated conditions included marked general joint laxity (25 cases), deQuervain's disease (14 cases), snapping finger (7 cases) and lateral humeral epicondylitis (4 cases).

Non-operative treatment consisted of immobilization of the wrist with elastic bandage (43 patients), oral nonsteroidal medication (40 patients), local steroid injections into the 6th dorsal compartment at an

average of 3 times (35 patients), and/or application of a plastic wrist brace (20 patients) for a mean of 3 months. Surgical release of the 6th compartment with reconstruction of the retinaculum was performed in 3 patients. 7 normal adult cadaveric wrists were dissected.

### Results

40 patients became symptom-free after non-operative treatment for a mean of 3 (1–9) months and were still so at a follow-up examination after 3–7.5 years. The results of surgery in 3 cases were also good after a follow-up of 3.5 (2.5–5) years. Macroscopic examination at surgery revealed thickening of the retinacular tissue in the 6th compartment and attenuation of the ECU tendon at the entrance to the 6th compartment. In addition, an anomalous accessory ECU tendon was found in 2 cases and was removed.

Macroscopic observation of 7 cadaveric wrists revealed that the ECU tendon passed under the extensor retinaculum at an average width of 5 cm, which formed the upper roof of the 6th compartment and its medial border attached to the os pisiform and os triquetrum and that a thin fibrous connective tissue was found under the retinaculum, which constrained the lateral movement of the ECU tendon in the 6th compartment. An accessory ECU tendon was found in 2 cadaveric wrists.

### Discussion

The differential diagnoses of dorsal wrist pain include dislocation of the ECU tendon, carpal instability, ulnocarpal impingement, triangular fibrocartilage tears, symptomatic ulnar styloid fractures and arthrosis. In our experience, however, many

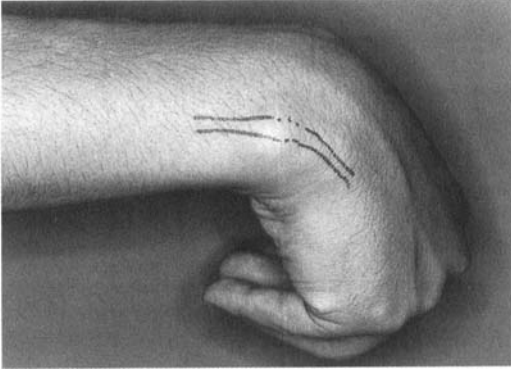


Figure. Pain-inducing test for diagnosing the ECU syndrome. Pain increased along the ECU tendon on forced wrist flexion, plus forearm pronation as well as supination.

patients have dorsal wrist pain without any abnormal or pathologic findings on radiographs, arthrography and arthroscopy. We found a number of patients whose symptoms were closely related to the ECU tendon and suggest ECU syndrome as a distinct clinical entity, called the ECU syndrome. It is characterized by pain on motion and tenderness only in the region of the 6th dorsal compartment, which increases on forced wrist volar flexion plus forearm pronation as well as supination. Tenosynovitis in other locations and general joint laxity were found in several patients. There are probably caused by repetitive overuse. Satisfactory results are obtained in most cases with non-operative treatment. In other cases, surgical release of the 6th compartment may be of value.

In our cadaveric study, the ECU tendon was found in the 6th compartment which has a very different anatomical environment from those of other extensor

tendons, thus permitting free lateral movement (instability) of the ECU tendon on wrist motion. On the other hand, it is also well-known that the ECU tendon is an important stabilizer of the wrist during daily hand use (Spinner and Kaplan 1970). Therefore, one may speculate that the ECU tendon suffers excessive mechanical stress with repetitive overuse, which may result in tenovaginitis of the tendon (Nachinocar and Khanolkar 1988). Wood and Dobyns (1986) have suggested that the 6th compartment is, after the first compartment, the second commonest site of tenovaginitis (Stein 1927, Dickson and Luckey 1948, Garston 1951, Lapidus and Fenton 1952).

Co-existence with an accessory ECU tendon is possible, as 2 of 3 operated cases and 2 of 7 cadaveric wrists showed this anomaly.

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