

A Case Report of Isolated Traumatic Tear of the Triangular Fibro-Cartilage

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ABSTRACT

We have recently experienced a case of solitary traumatic tear of the TFC which was diagnosed with the evident history of trauma, positive physical and arthrographic findings. Although the treatment is controversial for this problem, this case was treated with the excision of the torn TFC flap. Up to 13 months postoperative follow up, the patient is free of complaints.

The triangular fibro-cartilage (TFC) is located on the ulnar aspect of the wrist joint and works as a cushion in the ulnar column of the carpus. The injury to the TFC was overlooked in the past due to the ambiguous anatomical understanding of the area. Recently, however, with the introduction of the wrist arthrography and recognition of the carpal instability, it has emerged into our attention.

We have experienced one case of solitary traumatic tear of the TFC that was treated successfully with excision of the torn flap. This case is presented with some discussion of anatomy, diagnosis, and treatment.

CLINICAL CASE

A 46-year-old left handed man fell off the bicycle by accident. And he hit his left palm bitterly with the elbow stretched and the wrist dorsiflexed. On the following day, he visited our clinic. On physical examination, slight swelling and tenderness were noted on the dorso-ulnar aspect of the left wrist. Routine X-rays were taken, which revealed negative findings. The initial treatment, therefor, was commenced with elastic bandage immobilization and oral anti-inflammatory medicine. After two months of conservative therapy, his symptoms were resolved to some extent. However, some symptoms re-

mained such as the pain of the wrist in the hyperextended position, inability to pitch a ball, and to push up himself.

The patient was reexamined. On inspection, there were no swelling and erythema. Moderate tenderness was present slightly distal to the dorsal aspect of the distal radio-ulnar joint. The range of motion of the left wrist was full in every direction. Spontaneous pain was noted when the wrist was fully extended and supinated. Griding test elicited no clicking in the left wrist. The grip power was measured 38 kg on both hands, although he was left handed. Bilateral wrist arthrograms were taken, which demonstrated communication between the radiocarpal joint and the distal radio-ulnar joint only in the affected wrist (Fig. 1). From the aforementioned results of physical examinations, positive arthrogram, and evident history of trauma, the diagnosis was concluded as traumatic TFC tear of the left wrist.

Surgery was carried out. The TFC was approached dorsally. The proximal one-half of the extensor retinaculum was reflected radially from the extensor carpi ulnaris compartment, to the radial border of the extensor digiti minimi compartment. The wrist capsule was detached sharply from the carpus and reflected proximally. Then the extensor carpi ulnaris and extensor

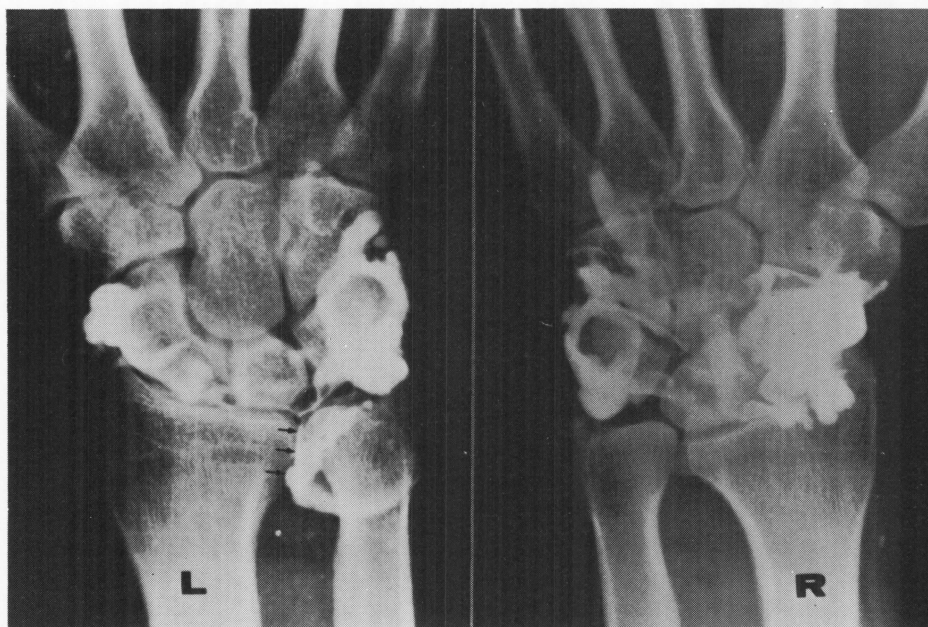


Fig. 1. Bilateral Wrist Arthrogram

Arrows indicate communication between the radiocarpal joint and the distal radioulnar joint. This is present only in the affected wrist.

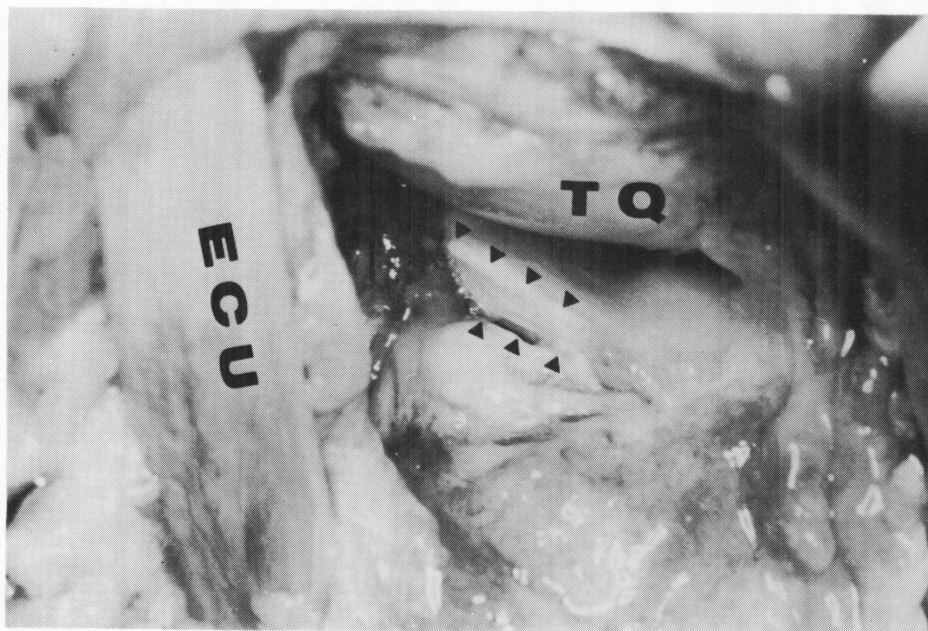


Fig. 2. The TFC Proper Observed From The Posterior Angle

Approximately five millimeter tear was seen at the dorso-ulnar margin of the TFC proper.

ECU: Extensor Carpi Ulnaris

TQ: Triquetrum

digiti minimi were retracted ulnarly and radially. This enabled observation of the TFC from the posterior angle. Peripheral tear was seen at the dorso-ulnar margin of the TFC proper, which was measured 5mm in width. Articular surface of the triquetrum and the lunate were intact. No laxity between them was seen (Fig. 2). This marginal flap of the TFC was excised sharply. The capsule, the extensor retinaculum, and the skin were approximated primarily and the wrist was immobilized in a volar forearm splint for 3 postoperative weeks, after which gradual exercise was commenced.

At the follow up examination five months postoperatively, his left hand grip power raised to 48 kg from 38 kg. He returned to normal activities including pushing up, and pitching a ball.

DISCUSSION

1) Anatomy of the TFC:

Interpretation of the structure, the triangular fibro-cartilage, is confusing simply because it is not a discrete structure.

In 1981, Palmar et al advocated a new concept of the triangular fibrocartilage complex (TFCC) to include the articular disc (the TFC proper), the dorsal and volar radioulnar ligaments, the meniscus homologue, the ulnar collateral ligament, and the extensor carpi ulnaris tendon sheath. This idea of structural complex, although debatable, is more acceptable than that to classify each individual structure.

2) Literature Review:

There are 42 reported cases of solitary rupture or tear of the TFC in the English literature, but none in the Japanese literature. Coleman²⁾ reported 9 cases of solitary TFC tear, all of which were traumatic. Weigl⁹⁾ reported 5 cases, which were also all traumatic origin. Mossing⁷⁾ had 12 cases, 8 of which were traumatic and 4 of which were degenerative. Menon⁵⁾ studied 16 patients of isolated TFC tear with a history of injury to the wrist. Although it seems a rare injury, it is well plausible that the TFC may tear itself when it is exposed to the undue tension on hyper-supination or pronation of the wrist.

3) Diagnosis:

Positive physical findings of the TFC tear are listed as tenderness over or slightly distal to the dorsum of distal radioulnar joint, spontaneous

pain with or without palpable click on rapid rotational movements of the wrist, and weakness of the wrist grip. Patients may remember evident trauma to the wrist. On arthrogram, communication between the radiocarpal joint and the distal radio-ulnar joint is present. However, degenerative perforation of the TFC is seen in more than 50% of the specimen dissected⁸⁾. So that this communication alone can not make the final diagnosis. As a general rule, the arthrogram is beneficial when the patient is young and the communication is demonstrable only in the affected wrist.

4) Treatment:

There is no consensus yet in regards to the treatment. The reported procedures include partial excision or debridement⁸⁾, en block excision of the TFC proper^{2,7)}, resection of capitulum ulnae⁹⁾, and shortening of the ulna¹⁾. Mossing⁷⁾ reported successful result of en block excision of the TFC proper in 8 patient with evident traumatic origin. Colemann²⁾ also reported 14 cases that were successfully treated with excision of the TFC proper. Weigl⁹⁾ performed Darrach procedure in 6 patients without failure. On the other hand, Palmar⁸⁾ questioned adequacy of total excision of the TFC because it is not possible to excise the entire TFCC without injuring the support of the ulnar carpus and a key stabilizer of the distal radioulnar joint. Development of degenerative arthritis of the radiocarpal and distal radioulnar joint after the TFC excision is reported by Menon⁵⁾. Although it remains question whether the development of the degenerative arthritis is secondary to the excision of the TFC or the natural course of unstable distal radioulnar joint, it is probably safer to preserve as much part of the TFC as possible unless the lesion is too extensive.

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