

# A Rare Case of Extensor Digitorum Communis Rupture Due to Pancarpal Arthritis

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## Abstract

We report the case of a 71-year-old man who presented to our clinic with extensor digitorum communis (EDC) tendon rupture associated with pancarpal arthritis. He presented with a history of prolonged chainsaw usage. Later that day upon waking up, he noticed an inability to extend his small and ring fingers. On examination, the EDC of the ring and small fingers showed zero power. Radiographs of the wrist joint showed pancarpal arthritis with a dorsally displaced lunate along with distal radio-ulnar joint (DRUJ) osteoarthritis (OA). During surgery, a sharp posterior lunate prominence was noticed to be the cause of the attrition and rupture of EDC. The DRUJ surface was relatively smooth. Proximal row carpectomy and transfer of extensor indicis proprius (EIP) to EDC reverse end-to-side were done. Postoperatively, the patient gained full extension. There are no other similar cases reported in the literature.

## Keywords

- tendon
- wrist arthritis
- lunate

## Introduction

Spontaneous extensor digitorum communis (EDC) tendon rupture is rare and is mostly secondary to distal radioulnar joint (DRUJ) osteoarthritis (OA) as in Vaughan–Jackson syndrome.<sup>1–3</sup> In such patients, ulnar-sided extensor tendons start to rupture and extend to the radial side if the underlying cause is not treated.<sup>3</sup> We report a unique case of EDC tendon rupture secondary to pancarpal arthritis with a dorsally displaced lunate.

## Case Presentation

We report a 71-year-old male patient, who presented to our clinic with a 2 weeks history of a sudden loss of extension of his left ring and small fingers. Prior to the development of this symptom, he reported prolonged use of a chainsaw. Later that day, he noticed an inability to extend his left ring and small fingers.

On examination, he had left small and ring finger drop with no active extension. Complete flexion was present. Triceps, brachioradialis, extensor carpi radialis longus and brevis, extensor carpi ulnaris were normal. There was no active extension of the ring and small finger. Sensory examination was normal.

Plain X-rays of the wrist showed pancarpal arthritis with a dorsally displaced lunate, DRUJ osteoarthritis, radial cyst, and a break on the volar radial surface (► **Fig. 1**). There was ulnar translation of the carpus. The patient was diagnosed with left pancarpal OA, DRUJ OA with EDC rupture. The possibility of Vaughan–Jackson syndrome was explained to the patient and surgery was planned.

Intraoperatively, after opening the extensor retinaculum over the fourth extensor compartment, we noticed ruptured EDC tendons. All EDC tendons were ruptured, while Extensor Indicis Proprius (EIP) was intact. A sharp prominence on the posterior pole of the lunate was noted to be the cause of the

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**Fig. 1** Preoperative radiograph showing scapholunate advanced collapse with a sharp prominence of posterior pole of lunate.

attrition damage. The dorsal surface of DRUJ was relatively smooth. A proximal row carpectomy was done to address the lunate along with a 4-mm radial styloidectomy to prevent trapezio-radial impingement (►**Fig. 2**). The capsule was repaired to create a smooth gliding surface for the tendons.

Upon examining the tendons, the proximal ends of the EDC and EDQ were found to be retracted. Because EIP was spared, we performed reverse end-to-side tendon transfer to EIP. The distal ends of EDC tendons were debrided and attached to the side of EIP tendon. The tendons were fixed with multiple 4–0 fiber-wire sutures in a figure-of-8 fashion. Adequate tensioning was performed and the retinaculum was closed.

The patient was placed in a volar splint with wrist and metacarpophalangeal joints in extension for 2 weeks and



**Fig. 2** Postoperative radiograph showing proximal row carpectomy status.

then an extension brace was applied. He started therapy at 2 weeks post-surgery, for active finger extension. His finger extension gradually improved with therapy and bracing during each follow-up. The patient is now at 1-year follow-up and he had a grade 5 finger extension (►**Fig. 3**).

## Discussion

Spontaneous EDC tendon rupture is a rare condition. The common causes reported in the literature are due to DRUJ pathology namely, osteoarthritis or rheumatoid arthritis as in Vaughan–Jackson syndrome.<sup>1</sup> EDC rupture in association with distal radius fractures and plating are reported as well.<sup>2</sup> In our literature review, we did not come across any reported cases of EDC rupture due to pancarpal OA although we came across two cases where lunate was the cause.

Mazhar et al reported a case of EDC rupture due to Kienbock's disease.<sup>3</sup> The lunate was fragmented and posteriorly displaced causing EDC rupture. Following the excision of the dorsal fragment, the indicis proprius tendon was transferred to the little finger, and the ring finger tendon was cable-grafted to the EDC tendon of the middle finger. Their patient ultimately regained full functionality of his hand and wrist.

Barbati et al reported a case of spontaneous rupture of EDC secondary to an unrecognized lunate fracture with partial dorsal dislocation.<sup>4</sup> They debrided the edges of the tendons and sutured using a locked modified Kessler suture. They highlighted that in the absence of a clear etiology for rupture of the extensor tendons, lunate fracture, though rare, is a possible cause.

In both these cases and in our case, the pathophysiology was similar. The EDC tendons get compressed against the posterior pole of the lunate and the extensor retinaculum, eventually leading to attrition damage and rupture.

It is important to address the underlying pathology causing the tendon attrition and rupture. In Vaughan–Jackson syndrome, arthritic DRUJ leads to tendon rupture. Many options are available to address the DRUJ such as Darrach's procedure, Sauve–Kapandji procedure, and Scheker prosthesis. However, in our case, the dorsal surface of DRUJ was relatively smooth and the sharp prominence at the posterior pole of the lunate was the cause of the attrition damage. Because the patient's complaint was mainly his inability to extend the finger and not DRUJ pain, no DRUJ procedures were felt necessary. Even after the surgery, the patient did not request any intervention for DRUJ arthritis.

Our case highlights that on rare occasions, the lunate may be the cause of EDC rupture. Addressing the dorsally displaced lunate required lunate excision and proximal row carpectomy. While the proximal row carpectomy will not address his wrist arthritis, clinically, he did not complain of pain and wanted to retain as much motion as possible. An appropriate treatment for pancarpal arthritis would be total wrist arthrodesis, but our patient did not desire one.

EDC rupture with pancarpal arthritis is rare. It is important to keep this cause in mind as a differential diagnosis of Vaughan–Jackson syndrome when the patient presents with EDC function loss.



**Fig. 3** Postoperative range of motion showing complete extension.

#### Conflict of Interest

None declared.

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