RUPTURE OF EXTENSOR TENDONS BY ATTRITION AT THE INFERIOR RADIO-UlnAR JOINT

Report of Two Cases
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Ruptures of tendons by attrition, such as those of extensor pollicis longus and the long head of biceps brachii, are well recognised. References abound in the literature. But a search through the quarterly Index Medicus over the past thirty-one years reveals no direct reference to rupture of the extensor tendons of the fingers by attrition at an arthritic inferior radio-ulnar joint. Nor was any account traced in standard text-books. References in articles under other headings may of course have been missed, but the condition would seem to be sufficiently unusual to justify the record of two cases.

Case 1. E. B., a labourer aged fifty-seven years, first attended the London Hospital on March 15, 1946, complaining that three months earlier, without any injury that he could recollect, he had abruptly and painlessly lost the power of extending his left little finger. One week later, in an exactly similar manner, he lost the power of extending the left ring finger, and noticed a lump towards the ulnar side of the dorsum of the left hand.

On examination there was inability to extend the metacarpo-phalangeal joints of the ring and little fingers, and a small nodular elastic swelling was present over the dorsum of the proximal end of the space between the fourth and fifth metacarpals. The diagnosis was made of spontaneous rupture of the extensors to the ring and little fingers.

At operation the tendons were exposed through a longitudinal dorsal incision. The tendons of extensor digiti minimi and extensor digitorum communis (IV and V) were found to be ruptured, and their distal ends, matted together in scar tissue, constituted the swelling which had been noted. The proximal ends were found lying just proximal to the inferior radio-ulnar joint.

The tendon sheaths were visible as attenuated, grey strands joining their cut ends. The tendon of extensor digitorum communis (III) had moved ulnawards into the position normally occupied by the severed tendons, and it was frayed half through from its ulnar margin, over a length of one centimetre, exactly level with the inferior radio-ulnar joint. On retracting this tendon laterally, the cause of rupture was at once apparent. In the groove for the tendons was a small rounded hole, four millimetres in diameter. When the forearm was pronated and supinated an arthritic roughening of the articular margin of the lower end of the ulna could be seen moving to and fro in this hole; one particularly prominent part of the roughening projected just through the hole into contact with the tendon. The mechanism of attrition was only too clear. (Fig. 1)

Three centimetres of the lower end of the ulna was excised. The palmaris longus tendon was exposed but it was found to be too tenuous for use as a free graft and, instead, a longitudinal sliver of the tendon of flexor carpi ulnaris was taken. It was sutured to the proximal end of extensor digitorum (IV) and to the fused distal ends of extensor digitorum (IV and V), using stainless steel wire sutures.

The hand and forearm were immobilised in a cock-up plaster with the metacarpo-phalangeal joints extended fully and the interphalangeal joints in the mid-position. The plaster was retained for one month, by which time moderate power of extension at the metacarpo-phalangeal joints had returned. The patient returned to light work as a night watchman two and a half months after operation.

When seen recently, one year after operation, he had complete power of extension of all fingers and no disability. The only abnormality noted was a slight tendency to "bowstringing" of the extensor tendons when the wrist was fully dorsiflexed. (Figs. 2-3.)

Case 2. J. R., aged sixty-six years, a general repair worker engaged in carpentering and bricklaying, attended on September 25, 1945, complaining that one month previously he had suddenly and painlessly lost the power of extending his right ring and little fingers. He remembered no recent injury to account for this, but recalled that nine months previously the back of his hand had been cut by glass in a bomb "incident." He indicated that the site of this injury was over the shafts of the fourth and fifth metacarpals on the dorsum. No scar was apparent. There was complete loss of extension at the fourth and fifth metacarpo-phalangeal joints but not at the interphalangeal joints (Fig. 5). The lower end of the right ulna was prominent, and radiographic examination revealed arthritic changes in the radio-ulnar joint (Fig. 4).

At operation, findings almost identical with those in Case 1 were revealed, the only differences being that the tendon of extensor digitorum (III) was intact and that the distal ends of extensor digitorum
(IV and V) were not matted together. These tendons had been severed at the level of the inferior radio-ulnar joint by arthritic roughening of the lower end of the ulna which had worn a hole through the capsule and into the floor of the tendon groove under the dorsal carpal ligament. After removal of the lower end of the ulna the severed tendon ends were mobilised and united by two free tendon grafts, using a

![Diagram](image)

**Fig. 1**
Case 1. Attrition rupture of extensor tendons due to arthritis of inferior radio-ulnar joint. Sketch of essential findings at operation.

![Hand Images](image)

**Fig. 2**
Case 1. Left hand after operation (Fig. 2) showing that a full range of extension movement was regained despite slight bowstringing of the tendons at the wrist in dorsiflexion. Fig. 3 shows the normal right hand for comparison.

**Fig. 3**

length of palmaris longus tendon and a longitudinal sliver of the tendon of brachio-radialis. Stainless steel wire sutures were employed. A cock-up plaster was retained for three and a half weeks, after which time active movements of the metacarpo-phalangeal joints were started. Five months after operation the patient had full use of his hand but showed a slight degree of extensor lag in the fourth and fifth fingers. This lag persisted when he was seen one year after operation but it caused no disability whatever. (Fig. 6).

The similarity of the pathological picture in these two cases indicates that this type of attrition rupture is a real, if unusual, entity. Indeed it is remarkable that it should be so rare as seems to be shown by the complete absence of reference to it in the literature.

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One other point of interest in both operations was the successful use, as a free graft, of a longitudinal strip cut from the margin of a tendon without impairing its continuity. Admittedly this procedure is not to be advocated widely because in general there is an abundant supply of tendons which can be sacrificed to serve as whole tendon grafts. But at least it is shown that such part-tendon grafts can succeed.

In conclusion I would like to express my gratitude to Sir Reginald Watson-Jones, under whose care these patients were admitted when I operated upon them, and for his encouragement to publish this account.