

A METHOD FOR REPAIR OF EXTENSOR TENDONS

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Division of the extensor tendons in the hand is often regarded as a minor injury and it is widely held that the results following repair are always good. This attitude sometimes results in a permanent Boutonniere deformity or a mallet finger, which may not only be a severe handicap, but is also cosmetically unattractive.

The results obtained depend mainly on the point of division and how carefully the repair is performed. Every repair should be done as soon as possible after injury to obtain the best result.

The most common site for division of the extensor tendon in fingers is in the region of the terminal interphalangeal joint. These injuries often penetrate into the joint, dividing the joint capsule at the same time. In crush injuries, as seen in motor car door injuries, the division of the extensor tendon is sometimes associated with a fracture through the metaphysis of the terminal phalanx.

Suturing of the extensor tendon in this region gives rather poor results. The patient often has a terminal phalanx afterwards, which is in a permanent position of flexion of about 15-20°, with loss of full extension to the same degree. The cause of this is that the divided tendon ends do not heal in absolute apposition after ordinary suturing.

It was noted during repair of extensor tendons in this region that by pushing the terminal phalanx in absolute full extension, a perfect apposition of the tendon ends is obtained, but that after careful suturing there is often a small gap between the two ends, thus causing the unsatisfactory postoperative results. If the terminal phalanx can be maintained in a position of full, or even slight hyperextension, a good apposition and healing of the two ends will be obtained. The usual method described to maintain this hyperextension, is a small plaster-of-paris cast. This plaster cast is difficult to apply and never gives proper immobilization for the expected 3 - 4 weeks.

Repair of Tendons using Kirschner Wire

It was therefore decided to fix the terminal phalanx in a position of full extension by using a very thin Kirschner wire. This Kirschner wire is driven from the tip of the finger through the proximal phalanx and distal interphalangeal joint, into the middle phalanx with the joint in slight hyperextension. This will bring the tendon ends in absolute apposition, and no suturing of the tendon itself is required. The skin is sutured with 4/0 black silk, and no plaster cast is applied. Only a small dressing is applied to the terminal phalanx, which allows the patient to move the other joints in his finger freely.

The procedure is performed under a local block and should only take a few minutes. The Kirschner wire is left protruding about 3 mm. from the finger pulp and is easily removed after 3 weeks, without anaesthetic.

Where the injury has been a closed one, as seen in cases of forcible flexion of the distal joint in the extended finger (mallet finger), the same method of fixation is used. These closed injuries usually result in an avulsion of the extensor tendon from the base of the distal phalanx with or without a piece of bone. The conventional method of immobilization with a plaster cast gives such poor results that some authors have advised that no treatment should be given. In these avulsion injuries it is usually necessary to leave the wire *in situ* for at least 4 weeks (Figs. 1 and 2).



Fig. 1. Mallet finger with position of fingertip before pinning and the position of the pin after insertion.

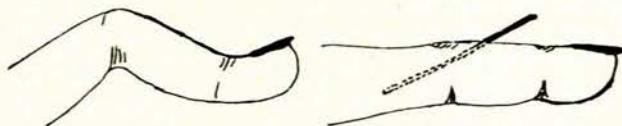


Fig. 2. Boutonniere deformity with position of pin after insertion.

A point to bear in mind when inserting the Kirschner wire is the fact that the bone of the terminal phalanx is just underneath the nail. The point of entrance should therefore be not more than 3 - 4 mm. from the free end of the nail.

This method of repair for extensor tendons has also been used in cases where the point of division was over the proximal interphalangeal joint. Careful repair of the extensor tendon is of great importance in this area because loss of the central extensor slip results in the well-known Boutonniere deformity. In these cases, the Kirschner wire is driven obliquely downwards from the dorsum of the second phalanx into the first phalanx, while the finger is held in slight hyperextension.

This method of repair gives very good results and movements of the finger joints are normal within a few days after removal of the wire. No permanent damage to the joint or bone is caused by the wire.