

# *Unusual Complication of Kirschner-Wire-Fixation of Carpo-Metacarpal Joint of the Thumb*

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## SUMMARY

A rare case of injury to the flexor tendons of index finger during Kirschner-wire-fixation of the carpo-metacarpal joint of the thumb, is described. The case is being reported for the greater awareness of such hazards. The need for the due care and exact technique during similar procedures in the hand is emphasised.

## INTRODUCTION

The use of Kirschner-wire-fixation in the management of various fractures and fracture-dislocations of the hand is quite frequent and well established (Moberg and Gedda, 1971; Wagner, 1971; Appley, 1973; Duthie and Ferguson Jr., 1973; Goldstein and Dickerson, 1974). Although these procedures are usually considered to be technically straightforward, accurate technique is necessary to avoid complications.

A case of serious injury to the flexor tendons of the index finger during the fixation of the carpo-metacarpal joint of the thumb, is reported. The purpose of this presentation is to draw attention to such possible hazards in order to avoid similar complications in the future.

## CASE REPORT

A forty-four year-old barman attended at the Orthopaedic Clinic, University Teaching Hospital, Lusaka, complaining of painful and restricted movements of the right thumb for four months following a blunt injury to the thumb. Clinical and radiological examination confirmed the subluxation of the carpo-metacarpal joint with a chip fracture of the base of the metacarpal involving the articular surface. Considering the duration of the injury and the occupation of the patient, arthrodesis of the trapezio-metacarpal joint was advised. The operation was performed by a well experienced orthopaedic registrar. Under a pneumatic tourniquet, the joint was exposed and after denuding the articular cartilage and positioning of cancellous bone graft, the joint was fixed in the functional position with the help of two crossed Kirschner wires (Fig. 1 and 2). The wound was closed and the thumb immobilised in a plaster of Paris cast, which was split. On the tenth day the plaster was

removed and the wound was found to be healed. After removal of the stitches, a complete plaster cast was applied and the patient was allowed to go home with the advice to report back to the outpatient clinic after six weeks. The patient returned to the clinic after eight weeks and complained that he had noticed progressive loss of active flexion of the index finger since his discharge from the hospital. Apparently he failed to report back earlier, because of the distance involved (about 100 kilometres). Patient was referred to the *author* for evaluation at this stage. According to the medical record, there was no post-operative limitations of the index finger.

On examination after removal of plaster, the thumb was found to be painfree but injury to both flexor tendons of the index finger was evident. Examination of post-operative radiographs aroused concern that one of the Kirschner-wires might have been placed anterior to the carpo-metacarpal joints of the index and middle fingers leading to fixation of the tendons.

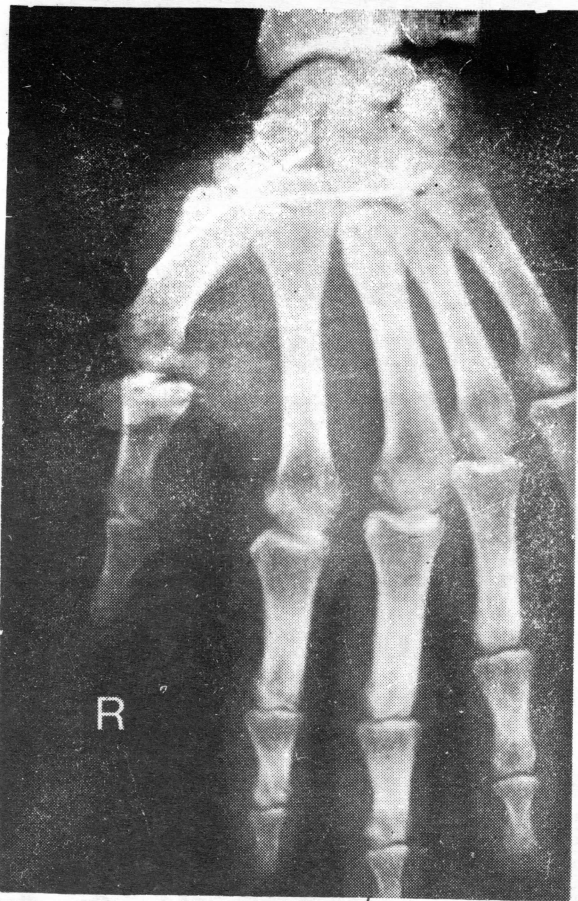
These observations were confirmed during the exploratory operation. The straight Kirschner wire was found lying anterior to the bony trough and in close contact with the deep surfaces of the flexor tendons. Both flexor tendons of the index finger were obviously degenerated (Figure 3). It might have been a matter of pure chance that only the index finger was involved. The wire was pulled out from the tendons quite easily. After thorough exploration, no other abnormal findings were present to indicate any other source of injury to the tendons. After reconstruction of the profundus tendon, the patient was rehabilitated back to his job a year after the original injury.

## COMMENT

In view of the operative findings and the history of progressive loss of active flexion of the index finger, it is quite clear that the Kirschner wire was too long and during insertion it had transfixed and injured the both flexor tendons of the involved finger. During the immediate post-operative period, the patient might have complained of disturbance of function of the index finger, but this was probably

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FIG. 1



ignored as being trivial. It is assumed that the active flexion and extension of the finger which was encouraged post-operatively (when the tendons were transfixed) might have caused further injury by progressive splitting of the fibres longitudinally. After the degeneration was fairly advanced, the wire might have cut itself out free from the tendons. Although the exact mechanism of the tendon injury may be a matter for speculation, the cause remains quite obvious.

In view of the narrow margin of error in surgery of hand, exact technique and due care to the soft structures, must be strongly emphasised. Finally, to wipe out any adverse reflection on the usefulness of the Kirschner-wire, I quote Shakespeare:

*"Virtue itself turns vice, being misapplied,  
And vice sometimes by action, dignified"*.

#### ACKNOWLEDGEMENT

The author gratefully acknowledges the invaluable help of Mr M.A. Ansary, Head of Medical Illustration Unit, School of Medicine, University of Zambia.

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FIG. II

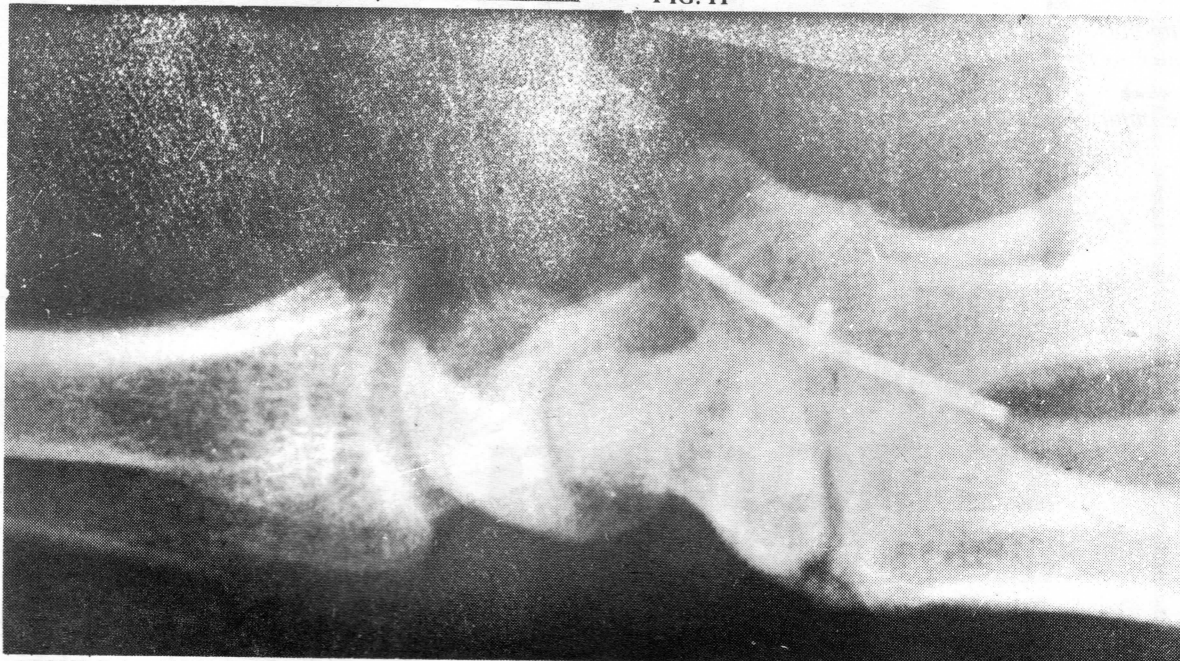
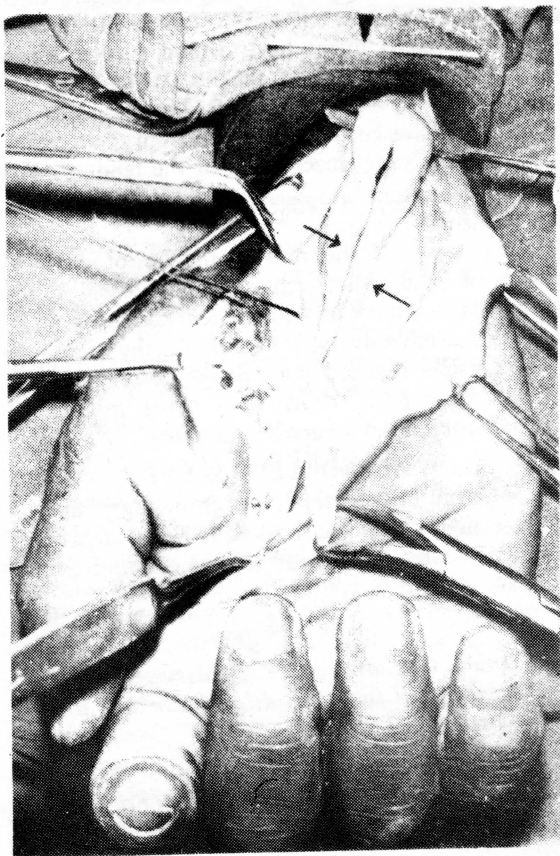


FIGURE 1 AND 2 Anteroposterior and lateral radiographs of the right hand. Note the length and the position of the Kirschner wires fixing the carpo-metacarpal joint of the thumb.

FIG. 3



*Intra-operative photograph showing the extent of injury to the both flexor tendons of the index finger ( → ). The removed Kirschner wire causing the injury is also shown ( ▶ ).*

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