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Simultaneous double dislocation of the interphalangeal joints of the fourth finger: A case report

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Abstract

Double dislocation of the proximal (PIP) and the distal interphalangeal (DIP) remains an extremely rare entity. The association with a metacarpal fracture of the same hand reflects the violence of the trauma. We report a case of simultaneous bipolar dorsal dislocation of the interphalangeal joints of the fourth finger associated with a fracture of the 3rd metacarpal bone, managed by a closed reduction and neighbour strapping associated with a plastered cuff, with a good outcome.

Keywords: dislocation, distal interphalangeal joint, proximal interphalangeal joint, floating joints

Introduction

Simultaneous dislocation of the interphalangeal joints of the same finger is rare. Described for the first time in 1874 by Bartels^[1]. Currently there are about sixty cases in the literature^[2-10]. Their treatment is essentially orthopedic by closed reduction and a simple immobilization followed by rehabilitation. We report a case of a simultaneous dorsal dislocation of the interphalangeal joints of the fourth finger with a fracture of the third Metacarpal bone.

Case report

A 45 years old male, right-hand dominant, manual worker consulted the emergencies after a fall from his height with a reception on his left hand, immediately resulting in pain and deformity. The clinical exam revealed a stepladder deformity of the 4th finger associated with a swelling of the dorsal side of the hand with soft palpation pain of the 3rd metacarpal. There were no neurovascular and skin lesions.

Radiographs showed a double dislocation of the proximal (PIP) and distal (DIP) interphalangeal joint of the fourth finger associated with a spiral fracture of the 3rd metacarpal bone (figure1).



Fig 1: Radiographs showing a double dislocation of the PIP and DIP of the fourth finger with a fracture of the third metacarpal bone

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The patient had an external reduction of the double dislocation by simple longitudinal traction in emergency. Both joints were checked after the reduction and no joint instability was found. The fourth finger was neighbor-finger strapped to the middle finger, and an orthopedic treatment was indicated for the metacarpal fracture with an intrinsic plus position plaster (metacarpal joints are flexed at approximately 60-90° and the interphalangeal joint are completely extended (figure 2).

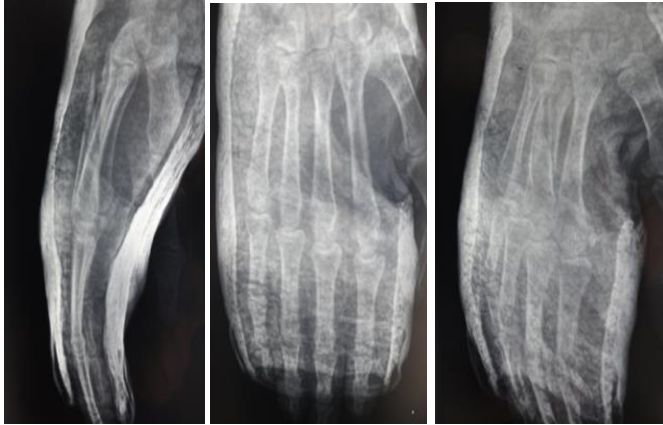


Fig 2: The radiological control after the immobilization

During the follow up an algo-neuro-dystrophy syndrome was detected and has been controlled by a medical and a physical treatment (figure 3).



Fig 3: Post-immobilization radiographs with an algo-dystrophy aspect

At three months, the functional result was excellent, the patient recovered and had an almost complete range of motion without residual laxity. He resumed his work and he was satisfied with the result (figure 4 and 5).

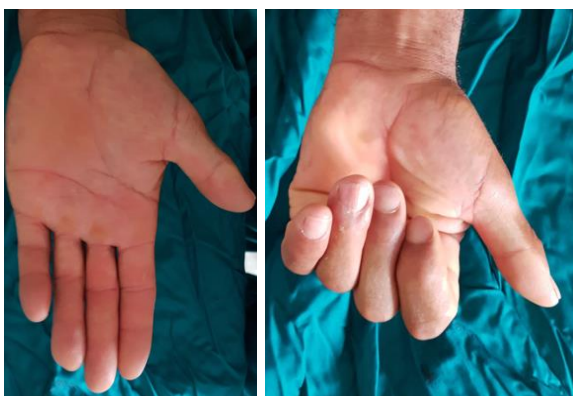


Fig 4: Functional result at 3 months



Fig 5: Radiological aspect at 3 months

Discussion

The interphalangeal joints are uncoated joints, their stability is ensured by the joint capsule and the ligamentous structures [11]. According to the literature, the most interested fingers by this injury are the little finger and the ring finger because they are considered as the less protected [12, 13]. The injury is most often caused by a violent sport trauma on young man but some cases have been reported following a simple fall [2, 4] as was the case of our patient.

The mechanism of onset corresponds to forced hyperextension, which would dislocate the DIP first then the PIP [4, 14]. According to Schernberg's studies of 20 cadaver fingers, in addition to the hyperextension a laterality movement has been observed [15]. On the Radiographs of our patient we noticed a lateral displacement of P3 and P2 which agrees with the observations of Schernberg.

In most cases, this lesions requires a closed reduction, done usually under anaesthesia, that must be performed gently, to not worsen a possible ligament lesion associated with immobilization of PIPs and DIPs [16]. Joint stability must be checked before immobilization.

In the case the stability tests demonstrate a capsulo-ligament lesion, some authors recommend the surgical repair of the lateral ligament and the palmar plate [16]. However in case no damage is present, an early active rehabilitation is recommended [17]. Despite the algo-neuro-dystrophy syndrome that our patient had, caused certainly by the violence of the trauma and the combined injuries, a simple reduction with immobilisation and rehabilitation allowed a good out come.

Conclusion

Simultaneous dislocations of PIP and DIP are rare. They often result from a violent trauma in hyperextension. Their treatment requires a closed reduction associated with immobilization. In our case a simple neighbour-finger strapping with the plaster immobilisation to treat the 3rd metacarpal bone allowing an early rehabilitation permitted to obtain a good result.

The authors declare no competing interests.

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