

Simultaneous Distal Interphalangeal (DIP) and Proximal Interphalangeal (PIP) Dislocation of the Little Finger, a rare case in trauma Surgery

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Abstract

Hand surgery is a distinguished sub-specialty of trauma and orthopedic management. Sprains and dislocations of the interphalangeal joint of the finger are relatively rare due to the protected position of this joint in the hand. However, unusual cases of a simultaneous Proximal and Distal Interphalangeal Joint Dislocation have been reported. We report this rare case of simultaneous dislocation of both interphalangeal joints of the little finger from Northern Iran. We observed that the mechanism, diagnosis and treatment of our case were similar to the published reports of the world literature. The patient had closed reduction of distal interphalangeal joint with excellent postoperative recovery. The importance of careful assessment of hand injuries with stress test of the joints under local anesthesia is reiterated. In conclusion, we recommend that this injury of rare occurrence be treated conservatively by manipulation, and if a good functional result is desired, adequate physiotherapy treatment is also required.

Keywords: Dislocation; Finger; Trauma; Surgery

Introduction

A Hand surgery is a distinct sub-specialty of trauma and orthopedic management. Sprains and dislocations of the interphalangeal joint (IPJ) of the finger are relatively rare due to the protected position of this joint in the hand.¹ The bony anatomy of the finger provides greater laxity in extension, with the shallow articular surface of the proximal phalanx resting on the spherical head of the distal phalanx.² Sudden forces that push the finger into ulnar deviation or hyperextension may lead to collateral ligament sprain, a torn volar plate, or frank dislocation of the IPJ.³ Sudden deviation or twisting of the finger may cause collateral ligament injury. Accidental dislocations of metacarpo-phalangeal and interphalangeal joints of the thumb have been frequently reported.^{4,5} The ulnar 3 digits are affected more commonly than the in-

dex finger.^{1-3,6} A third-degree sprain has complete ligament rupture and manifests itself as tenderness, swelling, and gross instability. Simultaneous dislocation of the PIP and DIP Joints in the same digit can occur in any finger but apparently these double dislocations are most common in the ring and small digits.⁶ The best review article, published between 1974 (when the combination was first reported by Bartels) and 1992, is that of Anderson and Johannsen⁶ with 52 cases.

In 1999, Japanese surgeons published a case series of 16 simultaneous fracture dislocations of the distal and proximal interphalangeal joints during 10 years.⁷ Virtually, all these papers have appeared as case reports suggesting the rarity; even the hand service of the Edinburgh Hospital found only eight cases in 10 years.⁸ We report this rare case of simultaneous dislocation of both interphalangeal joints of the little finger from Northern Iran.

Case Report

A 36-year-old right-handed lady slipped on her stiletto heel shoes and injured her right hand. She

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referred to trauma ward of the hospital and was attended by triage medical staff who suspected an initial diagnosis of a closed dislocation of IPJ or fracture of digits. She was given a finger spica plaster after closed reduction of the dislocation (Figure 1). She was visited next day in hand fracture clinic it was found that she had swelling and tenderness around her right little finger. On specialist examination by the orthopedic surgeon and stress radiography of the right hand, simultaneous dislocation of the PIP and DIP Joints were confirmed. This patient was treated with close reduction under local anesthesia and she was recommended three weeks immobilization. The pressure was applied over the dorsal proximal phalanx, gently pushing in a palmar and distal direction, while simultaneously placing the MPJ into flexion. Flexing the wrist initially may aid reduction by relaxing the flexor tendons. The result was good motion in the MP and PIP but limited motion in the DIP joint.



Figure 1: Radiographic image of the right finger.

Discussion

The border digits (index and small) are more susceptible to injury, particularly in extension since either finger is less protected by neighboring digits or the collateral ligaments are lax. The same is true in the present case, as the patient fell and dropped her body weight on her hyper-extended little finger. Simultaneous distal interphalangeal (DIP) and proximal interphalangeal (PIP) dislocation in the same digit can occur in any finger but apparently these double dislocations are most common in the ring and small digits. The first case report published by Bartels in 1874 and review articles by Anderson and Johannes⁶ and

Edinburgh surgeons⁸ confirm the rarity of such a case. If the swelling is mild, the finger may have a "step ladder" appearance, but Vashista and Krishnan noted that swelling may obscure the clinical diagnosis,⁹ just as what happened to our patient. Radiographic examination is mandatory, especially a True Lateral view of the individual digit. We confirmed the diagnosis by radiography. In most of the previously reported cases, closed reduction was easily accomplished, usually under digital block^{3,6} or without anesthesia. We used local anesthesia during close reduction. The importance of the use of local anesthetic specifically to look for an associated ulnar collateral ligament laxity is stressed. Careful clinical assessment of hand injuries and use of local anesthesia as an adjunct to diagnosis is reiterated. Local anesthetic blocks are easy to perform and help to make accurate diagnosis especially for uncommon injuries, leading to appropriate management. Postreduction immobilization has ranged from brief to 3 weeks, although mild limitation of motion has been reported after 3 weeks of splinting. Delay in diagnosis or treatment may necessitate open reduction and compromise the result. A good result was reported by most authors^{1,3,8,10} except Krebs and Gron¹¹ whose patient ultimately required arthrodesis of the PIP joint for severe pain. On the other hand, Czech authors have reported a rare case of the simultaneous double interphalangeal dislocation in the little finger of the left hand. A 35-year-old man playing football as a goalkeeper was injured when another player trod on his little finger. The dislocation was reduced by traction without anesthesia and the finger was immobilized on a splint, for only a week. At one year, his little finger showed no deformity and regained a full range of painless, active motion.¹² There has apparently been only one case report of triple dislocation (simultaneous MP, PIP and DIP in the same digit).¹³ Though soreness and swelling may persist for many months after the capsule and ligaments have healed, our patient was without pain and she had good motion in the metacarpo-phalangeal and proximal interphalangeal joints. Inadequate immobilization or early return to high stress activities may result in ligamentous laxity or recurrent instability. Japanese authors have reported simultaneous dorsal dislocations with minimal limitations and active range of motion without any functional disability.¹⁴ Excessive immobilization or severe soft tissue damage may lead to some joint stiffness, which is common after many of such injuries. Posttraumatic arthritis may occur after multiple

closed reductions or unrecognized chronic dislocations.¹⁵ Our case was without arthritis and joint stiffness. This may be because of the involvement of a single finger in our case. Watson also reports a similar case of IPJ dislocation in one finger.¹⁶

In conclusion, we recommend that this injury of rare occurrence be treated conservatively by manipulation, close reduction and short-term immobilization by finger splint. If a good functional result is desired, adequate physiotherapy treatment is also required.

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