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Delayed diagnosis of isolated ulnopalmar dislocation of the fifth carpometacarpal joint and its treatment with open reduction and internal fixation

Beşinci karpometakarpal eklemde tanısı geç konan izole ulnopalmar çıkığın açık redüksiyon ve internal fiksasyonla tedavisi

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Bu yazıda, elinin üzerine düşme sonucu beşinci karpometakarpal eklemin izole ulnopalmar çıkığı oluşan 21 yaşında bir erkek hasta sunuldu. Tanısı beş hafta geciken olguda kapalı redüksiyon yapılamadı ve açık redüksiyon ve internal fiksasyon yapıldı. Tespit materyallerinin altı hafta sonra çıkarılması üzerine gözlenen refleks sempatik distrofi ve hareket kısıtlılığının, rehabilitasyon ve medikal tedaviyle 15. haftada tamamen düzeldiği görüldü. Elde edilen fonksiyonel ve radyografik sonuçlar tatmin edici bulundu.

Anahtar sözcükler: Çıkık/cerrahi/radyografi; metakarpofalangeal eklem/yaralanma/radyografi.

We present a 21-year-old male patient with an isolated ulnopalmar dislocation of the fifth carpometacarpal joint that occurred due to a fall on the hand. Diagnosis was delayed for five weeks and closed reduction was not successful. He was treated with open reduction and internal fixation. Upon removal of fixation materials six weeks after surgery, he developed reflex symphatic dystrophy and limitation in joint movements, which disappeared following rehabilitation and medical treatment at the end of 15 weeks. Functional and radiographic results were satisfactory.

Key words: Dislocations/surgery/radiography; metacarpophalangeal joint/injuries/radiography.

Isolated palmar dislocation of the fifth carpometacarpal joint is a rare injury and classified as radio-palmar or ulno-palmar according to the direction of displacement of the fifth metacarpal base [1,2,3]. Especially ulno-palmar type can be easily overlooked because clinical diagnosis is difficult and findings on routine anteroposterior and lateral radiographs may be subtle. [3,4]

In this paper we reported the results of a case with isolated ulno-palmar dislocation whose diagnosis was made five weeks after the trauma and treated with open reduction and Kirschner wire fixation.

Case report

A 21-year-old man with the dominant side of his right, had fallen on his left hand. With the complaints of pain, swelling and restriction of movements on his left hand, he had been examined in a local hospital. After physical and roentgenographic evaluations, the injury had been diagnosed as a sprain and oral-topical analgesic-antiinflammatory medications had been applied. Although severe pain and swelling had subsided, the patient was sent to our clinic because of pain and restriction of movements during daily activities, 5 weeks after the injury. Examination revealed tenderness on the ulnar side of wrist, restriction of the movements of fifth digit and wrist due to pain, and minimal shortening and rotational deformity of the small finger. For radiologic evaluation antero-posterior, lateral and to see the hamatometacarpal joint clearly supination oblique X-rays were obtained. Although

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Figure 1. Radiographs showing **a)** subtle incongurity of the fifth carpometacarpal joint on anteroposterior view, **b)** palmar dislocation of the fifth metacarpal base on lateral view, and **c)** ulnar dislocation of the fifth metacarpal base on supination oblique view.

there was no obvious sign of osseous pathology on X-rays, on the supination oblique view, ulnar dislocation of the fifth metacarpal basis at the hamatometacarpal joint was obiously seen. Palmar componenet of the dislocation was noticed on the second evaluation of the lateral view. The injury was diagnosed as isolated ulno-palmar dislocation of the fifth CMC joint (Fig. 1). Dynamometer grip strength was 0.15 bar. In the operating room manipulation for closed reduction under axillar

Figure 2. Radiographs showing correction of deformities and congruency of the fifth carpometacarpal joint **a)** on anteroposterior, **b)** on lateral and **c**) on supination oblique views, after open reduction and Kirschner wire fixation.

anesthesia was unsuccessful, and open reduction was indicated. Open reduction was performed by dorsoulnar incision at the fifth metacarpal basis and reduction was maintained with two Kirschner wires (Fig. 2).

After 6 weeks of fixation, Kirschner wires were removed and immobilization was ended. Comparative anteroposterior / lateral / supination oblique views revealed maintenance of the reduction. However, finger and wrist motions were severely restricted with the signs of reflex sympathetic dystrophy (RSD). The patient was followed by physiotherapy, and medicated by peroral calcium-vitamin D and nasal calcitonin. At the postoperative 15th week, the signs of RSD completely resolved, there were full ranges of motion in every joint (Fig 3), the maintanance of reduction was observed on X-rays (Fig 4), the grip strength improved to 0.45 bar and the patient was comletely pain-free in his daily activities.

Discussion

The fifth CMC joint contributes to the powerful grip of large objects but its shallow structure provides minimal intrinsic stability to the joint. The joint is supported by pisometacarpal, dorsal-palmar carpometacarpal, and 4-5 intermetacarpal ligaments. Among these, intermetacarpal ligament is the major stabilizator of the joint. In cases of injury of this ligament palmar subluxation or dislocation, either ulnar or radial, can occur. The insertio of the extansor carpi ulnaris muscle on the dorso-ulnar side of the second metacarpal basis also contributes to the stability.[1,2,3]

Isolated palmar dislocation of the fifth CMC joint is an uncommon injury and usually is the result of direct trauma.[1,2,3] Degree of distruption of the tendinoligamentous structures of the CMC joint designates the direction of palmar dislocation, that is radial or ulnar. In the palmar-radial dislocation all ligamentous structures are distrupted and the base of the fifth metacarpal displaces in a considerable amount. However, pisometacarpal ligament remains intact in the palmar-ulnar type, thus preventing marked displacement of the base of the fifth metacarpal and making the diagnosis of dislocation on routine anteroposterior and lateral radiographs difficult, especially when there is no associated fracture.[1,3]

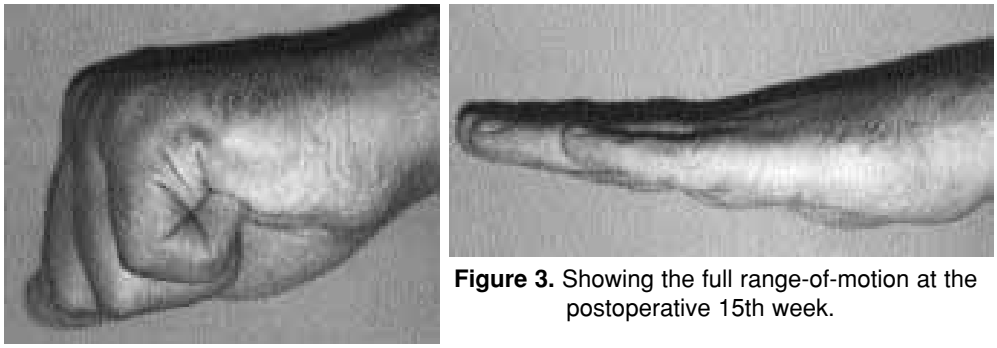

Figure 3. Showing the full range-of-motion at the postoperative 15th week.

Figure 4. Radiographs taken at the last follow-up visit (at the postoperative 15th week) showing maintenance of reduction **a)** on anteroposterior, **b)** on lateral and **c)** on supination oblique views.

Early clinical examination of the isolated palmar-ulnar dislocation reveals moderate to severe swelling and tenderness at the ulnar side of the wrist, mild rotation and shortening of the fifth digit, and the restricted active movements of the little finger due to pain. Since severe swelling might conceal the deformity, thus making clinical diagnosis difficult, radiologic evaluation might be more important in the diagnosis. [1,3] Findings on anteroposterior and lateral radiographs are usually subtle, thus the dislocation can be easily overlooked. For adequate visualization of the hamatometacarpal joint, supination oblique views are recommended. [1,4,5]

In the present paper an isolated ulno-palmar dislocation of the fifth CMC joint which had been overlooked and misdiagnosed as a sprain was identified with supination oblique view five weeks after the trauma.

Stress X-rays and computed tomography are of value for those undecided cases. [3]

In case of early diagnosis of ulno-palmar dislocation, closed reduction can be easily obtained but maintenance of the reduction with closed methods is difficult because of the distruption of the intermetacarpal ligament, thus percutaneous Kirschner wire fixation is recommended for six weeks. In cases where diagnosis is delayed for a few weeks, open reduction and Kirschner wire fixation is the choice of treatment. In neglected old cases arthrodesis or interposition arthroplasty can be applied for functional impairment and pain.[1] In the literature the results of case reports, related to early diagnosis and treatment of isolated ulno-palmar dislocation of the fifth CMC joint, have been reported as satisfactory. [1,2,3] However, we could not obtained any case report giving the results of delayed diagnosis and treatment of an isolated ulno-palmar dislocation of the fifth CMC joint, in the literature.

In our case closed reduction under anesthesia of the isolated ulnopalmar dislocation of the fifth carpometacarpal joint was unsuccessful due to the delay in diagnosis for five weeks. Open reduction and fixation wiyh Kirschner wires was performed for the treatment. Reflex sympathetic dystrophy that was observed by the removal of fixation materials at the end of the sixth week was resolved by physiotherahy and medical treatment by the fifteenth week. Although the functional and radiological results were satisfactory, longer follow-up will give more beneficial outcomes for the evaluation of the arthritic changes.

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