

ISOLATED CARPAL DISLOCATION OF THE TRAPEZIUM

Bekir Eray Kilinc, Adnan Kara, Mehmet Mesut Sonmez, Yunus Oc, Savas Camur
Igdir State Hospital, Igdir, Turkey

IZOLOVANA KARPALNA DISLOKACIJA TRAPEZOIDNE KOSTI

Bekir Eray Kilinc, Adnan Kara, Mehmet Mesut Sonmez, Yunus Oc, Savas Camur
Državna bolnica u Igdiru, Igdir, Turska

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ABSTRACT

Trapezium fractures and dislocations of the trapezium are both extremely rare injuries whether they occurred with or without fractures of the surrounding bones. Specific radiological images can be difficult to help for the diagnosis. CT scan may be necessary for the diagnosis and adequate treatment. We are presenting an unusual case of volar and radial isolated trapezium dislocation concomitant second metacarpal basis fracture in which is treated by using open reduction and Kirschner wire fixation. In our case, isolated dislocation of trapezium was a result of violent and direct trauma. Different techniques have been proposed to achieve a stable fixation and the treatment outcomes. In our case, open reduction, Kirschner wire fixation and intercarpal ligament repair through dorsal approach are recommended for satisfactory outcomes in similar cases.

SAŽETAK

Frakture i dislokacije trapezoidne kosti su izuzetno retke povrede bilo da se javljaju udruženo sa prelomima okolnih kostiju ili izolovano. Radiološki snimci su uglavnom nedovoljni za postavljanje dijagnoze, tako da je često neophodno uraditi CT skeniranje za postavljanje dijagnoze i adekvatnu terapiju. U ovom radu je predstavljen neobičan slučaj volarne i radijalne izolovane dislokacije trapezoidne kosti sa pridruženim prelomom baze druge metakarpalne kosti, koji je lečen otvorenim nameštanjem i fiksacijom Kiršnerovim žicama. U slučaju koji smo predstavili, izolovana dislokacija trapezoidne kosti je nastala kao posledica nasilne i direktne traume. Predlažu se različite tehnike za postizanje stabilne fiksacije preloma i adekvatnog ishoda lečenja. U ovom slučaju, kao i u sličnim slučajevima, otvoreno nameštanje, fiksacija Kiršnerovim žicama i reparacija interkarpalnog ligamenta dorzalnim pristupom je preporučljiva za pozitivan ishod lečenja.



INTRODUCTION

Trapezium fractures and dislocations of the trapezium are both extremely rare injuries, whether they occur with or without fractures of the surrounding bones (1, 2). However, they are very important traumas to detect and treat early, given the importance of the trapezium in the carpometacarpal joint in actions such as grip and pinch. Occasionally, there may also be associated ligament damage (anterior oblique ligament, dorsoradial ligament, intermetacarpal ligament, posterior oblique ligament) (3). Specific radiological images help only slightly to obtain a diagnosis. A CT scan may be necessary for diagnosis and adequate treatment (4, 5). We present an unusual case of volar and radial isolated trapezium dislocation concomitant with a fracture of the second metacarpal basis. The case was treated with open reduction and Kirschner wire fixation.

CASE PRESENTATION

A 21-year-old right-handed man, a pastry worker, was seen in our emergency unit for pain, diffuse oedema and functional impairment of the wrist and thumb. An isolated volar and radial dislocation of the trapezium and a fracture of the second metacarpal basis were diagnosed on radiographic images and confirmed by a CT scan (Figure 1a, 1b, 2a, 2b).

A closed reduction of the trapezium was attempted in the emergency clinic. Post-reduction radiographs revealed that the trapezium remained dislocated. The wrist was immobilized in a splint with the thumb in an overlying thumb position, and the patient was admitted to the clinic for surgery.

Under general anaesthesia, a dorsal longitudinal incision was made. A volar and radial dislocation of the tra-



Figure 1a: After trauma anteroposterior X-ray



Figure 1b: After trauma lateral X-ray

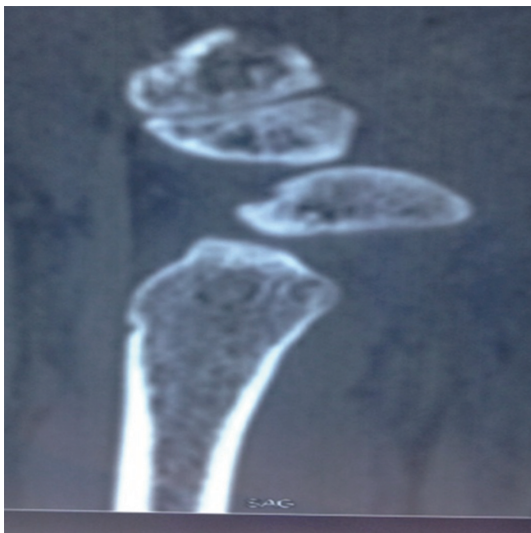


Figure 2a: After trauma CT



Figure 2b: After trauma CT



Figure 3a. Post-operative anteroposterior X-ray



Figure 3b. Post-operative lateral X-ray



Figure 4a : Antero-posterior view at 36 months



Figure 4b: Lateral view at 36 months

pezium were observed. The intercarpal ligaments between the trapezium and surrounding bones were ruptured. Open reduction was performed through the incision, and the bone was fixed with two Kirschner wires. The operation was completed after the capsule and ligament were repaired (Figure 3a, 3b). The wrist was immobilized in a splint including the proximal phalanx of the thumb. After four weeks, before the free mobilization began, the Kirschner wires were removed. The patient returned to work after 45 days and was satisfied with the result.

At 36 months follow-up, the patient had a painless range of motion. The active and passive motions of his wrist were the same compared with the uninjured side, with normal appositional and oppositional pinch strength. There was no avascular necrosis and no radiological signs of arthrosis (Figure 4a, 4b, 5a, 5b).

DISCUSSION

Dislocation of carpal bones is uncommon and generally occurs as a result of a high-energy injury. The mechanism of injury usually involves either direct dorsoradial impaction or indirect axial loading. Indirect trauma that is transmitted by the thumb may produce an incomplete dislocation of the trapezium. Isolated dislocations and fractures of the carpal bones are rare and are usually associated with other hand or wrist injuries (Bennett's fracture, Rolando's fracture, fracture of the scaphoid, hook of hamate, distal radius and carpometacarpal dislocation) (6, 7). The clinical presentation can be quite variable depending on the displacement of the fracture and the involvement of the carpometacarpal joint. Some patients only complain of minor pain at the base of the thumb without any gross swelling or deformity. Es-

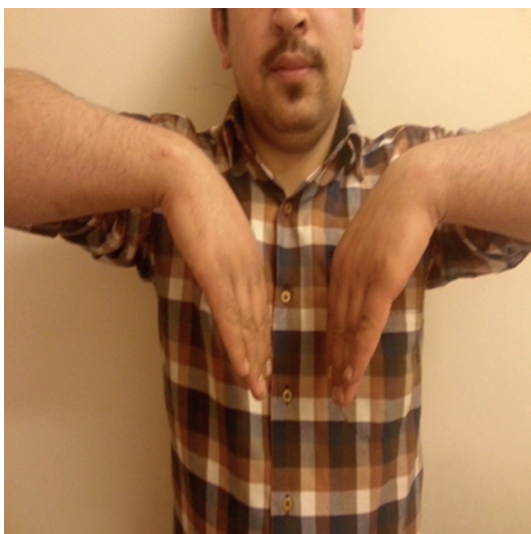


Figure 5a: Flexion at 36 months



Figure 5b: Extension at 36 ay



pecially in cases with associated dislocation, rupture of the surrounding ligaments and the dorsal joint capsule may result in instability. Once appropriately stabilized, these cases may require repair. Reconstruction of the inter-metacarpal and capsular structures, such as the inter-metacarpal abductor pollicis longus augmentation described by Brunelli et al. may be required, especially in isolated dislocations (3).

Trapezium injuries are likely to be missed on routine radiographs. A CT should be performed if the patient with localized pain has tenderness in the region even if the results of routine radiographs appear to be normal (4, 5). Occult injuries could be identified by using a special view such as a true anteroposterior radiograph (Robert's view) that is excellent for identifying the trapezium and the base of the metacarpal.

Anatomical reduction is recommended because of the importance of the trapeziometacarpal joint of the thumb function. Surgical treatments have been proposed in the literature. Peterson recommended excision of the trapezium following complete dislocation because of the likelihood of avascular necrosis (8). Brunelli reported reconstruction of the intermetacarpal and capsular structures in isolated dislocations (9).

In our case, isolated dislocation of trapezium was a result of violent and direct trauma. Different techniques have been proposed to achieve a stable fixation and the treatment outcomes. In our case, open reduction, Kirschner wire fixation and intercarpal ligament repair through a dorsal approach are recommended for satisfactory outcomes in similar cases.

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