Acute Isolated Pisiform Dislocation
- A Case Report -

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Isolated dislocation of pisiform is rarely reported in the literature. Isolated dislocation of pisiform without other injuries involving carpal bones are especially uncommon. This type of injury could be neglected in acute period. We report a case of an isolated dislocation of the pisiform without carpal bone injuries.

Key Words: Pisiform, Dislocation

CASE REPORT

A 20-year-old man suffered an injury to his left hand after falling down stairs. The radiographs revealed an isolated dislocation of the pisiform and associated injuries including an ipsilateral distal clavicle fracture and a contralateral intraarticular fracture of the metacarpal base of the thumb. Although the precise mechanism of injury was
unclear, he recalled suffering a direct blow to the volar aspect of the wrist.

A physical examination revealed tenderness over the hypothenar eminence. The wrist motion was restricted by pain and swelling. He did not have any history of ligament laxity. The neurovascular examination of ulnar artery and nerve was normal. The radiographs of the left wrist showed an isolated dislocation of the pisiform towards the ulnar with a separation of the pisotriquetral joint in the palmar–dorsal supine position as well as a shift toward the dorsal in the lateral view. 3D CT (computed tomography) showed no other injuries to the bone and wrist but a displaced pisiform.

An arthroscopic examination of the wrist joint was performed under general anesthesia but did not show any other intraarticular lesions. A closed reduction of the pisiform was attempted under a C–arm image intensifier. Direct pressure was applied to relocate the bone with a slightly dorsiflexed position. However, stable reduction was not maintained. Therefore, the pisiform was reduced...
into its position and fixed to the triquetrum using one Kirschner wire percutaneously. The wrist was immobilized with a long arm plaster splint in 25° of dorsiflexion for 3 weeks. The splint and kirschner wire were removed 3 weeks later, at which time physiotherapy and active exercise were initiated. Eight weeks after surgery, the radiographs revealed the pisiform to have relocated to the correct position. At the 24 months follow-up, the patient was clinically well without any pain or limitation of motion, and full recovery of his grip strength.

**DISCUSSION**

The pisiform bone lies in the proximal row of the carpal bones and articulates dorsally with the triquetrum. Because the pisiform has a flat articular surface, it relies mainly on its many soft tissue attachments for stability, such as FCU (Flexor carpi ulnaris) tendon, ulnar pisotriquetral ligament, pisometacarpal and pisohamate ligament being primary stabilizers of pisotriquetral joint. The pisotriquetral joint is tightly constrained by both the transverse carpal ligament and ulnar collateral ligament. Because of the insertion of all these structures, the pisiform is an important stabilizing structure of the wrist and also acts as a lever to provide extra stability when the wrist is flexed. Immelman suggested two possible mechanisms that may cause a dislocation of the pisiform: direct external force or traction by the FCU tendon. It appears that the latter mechanism occurs more often e.g. a fall on the hand with the wrist in the dorsiflexed position at the moment of impact or increase tension on the ligaments attached to the pisiform while lifting heavy objects. The normal force of this tendon tends to pull the pisiform proximally and medially, and diagnostic radiography confirms that the bone to be dislocated in this direction. In our case, the dislocation appeared to be secondary to acute dorsiflexion of the wrist joint with strong traction by the FCU tendon. The pisotriquetral joint appeared to be wide on the radiographs and CT.

Treatment includes immobilization after a closed reduction, an open reduction with internal fixation and a resection of the pisiform. Nonsurgical treatment has been initially attempted in acute cases. Sharara et al. recommended a closed reduction and immobilization. Kubiak suggested that simple immobilization is justified in cases with isolated dislocation. There were some differences regarding the position of the wrist in immobilization. Ishizuki et al. noted that a dislocation and reduction of the pisiform is dependent on the wrist position. Minami et al. reported a redislocation 3 months after immobilization in 20° palmar flexion of the wrist and the neutral position of forearm. Sharara et al. suggested the forearm to be in a full pronation position to maintain the FCU in the relaxed state. This allows the pisiform to stabilize in a normal orientation and prevent redislocation. It is believed that in this case, stable relocation was obtained in the slight extension position of the wrist in addition to percutaneous fixation to the triquetrum.

An open reduction and internal fixation of the pisiform might be employed in combined carpal injuries. Most authors favor an excision of the dislocated pisiform bone either initially or secondarily in cases of persistent pain or recurrent dislocation because of rapid rehabilitation and recovery to normal function. Ishizuki et al. performed a resection of the pisiform 5 months after the initial conservative treatment. Minami et al. inevitably resected the pisiform in the case of a redislocation followed by an open reduction and internal fixation. Some authors suggested a primary excision of the pisiform in acute dislocation. Therefore, a surgical resection is recommended if recurrent dislocations occur or the
disability remains after conservative treatment. An isolated dislocation of the pisiform can be neglected in cases associated with multiple injuries in the upper extremities. A high index of suspicion is required to identify this type of injury in traumatic patients. It is believed that our technique is an effective and reliable method for treating a dislocated pisiform.

REFERENCES

= 국문초록 =
단독 두상골 탈구는 매우 드문 병변으로서 문헌보고를 찾기 쉽지 않다. 대부분의 경우 동측 수근골 및 관절 또는 전완부와 완관절에 심한 손상을 동반하며 저층 손상의 발생시에 간과되기 쉽다. 따라서 진단과 치료에 관심과 주의를 기울여야 할 것으로 생각된다. 상지 다발성 손상과 동반된 두상골 탈구에서 도수 정복과 경피적 고정술을 시행한 1예를 보고하고자 한다.
핵심 단어: 두상골, 탈구