Fracture of the Triquetrum: One Case Report

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A 29-year-old male motorcyclist presented with severe right wrist pain after a collision with a panel truck. Physical examination revealed gross swelling, tenderness, ecchymosis and painful motion of his right wrist. Triquetral fracture was diagnosed. Closed reduction and internal fixation were performed. We arranged progressive rehabilitation programs for functional recovery of the wrister. The recovery was favorable in one year of follow-up.

Key words: Triquetral fracture, progressive rehabilitation

Introduction

Triquetral fracture is a rare orthopedic condition, accounting for 3 to 4% of all carpal bone injuries and approximately 0.2% of all fractures (1,2). It is usually the result of chisel action of ulnar styloid process, direct impact or by avulsion of the carpal ligaments (3-6). Unintentional omission is easily and we report an unusual case with fracture of the triquetral body.

Case Report

A 29-year-old male motorcyclist presented with severe right wrist pain after a collision with a panel truck and was taken by ambulance to our hospital for emergency service. The patient was not sure whether any histories of trauma occur in the wrist prior to this accident. He sustained a direct blow to the dorsal ulnar aspect of his right wrist. Physical examination revealed gross swelling, tenderness, ecchymosis and painful motion over the ulnar side of his wrist. No discernible neurovascular deficits were noted. Displaced triquetral fracture and asymptomatic diastasis of distal radioulnar joint were found from the posteroanterior radiograph of the right wrist (Fig. 1). On next day after admission, closed reduction and internal fixation with percutaneous Kirschner wires were performed under general anesthesia. A short arm splint was immobilized for 2 weeks and then he started progressive passive and active wrist movements (Fig. 2). The wires were removed at 6 weeks after surgery and the patient regained full range of motion simultaneously. The patient maintained good strength of grasp and satisfied functional recovery in one year of follow-up without any complaints (Fig. 3).

Discussion

Triquetral fracture is an uncommon injury and has been addressed only in limited series (1,2,6,7). The fractures have been classified into chip fractures and body fractures according to the injury location and severity (3-6). Chip fractures are almost five times
Fig. 1  Posteroanterior view of the patient’s right wrist after trauma. Displaced triquetral fracture and separation of distal radioulnar joint are evident (arrow).

Fig. 2  Posteroanterior view of the patient’s right wrist after operation for 2 weeks. Two wires are present on the body of the triquetrum. Less separation of distal radioulnar joint is noted.

Fig. 3  Anteroposterior view of the patient’s right hand after trauma for 3 months. Solid union of the triquetrum and still mild separation of distal radioulnar joint are noted.

These fractures are often caused by a fall on an outstretched hyperextension of the wrist with ulnar deviation and results in impingement of the ulnar styloid process against the dorsal surface of the triquetrum and subsequent chisel dorsal chip fracture fragments\(^{(2-5,8)}\). The other possible mechanism is a direct blow to the dorsum of the hand and wrist, which causes excessive force and create a fracture line through the body of the triquetrum\(^{(3,5)}\). Although avulsion of volar or dorsal radiotriquetral ligaments at their attachments have been argued but are less common manners\(^{(3,4,8)}\). Triquetral fracture can be a high-energy injury and frequently is associated with assaults on other carpal bones. But it can also take place during relative low-energy injuries\(^{(4)}\). No facts of neurovascular injury or avascular necrosis have been reported.

Misdiagnosis can and does occur occasionally because the fracture is sometimes unapparent on
judgments and promote better prognosis. Surgery is one
and radiographic examinations could reduce the mis
fracture and accompanied injuries. Careful assess
splinting after fixation is sufficient in our case
adequate in this patient. Recommendations for
has been mentioned casually, and we encourage
rehabilitation program after the reduction only
of the range of motion of the wrist. A progressive
advocate and report successful treatment with
surgical means, although most reports
recommended the former. Some authors
advocate and report successful treatment with
internal fixation in nonunion of the triquetrum. We
consider that the surgical intervention for
marked displaced triquetral fractures enhances good
pain relief and protects early mobilization. In
our case, percutaneous pinning was safe and easy
to carry out. A short period of splint protection and
supervised exercises may prevent the limitation
of the range of motion of the wrist. A progressive
rehabilitation program after the reduction only
has been mentioned casually, and we encourage
aggressive physiotherapy since the third week is
adequate in this patient. Recommendations for
the period of plaster immobilization have ranged
from three to ten weeks. We find two weeks
splinting after fixation is sufficient in our case
and no evidence suggesting benefit from longer
immobilization.

In conclusion, emergency physicians should
always be aware of the possibility of the triquetral
fracture and accompanied injuries. Careful assess-
ment of the mechanism of injury plus explicit physical
and radiographic examinations could reduce the mis-
judgments and promote better prognosis. Surgery is one
of the choices of treatment for triquetral fractures which
also provides applicably good functional outcomes.

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Treatment of non-union of a triquetral body
三角骨骨折：病例報告

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一位二十九歲機車騎士在與汽車碰撞後產生了右腕劇痛。理學檢查發現他的右腕明顯腫脹，壓痛、腫脹以及活動疼痛。隨後他被診斷出右腕三角骨骨折，而接受了固定性復位合併內固定術的治療。術後配合著漸進式的復健方式，我們幫助這位患者達到良好的功能性恢復，並且在一年的追蹤時期均無任何不適。

關鍵詞：漸進式復健，三角骨骨折