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Cas clinique

Salvage of a post-traumatic arthritic wrist using the scaphoid as an osteochondral graft

Sauvetage d'un poignet arthrosique post-traumatique à l'aide d'une greffe ostéochondrale scaphoïdienne

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Abstract

The authors describe a case of post-traumatic wrist arthritis with an osteochondral defect in the scaphoid fossa of the radius. The patient was treated with proximal row carpectomy, radial styloidectomy and reconstruction of the defect using the proximal half of the scaphoid as an autologous osteochondral graft. Pain relief was achieved while wrist motion and strength were improved. The carpal bones are a source of osteochondral grafts and can be used to expand the indications of motion-preserving wrist salvage procedures.

Keywords: Scaphoid; Osteochondral graft; Distal radius

Résumé

Les auteurs rapportent un cas clinique d'arthrose sévère post-traumatique du poignet avec une perte de substance ostéochondrale correspondant à la fossette scaphoïdienne du radius. Le malade a été traité par une résection de la rangée proximale du carpe, une styloïdectomie radiale et la reconstruction de la surface scaphoïdienne du radius en utilisant la partie proximale du scaphoïde comme greffe ostéochondrale autologue. La douleur a été améliorée, aussi que la force de prise et la mobilité du poignet. Les os du carpe peuvent être utilisés comme greffons autologues dans les traitements de sauvetage pour préserver la motilité du poignet.

Mots clés : Scaphoïde ; Greffe ostéochondrale ; Radius distal

1. Introduction

Despite huge advancements in the treatment of distal radius fractures, there are still a significant number of patients with unsatisfactory outcomes [1]. Unsuccessful restoration of articular congruity is one of the most important factors contributing to radiocarpal degeneration [2]. Post-traumatic arthritis is a common, disabling complication after intra-articular fractures of the radius [2]. For wrists with advanced degeneration, various salvage procedures such as total wrist arthrodesis and partial intercarpal fusions have been introduced [1]. Proximal row carpectomy (PRC) is another well-documented, satisfactory and motion-preserving treatment for arthritic wrists where the lunate facet and capitate head are intact [3,4].

Moreover, the initial trauma may result in cartilage and subchondral bone loss. If a motion-preserving procedure is planned, an osteochondral graft can be used to fill the defect and create a congruent articular surface [5]. We report a case of

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post-traumatic wrist arthritis treated with PRC and use of the proximal portion of the scaphoid as osteochondral autograft to fill the defect in the scaphoid facet of the radius.

2. Case report

In May 2010, a 50-year-old male patient was admitted to the outpatient clinic of our Hand Surgery and Microsurgery Unit for persistent pain in his right wrist and difficulty in performing daily activities. His medical history revealed that he had suffered high-energy trauma to his wrist after falling on his right hand with the wrist extended in December 2008. At that time, the initial x-rays taken at another hospital demonstrated a dorsal radiocarpal fracture-dislocation. His wrist was treated with closed reduction and immobilized in short arm cast for one month (Fig. 1). After removal of the cast, he underwent a rehabilitation program for another month, which was focused on increasing his wrist's range of motion. However, his complaints of pain and weakness in the right wrist did not subside and he was not able to continue working as a tiler (blue collar occupation).

In the physical examination, active wrist range of motion was found to be 25° flexion, 40° extension, 0° radial deviation and 20° ulnar deviation. Pronation and supination were 90° and 90°, respectively. He chose 8 on visual analog scale (VAS) to express his wrist pain. His grip strength was 18.4 kg. Radiology studies showed a malunited distal radius fracture with an osteochondral defect of the scaphoid fossa, chronic scapholunate dissociation, degenerative changes of the proximal pole of scaphoid and ulnar translation of lunate (Fig. 2). Stress tests did not result in significant dorsal or volar radiocarpal translation. Although a mild distal radio-ulnar joint (DRUJ) dislocation with ulnar styloid fracture was seen on plain radiographs, the patient did not exhibit any ulnar-sided wrist pain or pain during the clinical examination of DRUJ instability. Therefore it was assumed that the potential preexisting radiocarpal or ulnocarpal ligament injuries may have had healed. Supination and pronation were unlimited and pain free. Thus, no further investigation for potential TFCC

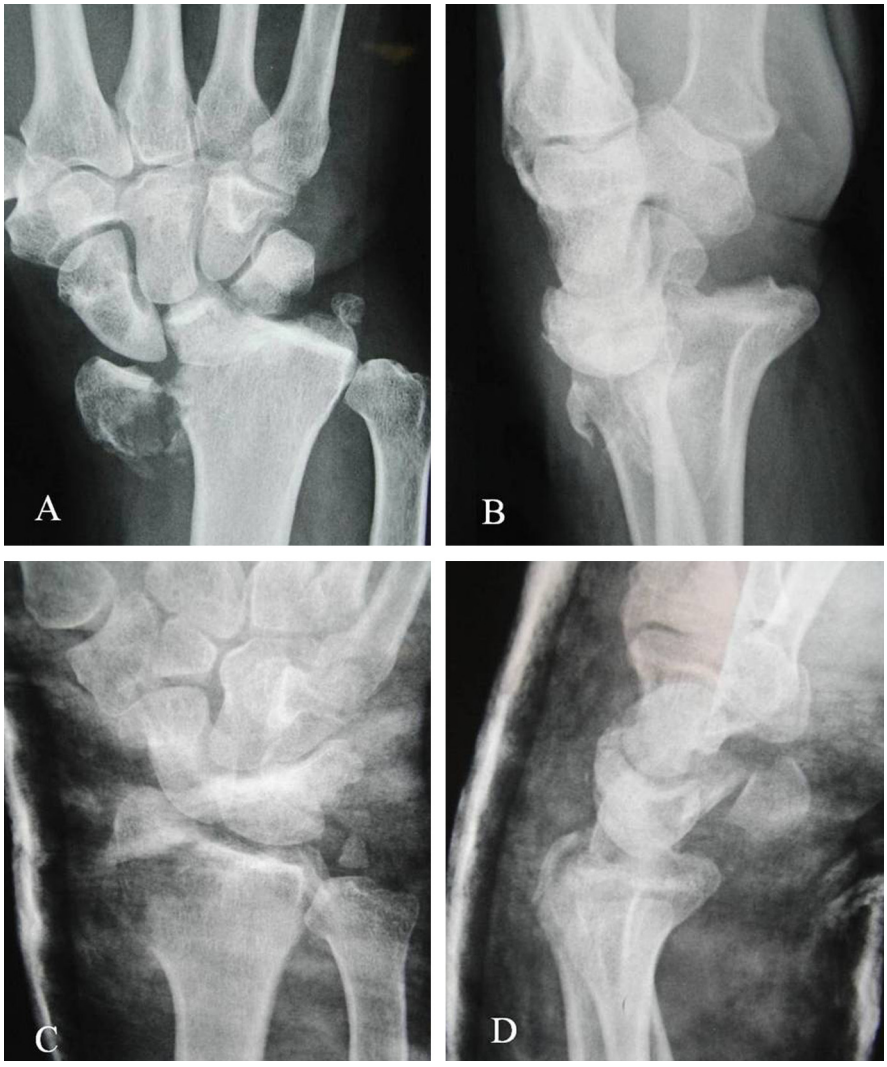

Fig. 1. The anterior-posterior (A) and the lateral (B) x-rays of the right wrist taken after the trauma revealed a displaced radial styloid fracture, dorsal dislocation of the carpus and ulnar styloid fracture. Closed reduction and cast immobilization for one month was performed as the emergency treatment (C, D).