Non-union of the triquetrum with pseudoarthrosis: a case report

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ABSTRACT

We report a case of symptomatic non-union of the triquetrum with pseudoarthrosis in a 34-year-old man. Motion of the pseudoarthrosis was noted from radial to ulnar deviation. The patient was treated with bone grafting and screw fixation. The non-union healed and the symptoms subsided. The Mayo wrist score had improved from 65 (fair) to 90 (excellent).

Key words: pseudoarthrosis; triquetrum bone

INTRODUCTION

The greater arc fractures usually extend from the radial column to ulnar column1,2 until a complete ring fracture forms.3 Isolated transverse fracture of the triquetrum is rare. It differs from an avulsion-fracture of the triquetral corner, which is regarded as ligamentous injury only. Most transverse fractures of the triquetrum are treated with casts. Three cases of non-union of the triquetrum have been reported.4–6 One was treated conservatively with persistence of symptoms; the other 2 underwent surgery and the non-union healed. Excision of the non-union fragment is an option, especially when it is small. We report a case of symptomatic non-union of the triquetrum with pseudoarthrosis treated with screws and bone grafting.

CASE REPORT

In June 2006, a 34-year-old right-handed policeman presented with persistent right ulnar wrist pain after falling with his out-stretched hand 4 weeks earlier. There was no external wound and the patient neglected the injury. The injury mechanism entailed forceful radial deviation and dorsiflexion of his wrist. Radiographs showed a shearing transverse fracture of the triquetrum along its longitudinal axis. There was no associated perilunate instability. A short arm cast was given for 8 weeks. However, the bone did not unite and a pseudoarthrosis was noted.

There was tenderness at the triquetrum dorsal-
ulnarly. The range of wrist motion was full. The patient had increased pain on radial but not ulnar deviation of the wrist. Dynamic radiographs and computed tomography confirmed motion at the pseudoarthrosis (Figs. 1 and 2). The patient declined surgery and a functional splint was given. Six months after the injury, the patient had persistent ulnar wrist pain and weakness that hindered his work, and agreed to undergo operative treatment.

A 2-cm dorsal longitudinal incision was made, and a capsulotomy performed. The pseudoarthrosis was noted intra-operatively (Fig. 3). There was a big piece of osteochondral fragment. The pseudoarthrosis was refreshed with a bone burr until bleeding cancellous bones were noted. Bone grafts harvested from the distal radius (at the Lister tubercle of the same wrist) were added. Two 1.5-mm AO screws were inserted using compression techniques.

At the 3-month follow-up, the non-union had healed completely (Fig. 4). At month 6, the patient was free of symptoms and had returned to all his usual activities. The Mayo wrist score had improved from 65 (fair) to 90 (excellent).

**DISCUSSION**

In our patient, we propose reverse greater arc as the mechanism of injury.\(^7\) This entails hyperextension, dorsiflexion, and radial deviation of the wrist. A shearing force from the dorsal rim of the radius or ulnar head may impinge on the triquetrum and

**Figure 1** Dynamic radiographs showing motion at the pseudoarthrosis. The gap (arrows) is (a) wider in radial deviation but (b) closer in ulnar deviation.

**Figure 2** (a) Coronal and (b) axial computed tomography showing non-union of the triquetrum (arrows).
transversely fracture it. The transverse shearing fracture of the triquetrum differs from an avulsion-fracture. Simple avulsion-fracture of the triquetrum can be treated as ligamentous injury, as its non-union causes minimal symptoms. Most transverse fractures of the triquetrum can be treated with immobilisation by means of a cast. Bone grafting and internal fixation can also achieve a good outcome. In our patient, the dorsal approach was used to avoid risking neurovascular injury, as the triquetrum is in a superficial position dorsally.

Diagnosing triquetral non-union based on clinical examination is difficult. Subtle fracture lines cannot be demonstrated in radiographs. Computed tomography and magnetic resonance imaging should be performed for patients with acute or chronic wrist injury, whenever there is a clinical dilemma in the presence of normal radiographs. Conservative management can be considered if the patient is symptom-free, but operative treatment is recommended when pain persists.

REFERENCES