TRAUMATIC AXIAL DISLOCATION OF THE SCAPHOTRAPEZIO-TRAPEZOIDAL JOINT : AN UNUSUAL INJURY AND ITS MANAGEMENT

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Traumatic peritrapezium-peritrapezoid axial dislocation is a rare but serious injury of the wrist. The usual case is significant wrench or crush injury. The prognosis is related to the severity of the associated soft tissue injury. Treatment is by early closed or open reduction and Kirchner-wire stabilization.

Keywords : traumatic axial dislocation ; scaphoid trapezium ; trapezoid dislocation.
Mots-clés : luxation traumatique axiale ; pouce.

INTRODUCTION

There are certain well recognized patterns of carpal injury (1). On the radial side the mechanism is usually a fall on the outstretched hand, but axial dislocation is rare.

Review of the literature showed that dislocation of the trapezius-trapezoid socket on the scaphoid with intact trapezius- and trapezoid-metacarpal articulations are most unusual. We present a case of isolated peritrapezium-peritrapezoid axial dislocation. As Watson and Hempton (6) have collectively called the joints between the scaphoid-trapezium, scaphoid-trapezoid and trapezium-trapezoid the "triscaphoid joint", we propose the use of the term "dislocation of the triscaph joint" to describe this lesion.

CASE REPORT

A 35-year-old man received a blow on the dorsum of his left nondominant hand from a commercial dough mixer (fig. 1). Immediately after the accident there was gross dorsoradial

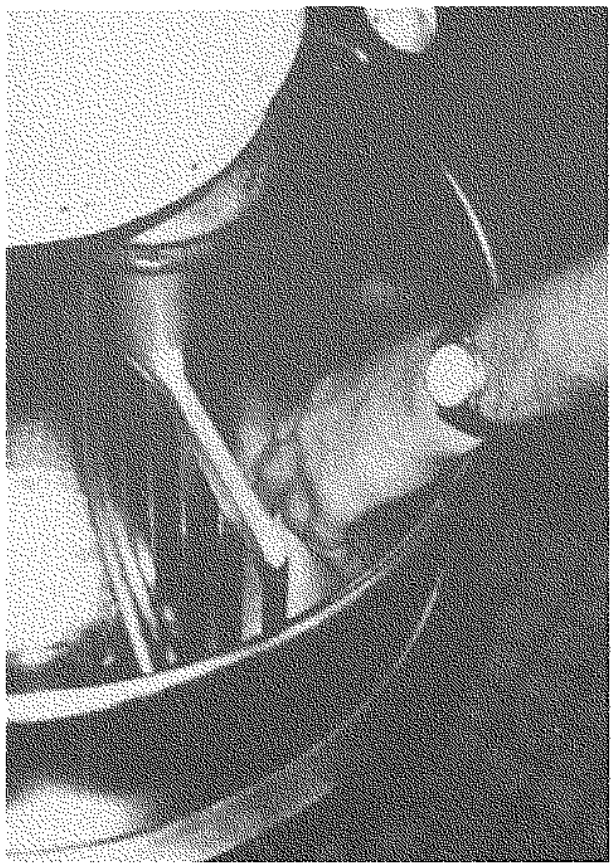

Fig. 1. — Mechanism of the injury.

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swelling with a narrowed appearance of the hand, and with disruption of the normal transverse arches of the hand. The radial part of the hand seemed shortened and unstable. No rotational deformity of the fingers was noted. The skin was intact and neurovascular and tendinous function unimpaired.

Radiographs showed volar, radial and proximal displacement of the first and second metacarpals along with the associated trapezium and trapezoid bones. The remainder of the carpus retained its normal relationships (fig. 2).

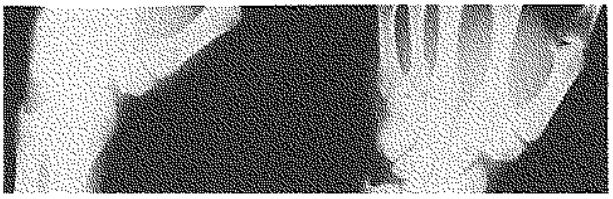

Fig. 2. — Radiographs showing the axial disruption.

Closed reduction proved relatively easy but was very unstable. Under image-intensification the best alignment of the bones was found to be in ulnar deviation, and two percutaneous Kirchner wires were used to stabilize the reduction (fig. 3). A short scaphoid cast was applied for 8 weeks. The wires were removed at 6 weeks. At 9 weeks signs of reflex sympathetic dystrophy were noted, and intensive physiotherapy was started.

Fig. 3. — Radiograph after closed reduction and pinning.

RESULTS

At 2 years the patient had good wrist and hand function but with dorsiflexion and radial deviation both diminished by 20° (fig. 4). This was thought to be related to the position of the scaphoid which appeared horizontal on dynamic x ray view. There was a lump corresponding to the osteophyte, palpable between the second and third metacarpal heads and visible on x rays. The patient returned to his original job after 4 months.

DISCUSSION

"Tri-scaph" separation is an infrequent injury and can be described as axial or longitudinal separation of the trapezius and trapezoid together with the corresponding metacarpal. The axial dislocations were classified by Garcia-Elias in 1989 (1) into three groups according to the direction of the instability : axial-radial. axial-ulnar and axial-radial-ulnar.

As they are usually associated with severe crush or blast injuries, they tend to be accompanied by severe soft tissue disruption, the degree of which usually determines the functional outcome.

Although the axial-radial group has a lower incidence of neurovascular or tendinous injury an isolated peritrapezius-peritrapezoid dislocation, as in our case, is rare and, we believe, due to the

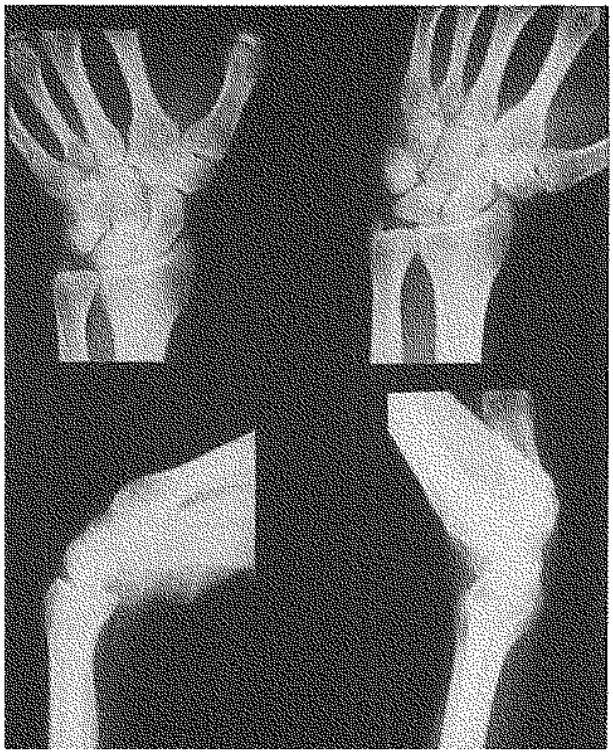

Fig. 4. — Functional result after 4 months.

mechanism of the injury, which was a dorsal blow rather than a crush mechanism injury.

The intermediate intrinsic ligaments that bind the trapezium to the scaphoid are very strong (3). The short intrinsic ligaments, including the trapezio-trapezoidal, the trapezio-capitate and the capito-hamate, bind together the four bones of the distal row into a single whole (4), so that the proximal carpal and the distal metacarpal transverse arches of the hand function as a whole. It therefore requires great force to disrupt them, making it difficult to avoid neurovascular injury.

"Tri-scaph" separation presents a dramatic appearance with gross swelling and characteristic loss of the normal convex relationship between the metacarpal heads, shortening and instability of the radial longitudinal part of the hand and no rotational deformity of the fingers.

In our case, closed reduction with Kirschner wire stabilization soon after the injury gave a good result. The key to stability seemed to be fixation of the trapezium-trapezoid socket to the scaphoid in a horizontal extended position. This avoided functional shortening of the scaphoid which could result from any flexion deformity which might predispose to carpal collapse with subsequent pain, loss of power and limitation of dorsiflexion (2).

CONCLUSION

Traumatic axial separation of trapezius and trapezoid with the corresponding metacarpal may be produced by a dorsal blow on the hand. It is not necessarily associated with soft tissue lesions. There is a characteristic narrowed appearance of the hand, with rupture of the transverse arches and shortening of the radial part of the hand. The treatment of this type of lesion consists of closed reduction and internal fixation of the trapezium-trapezoid socket to the scaphoid in a horizontal and extended position.

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SAMENVATTING

Y. DEVLIES, J. HAVERANS, L. DE SMET. Traumatische ontwrichting van het scaphotrapezio-trapezoide gewricht.

Traumatische peritrapezium-peritrapezoide axiale ontwrichting is een zeldzaam maar ernstig letsel van de pols. Het klassieke mechanisme is een crushtrauma van de pols. Soms betreft het een slag op het dorsum van

de pols waardoor een gesloten letsel wordt veroorzaakt zonder geassocieerd letsel. Het klinisch beeld is dramatisch en vertoont een karakteristiek vernauwd voorkomen met ruptuur van de transversale boog van de hand en verkorting van de eerste en tweede stralen zonder rotatie. De reductie is onstabiel en vereist interne Kirschnerfixatie in radiale deviatie van de pols teneinde de trapezium-trapezoid basis te kunnen fixeren op het os scaphoideum in een anatomische positie.

RÉSUMÉ

Y. DEVLIES, J. HAVERANS, L. DE SMET. Luxation traumatique de l'articulation scapho-trapézo-trapézoïdale (STT).

La luxation traumatique péritrapézo-péritrapézoïde est une lésion rare mais grave du poignet. Le mécanisme est un écrasement de la main. Parfois le mécanisme consiste en un traumatisme direct sur le dos de la main produisant une lésion isolée sans ouverture cutanée ni lésion neurovasculaire associée. L'aspect clinique est dramatique avec une déformation caractéristique. La main semble plus étroite avec une rupture de l'arche transversale et un accourcissement de la partie radiale du poignet sans rotation. La réduction est très instable et ne peut être stabilisée que par un brochage en inclinaison radiale du poignet, fixant le trapèze et le trapézoïde sur le scaphoïde en évitant une bascule antérieure du scaphoïde.