wjpmr, 2024, 10(1), 13-17

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Case Report

ISSN 2455-3301

WJPMR

TRANS-SCAPHO-RETRO-LUNATE DISLOCATION FRACTURE OF THE CARPUS WITH FRACTURE OF THE TWO STYLOIDS (CASE REPORT)

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Article Received on 25/10/2023 **Article Revised on 15/11/2023** **Article Accepted on 05/12/2023**

ABSTRACT

The trans-scapho-retro-lunate dislocation fracture represents one of the clinical forms of perilunate dislocation of the carpus. It is a rare lesion, accounting for 5% of wrist traumas, even more so when associated with a fracture of the two styloids. It is a severe, complex lesion of the wrist, sometimes going unnoticed, occurring most often in young adults. Diagnosis is clinico-radiological.

KEYWORDS: Fracture, luxation, scaphoid, styloid.

INTRODUCTION

The trans-scapho-retro-lunate dislocation fracture of the carpus is one of the clinical forms of peri-lunate dislocation of the carpus, and is a rare lesion.[1] These are complex and severe traumas, leading to capsulo-ligamentary lesions associated with osteochondral fractures compromising carpal stability, sometimes going unnoticed, occurring most often in young adults. Diagnosis is clinico-radiological. We report a case presenting a trans-scapho-retro-lunate dislocation fracture associated with a fracture of both wrist styloids.

BSERVATION

In this case, a 33-year-old patient, without antecedents, fell from a 3-meter ladder, landing on his right hand in hyper-extension (dominant limb).

On admission (at H3) to the emergency department, the patient reported pain, functional impotence and wrist deformity. Clinical examination revealed edema, anteroposterior enlargement of the wrist, limited mobility and grip strength, and a punctiform skin opening over the ulnar styloid.

Radiological and CT scans revealed a trans-scapho-retro-lunate dislocation fracture of the carpus associated with fracture of both radial and ulnar styloids (figs. 1, 2, 3, 4).

At H4, the patient was admitted to the operating room, where he initially underwent wound lavage, trimming and closure. We performed a dorsal S-shaped approach, centered on the second ray. The first step was to reduce the semilunar dislocation, which was easy to do, followed by descending pinning of the scaphoid with three 1.4 mm pins (instead of screw fixation, given the open nature and infectious risk of the fracture).

The lunate was then fixed in relation to the capitate in a reduced position to prevent the semilunate from tilting. At the end of the procedure, the lunotriquetral ligament and the two styloids were reinserted using transosseous stitches.

Immobilization was provided by a circular cast.

Radiological control was considered satisfactory (fig. 5, 6).

The post-operative course was simple:

- On day 45, the lunocapital pin was removed.
- At 3 months, the scaphoid pins were removed.
- He is currently 6 months out.

The cast was maintained for 8 weeks.
Rehabilitation began in the third month.
Results were assessed according to the QUICK-DASH score and the clinical criteria of Witvoet and Allieu (2):

1/ the clinical criteria of Witvoet and Allieu:
Pain

1. None.
2. Climatic, at forced movements.
3. During all movements, not at rest.
4. Permanent.

Mobility
1. Normal or < 10% of normal.
2. > 50% of normal.
3. < 50% of normal.
4. Ankylosis.

Muscular strength
1. Normal.
2. > 50% of normal.
3. < 50% of normal.
4. None.

In total, the results are
- Very good 3
- Good 4-6
- Fair 7-8
- Poor > 8

For our case, the score is 4. Which represents a GOOD result.

2/ According to quick-dash score,
- 1/Unscrewing a tight or new lid = 2
- 2/Doing heavy housework = 2
- 3/Carrying shopping bags or a briefcase = 1
- 4/Wash back = 1
- 5/Cutting food with a knife = 1
- 6/Leisure activities requiring a certain amount of strength or with shocks to the shoulder, arm or hand = 2
- 7/During the last 7 days, how much has your shoulder, arm or hand bothered you in your relationships with family, friends or neighbors = 1
- 8/Have you been limited in your work, any of your usual daily activities because of problems with your shoulder, arm or hand =2
- 9/Pain in your shoulder, arm or hand = 1
- 10/Painful tingling or pins and needles in your shoulder, arm or hand = 1
- 11/During the last 7 days, has your sleep been disturbed by pain in your shoulder, arm or hand = 1

The score is (15/11 - 1) x 25 = 9%, which is a good result.

DISCUSSION

The trans-scapho-retro-lunate dislocation fracture of the carpus is a rare injury,[1] and is even rarer when associated with a fracture of the two wrist styloids. This injury is most common in young people following high-energy trauma.[3] These are complex and severe traumas, leading to capsulo-ligamentary lesions associated with osteochondral fractures that compromise carpal stability.

Its mechanism is hyper-extension associated with torsion, with ulnar inclination and intracarpal supination.[4] This is a severe injury due to the complexity of the carpal joint (8 bones, 33 ligaments, 4cm² surface area).

This lesion is easy to diagnose clinically and radiologically, but can sometimes go unnoticed.[5] Treatment is surgical, as scaphoid fracture is often associated with irreducible dislocation.[6]

The approach is dorsal, centred on the second radius.[7]

Reduction of the dislocation is achieved by traction in the axis, hyper-extension, reproducing the trauma, followed by a flexion movement with traction and rotation with a thumb resting on the semilunar,[8] osteosynthesis of the scaphoid is performed either by screw fixation, which represents a solid means of osteosynthesis,[9] or by pinning,[10] as performed in our patient's case to avoid the infectious risk of an open fracture; combined with luno-capital pinning and repair of ligamentous lesions or triquetro-lunar pinning.[10] In our case, we recommended ligament repair and reinsertion of both styloids using trans-osseous sutures.

Immobilization is provided by a cast for eight weeks in the case of pinning.

RESULTS

In cases treated correctly, the ligaments heal, allowing the carpus to regain normal dynamics, with the bones in good position. The scaphoid fracture consolidates in good position.[11]

Results were assessed according to the clinical criteria of Wit Voet and Allieu (2) and the QUICK-DASH score. In our case, the results obtained with scaphoid pinning were similar to those obtained with screw fixation.

Fig. 1: Front X-ray showing trans-scapho-retro-lunate dislocation fracture of the carpus + fracture of both styloids.

Fig. 2: Profile X-ray showing trans-scapho-retro-lunate dislocation fracture of the carpus + fracture of both styloids.

Fig. 3: CT scan with 3D reconstruction.

Fig. 4: CT scan with 3D reconstruction.

Fig. 5: Post-operative control radiograph (front).

Fig. 6: Post-operative control radiograph (profil).

CONCLUSION

The trans-scapho-retro-lunate dislocation fracture of the carpus is a serious injury, combining ligamentous and bony lesions. Scaphoid pinning provides a reliable and easily accessible alternative to screw fixation in open fractures, for stabilization of the fracture site and rapid recovery of the carpal junction, enabling early rehabilitation to begin on the 45th day after removal of the capitolunate pin and cast.

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