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Case Report

Isolated Partial Carpal Scaphoid Dislocation: A Case Report

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Abstract: Scaphoid dislocation is an uncommon entity of the carpal injuries that has been rarely reported in the literature. We report a case of a 41-year-old right-handed male who presented with a partial palmar scaphoid dislocation following a motor vehicle accident. Closed reduction was successfully performed and an immobilization by a short arm thumb cast has been maintained for 6 weeks. The last follow-up X-rays showed no evidence of redislocation, malunion or avascular necrosis. Our patient returned to his daily activities without any limitations. This case report emphasizes the importance of early diagnosis and orthopedic treatment for improved prognosis.

Keywords: Isolated, Scaphoid, Carpus, Dislocation, Trauma, Wrist.

INTRODUCTION

Solitary scaphoid dislocation is a rare carpal injury that can result from high-energy trauma or forced hyperextension of the wrist. The management depends on several factors and may vary from non-operative to open reduction with ligamentous repair. Due to its uncommon presentation, diagnosis can be challenging and delayed, leading to long-term complications.

CASE REPORT

We report the case of a 41 years old, right handed male, working as a cook, who presented to the emergency room following a motor vehicle accident. Upon his arrival, his vital signs were stable. Physical examination revealed a severe pain and swelling on the right wrist with partial functional impairment. There were no skin wounds with no vasculo-nervous complications.

X-rays showed a partial palmar scaphoid dislocation associated with type ‘a’ distal tubercle fracture and proximal fourth metacarpal bone fracture (fig 1).

Figure 1: Initial X-Ray showing the scaphoid dislocation

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A CT scan confirmed the injury and showed a non-displaced radius fracture.

Closed reduction by longitudinal traction, ulnar deviation and local manual pressure on the scaphoid was successfully performed, and an immobilization by a short arm thumb cast has been maintained for 6 weeks with close clinical and radiological evaluation.

At 3 months follow-up evaluation , the patient has a painless wrist with a full range of motions showing an active extension of 65°,an active flexion of 42° and a normal grip strength compared to the contralateral wrist.

At 6 months, the X-rays showed a full consolidation of the fourth metacarpal bone fracture and no signs of redislocation or avascular necrosis (fig 2).

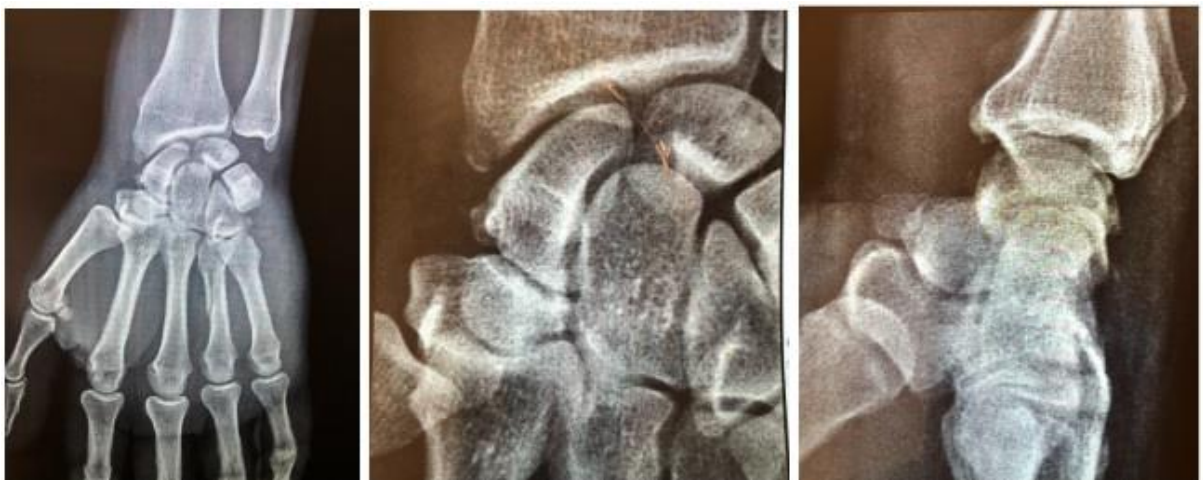


Figure 2: Radiographs at 6 months follow-up

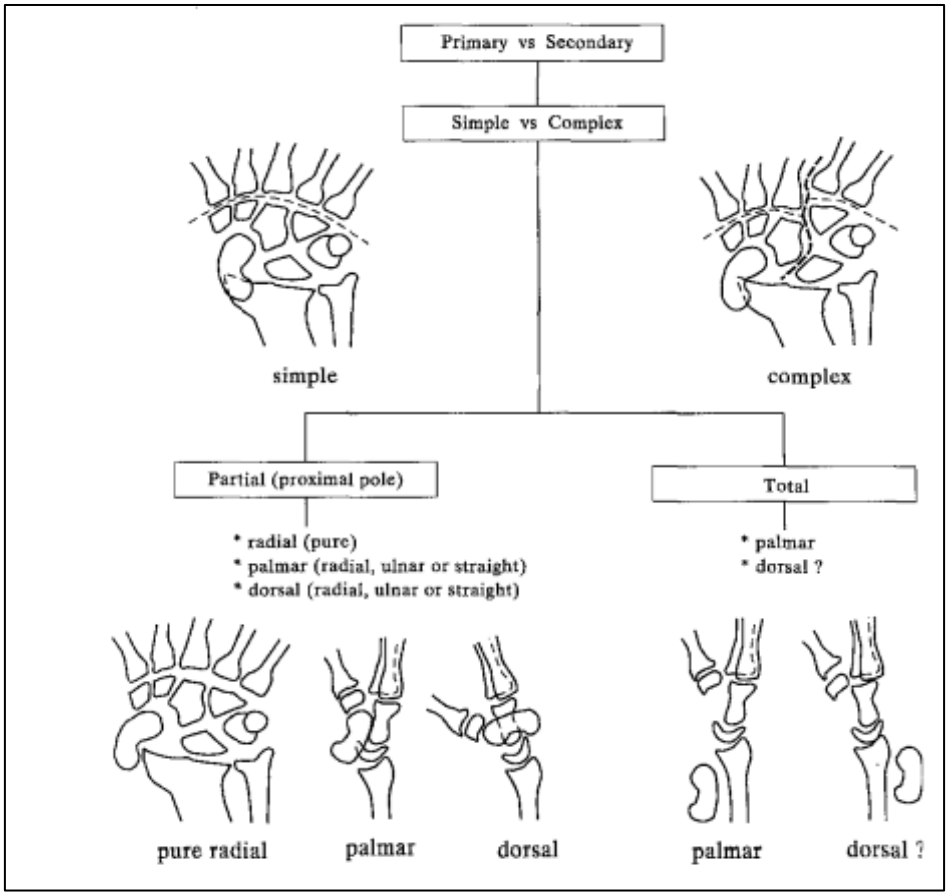
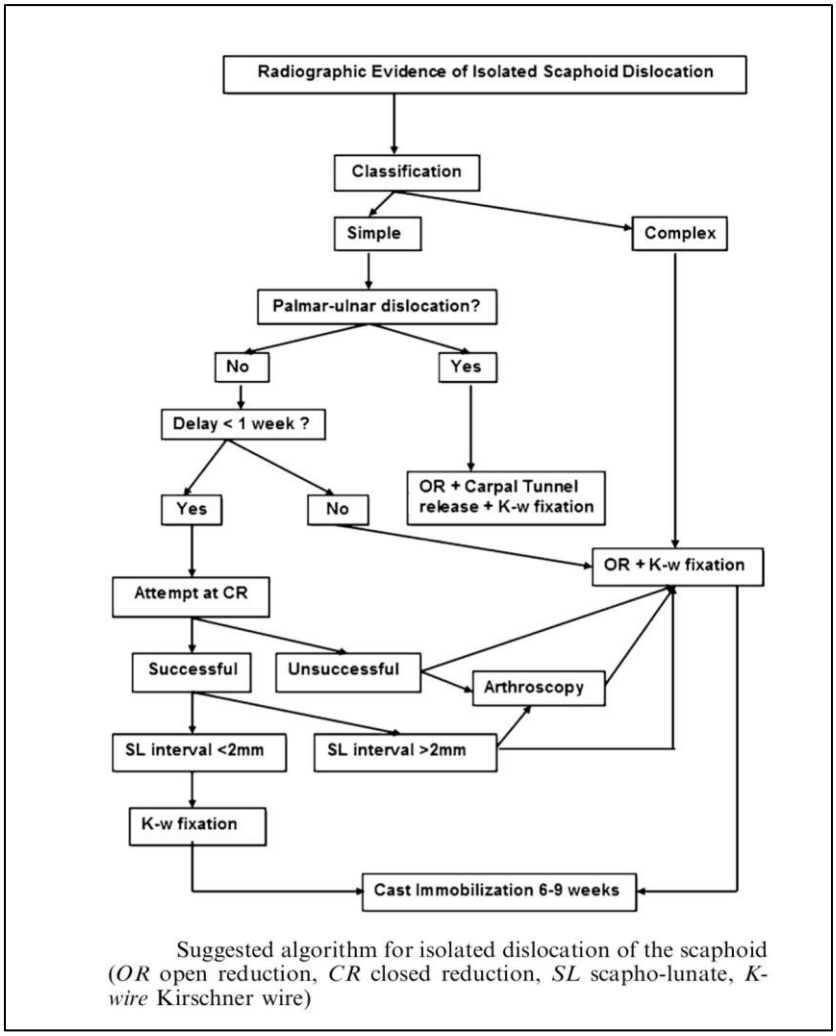


Figure 3: Classification of isolated dislocations of the scaphoid [2]



Suggested algorithm for isolated dislocation of the scaphoid (*OR* open reduction, *CR* closed reduction, *SL* scapho-lunate, *K-wire* Kirschner wire)

Figure 4: Suggested algorithm for isolated dislocation of the scaphoid (OR open reduction, CR closed reduction, SL scapho-lunate, K-wire Kirchner wire) [6]

DISCUSSION

Solitary carpal scaphoid dislocations are rare, and the optimal treatment strategy remains controversial.

The first carpal scaphoid dislocation was detailed in the early 1900 [1]. Since then, Leung *et al.*, [2] have classified this injury within a system that organizes the injury into primary or secondary, simple or complex, partial or total, and the direction of dislocation.

The injury is considered either primary if it results directly from the initial trauma or secondary if it results from an abnormality of the articulation following the proximal carpal dislocation. Afterwards, it was identified as simple or complex based on whether there was any disturbance to the distal carpal row, which would make it qualify as complex. The injury was divided into partial and total dislocation. In the partial dislocation, either the soft tissue attachments or the distal scaphotrapezial articulation remained, while a total dislocation led to the loss of all soft tissue attachment. The last category focused on the direction of the dislocation of the proximal pole. This direction could be either palmar, dorsal, or radial. The deviation could be called radial, ulnar, or neutral direction as well (fig 3).

Using the classification system of Leung *et al.*, our patient's injury would be classified as a primary, simple, partial, palmar scaphoid dislocation.

In a literature review conducted by Amundsen *et al.*, [3], a total of 55 documented cases of isolated scaphoid dislocation were identified, with the majority occurring in males (sex ratio = 46/:3) aged between 18 and 79 years with a mean age of 39. The most common mechanism of the injury was a public road accident, which resulted in the wrist being subjected to a combination of twisting and forced dorsiflexion. Our case was consistent with the literature being a 41 years old male who was a victim of a motor vehicle accident.

Various methods for treating this injury, including closed reduction with cast immobilization, percutaneous screw and Kwires fixation [4], or open

reduction with internal fixation. Closed reduction with cast immobilization is a commonly used method for treating partial dislocations with no associated carpal fractures. However, it can be challenging to maintain the reduction and prevent redislocation, especially in unstable fractures.

Akinci *et al.,* [5] reported an anatomic description of two varieties of the lunates. In type-II the lunates has an articulation with the hamates through a medial facet which is absent in type-I lunates. The type-II lunates provide a certain degree of protection to the carpal region with the lunates medial facet being more load to the central column. The x-ray of this patient showed a type-I lunates.

Chloros [6] has presented a management algorithm for dealing with isolated scaphoid dislocation, which involves categorizing the injury based on its severity. Effective pain relief and restoration of active range of motion can be achieved by identifying the injury early and performing closed reduction. Following reduction, plaster casting should be used for a minimum of four weeks. However, in situations where the dislocation is more complex or with delayed diagnosis, the inflammation surrounding soft tissue may require open reduction (fig 4). The prognosis tends to worsen with increasing delay in identification and reduction.

In our case, closed reduction was successfully performed, and an immobilization by a short arm thumb cast was maintained for 6 weeks.

Nearly half of the cited cases in Amundsen [3] systematic review had delayed diagnosis with the longest interval being 6 years. In our case, the injury has been early diagnosed with a closed reduction being practiced within three first hours following the accident.

Rare complications such as acute carpal tunnel [7] have been reported especially in palmar and ulnar dislocations. Avascular necrosis of the scaphoid is the most dreaded long-term complication although being reported in only one case [8]. Our patient did not report any clinical sign of acute carpal tunnel of nerve compression.

The follow-up X-rays showed consolidation of the fourth metacarpal with no evidence of redislocation, malunion or avascular necrosis.

The patient returned to his daily activities without any limitations.

CONCLUSION

In conclusion, solitary carpal scaphoid dislocations are rare injuries that require a thorough evaluation and appropriate treatment strategy. Closed reduction with cast immobilization can be a successful approach in selected cases, but careful monitoring and follow-up are essential to ensure optimal outcomes. Further studies are needed to determine the best treatment approach for this rare injury.

DECLARATION OF INTERESTS

The authors declare that they have no conflicts of interest in relation to this article.

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