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Hamate Bone Fracture following a Sports-Related Accident: A Case Report

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Abstract **Case Report**

Fractures of the hamate bone are uncommon but can occur as a result of sports-related accidents and can present diagnostic challenges. This article presents a case report of a hamate bone fracture following a sports-related incident, with a focus on the use of CT scans for accurate diagnosis and treatment planning. The purpose is to highlight the significance of imaging techniques in evaluating hamate bone fractures and guiding appropriate treatment strategies.

Keywords: Hamate Bone Fracture, Sports-Related Injury, Case Report, CT scan, Diagnosis, Treatment.

INTRODUCTION

Fractures of the hamate bone, although relatively rare, can occur during sports activities and require careful evaluation and management. Accurate diagnosis and appropriate treatment planning are essential for optimal outcomes. This case report focuses on a hamate bone fracture sustained during a sports-related accident, emphasizing the role of CT scans in assessing fracture characteristics and guiding treatment decisions [1].

CASE REPORT

A 32-year-old male presented to the orthopedic clinic following a sports-related incident. He complained of significant pain and tenderness in his dominant hand, particularly over the hypothenar eminence. The patient described a direct impact on his hand during a golf swing, resulting in immediate pain and functional impairment.

Initial radiographs showed no obvious fractures, but due to persistent symptoms, a CT scan was performed to evaluate the hamate bone region. The CT scan revealed a fracture through the body of the hamate bone, involving the hook of the hamate. Detailed assessment of the fracture pattern and displacement was possible with multiplanar reconstructions.

Based on the CT scan findings and the patient's symptoms, surgical intervention was recommended. Open reduction and internal fixation (ORIF) with screw fixation were performed to stabilize the fracture and restore anatomical alignment.

Following surgery, the patient underwent a structured rehabilitation program, including hand therapy, range of motion exercises, and grip strengthening exercises. Regular follow-up visits were scheduled to monitor fracture healing and assess functional recovery. At the final follow-up, the patient demonstrated satisfactory clinical and radiographic outcomes, with improved hand function and pain relief.

Figures: Multidimensional CT Imaging Reveals Oblique Fracture of the Hamate with Fragment Displacement in 3D Bone Window

DISCUSSION

Hamate bone fractures, particularly those involving the hook of the hamate, are commonly seen in sports that involve swinging or gripping motions [1]. Hamate fractures are relatively rare but can be associated with significant pain and functional limitations in the wrist region. Imaging plays a crucial role in the diagnosis and management of these fractures [2].

Standard wrist radiographs, including anteroposterior, lateral, and oblique views, are often performed initially to assess hamate fractures [3]. However, these fractures can sometimes be difficult to visualize on standard radiographs due to superimposition of surrounding bony structures [4].

In such cases, other imaging modalities such as magnetic resonance imaging (MRI) or computed tomography (CT) may be necessary [2]. MRI is particularly useful for evaluating associated soft tissue injuries, such as ligament and tendon injuries. It can also provide detailed information about the vascularity of the fractured region [1].

CT is often used for a more precise evaluation of the fracture, especially in cases where detailed visualization of the fracture is needed for surgical planning. Multiplanar reconstructions and 3D reconstructions obtained from CT data can help better visualize the fracture and assess its severity [5].

Additionally, ultrasound may be used as a complementary tool in the evaluation of hamate fractures, particularly to assess soft tissue injuries and the presence of fluid collections [6].

In summary, a multimodal approach using different imaging techniques is often necessary for accurate diagnosis and optimal management of hamate fractures [7]. X-ray imaging remains often the first step in evaluating these fractures, but other imaging modalities such as MRI, CT, and ultrasound may be needed to obtain a comprehensive assessment of the injury and surrounding structures [3]. Surgical

intervention is often necessary to achieve stable fracture fixation and restore hand function [1].

CONCLUSION

This case report highlights the management of a hamate bone fracture following a sports-related accident, emphasizing the importance of CT scans in accurate diagnosis and treatment planning. CT imaging enables precise assessment of fracture characteristics, facilitating appropriate surgical intervention and optimizing treatment outcomes. A multidisciplinary approach, involving orthopedic surgeons and hand therapists, is crucial for successful management of hamate bone fractures.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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