Chauffeur Fracture (Radial Styloid Process Fracture) Following a Road Traffic Accident: A Case Report

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Abstract

This case report outlines the management of a Chauffeur fracture (radial styloid process fracture) in a 28-year-old male following a road traffic accident. The patient presented with typical symptoms of pain, swelling, and reduced motion at the wrist. Diagnosis was confirmed via radiographs and CT scan, which showed a displaced radial styloid fracture. Surgical intervention through open reduction and internal fixation was pursued due to the displacement. Post-surgical outcomes were favourable with the patient regaining full wrist function after comprehensive rehabilitation. This report emphasizes the necessity for prompt and precise treatment protocols in managing Chauffeur's fractures to ensure optimal recovery and function. The insights from this case contribute to the broader understanding of wrist fractures resulting from high-energy trauma and underscore the significance of a multidisciplinary approach in trauma Orthopedics.

Keywords:- Radial Styloid Process Fracture, Chauffeur's Fracture, Road Traffic Accidents, Wrist Fractures.

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INTRODUCTION

Chauffeur fracture, identified as a radial styloid process fracture, is a specific type of wrist injury that typically results from high-energy trauma, such as a road traffic accident (RTA).[1] This fracture is clinically significant due to its association with intrinsic ligament injuries and potential disruption of carpal stability. This report examines the biomechanics, clinical implications, and optimal management strategies for Chauffeur fracture, highlighting its relevance in trauma orthopedics.[2]

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The radial styloid process is a critical structure involved in the bony anatomy of the wrist, playing a pivotal role in the stabilization of carpal bones and in the attachment of ligaments. [3] Fractures of this type are often the result of a forceful impact to the dorsum of the radially deviated hand, common in RTAs where the hand may be forced against the steering wheel or dashboard. Epidemiologically, these fractures are more frequent in situations involving high-impact sports or vehicular accidents, predominantly affecting young and middle-aged adults. [4]

Clinically, patients with Chauffeur fracture present with pronounced pain, swelling, and tenderness localized to the radial aspect of the wrist, often accompanied by a decrease in wrist motion and grip strength. Diagnostically, the fracture is typically identified through standard radiographic imaging, which will show a fracture at the radial styloid. The complexity of this fracture often requires further evaluation with computed tomography (CT) to assess the extent of displacement and involvement of associated carpal injuries. [5]

CASE REPORT

The patient, a 28-year-old male, presented to the emergency department following a high-speed RTA. He reported severe pain in his right wrist, with visible swelling and decreased range of motion. The patient was otherwise healthy with no previous history of orthopaedic injuries. On physical examination, marked tenderness was noted over the radial aspect of the wrist, and radiographs confirmed a Chauffeur fracture with displacement of the radial styloid process.

Initial management involved the application of a temporary splint and pain management with NSAIDs. CT scans were performed to assess the intricacies of the fracture and to evaluate for additional carpal bone injuries. The scans revealed a displaced radial styloid fracture without further carpal involvement. Given the displacement, surgical intervention was planned to restore anatomical alignment and ensure the stability of the radial-carpal joint.

The surgical procedure employed was open reduction and internal fixation (ORIF) using a small fragment screw system. Post-operatively, the wrist was immobilized in a plaster cast for six weeks to promote bone healing and to maintain alignment. Follow-up radiographs showed good alignment of the radial styloid process, and there were no signs of post-operative complications.

Rehabilitation began after cast removal, focusing on restoring wrist function and strength through targeted physiotherapy. The patient gradually regained full range of motion and reported satisfactory functional recovery at a 12-week follow-up.

Figure 1: Chauffeur Fracture (Radial Styloid Process Fracture).

DISCUSSION

This case of Chauffeur fracture following an RTA exemplifies the challenges and effective management of radial styloid process fractures. Literature review highlights that while such fractures are not uncommon, the potential for significant functional impairment without proper management is considerable.[6] Similar cases, as reported in studies by Martinez et al[7] and Khan et al emphasize the importance of timely surgical intervention in cases of displacement to prevent long-term sequelae such as post-traumatic arthritis and chronic instability.[8]

The biomechanical forces involved in Chauffeur fractures and the implications of associated injuries to the intrinsic ligaments of the wrist needs to be considered in these cases.[9] Comparative analysis of treatment outcomes between conservative management and surgical intervention in different degrees of displacement could further guide treatment protocols.[10]

CONCLUSION

The successful management of a Chauffeur fracture in a young adult following an RTA underscores the importance of accurate diagnosis, appropriate surgical intervention, and dedicated post-operative rehabilitation. This case highlights the critical nature of addressing both bone and soft tissue components to restore function and prevent long-term disability in patients with radial styloid process fractures.

Conflict of interest

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