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Kocher's Diacondylar Fracture of the Distal Humerus: A Case Report and Literature Review

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Abstract | **Case Report**

Kocher's diacondylar fracture is a rare form of coronal shear fracture involving both the capitellum and trochlea as a single osseous fragment. Due to its rarity and the limitations of standard radiographic imaging, diagnosis is often delayed, resulting in significant functional impairment. We present a case involving a young female patient and provide an in-depth discussion on surgical techniques, rehabilitation strategies, and outcomes, contextualized within a comprehensive literature review.

Keywords: Kocher's diacondylar fracture, Coronal shear fracture, Distal humerus fracture, Dubberley type 2A, Elbow injury.

INTRODUCTION

Distal humerus fractures involving the articular surface in the coronal plane represent a small subset of elbow injuries, accounting for approximately 13% of all distal humeral fractures [1]. Among these, fractures that comprise both the capitellum and trochlea as a single fragment—termed Kocher's diacondylar fractures—are particularly rare. These are classified as Dubberley type 2A fractures, a subtype that constitutes about 16.7% of all coronal shear fractures [2–4]. The complexity of elbow anatomy and the subtle presentation on standard radiographs often result in missed diagnoses, emphasizing the necessity of computed tomography (CT) for accurate assessment. Early diagnosis is critical as missed fractures can lead to elbow stiffness and long-term disability.

CASE PRESENTATION

A 22-year-old right-handed woman presented to the emergency department two hours after a direct fall onto her flexed right elbow due to a road traffic accident. She reported acute pain, swelling, and restricted elbow motion. Her medical history was unremarkable. Standard radiographs revealed a coronal shear fracture involving both the capitellum and trochlea. CT imaging confirmed a Dubberley type 2A diacondylar fracture, and excluded other differentials such as isolated capitellar (Hahn-Steinthal) or trochlear fractures, as well as bi-columnar injuries.

Surgical Technique

Surgery was performed five days post-trauma with the patient in a supine position and the arm supported laterally. A dual approach was employed—lateral (Kocher) and medial—allowing full visualization and access. The medial approach was made between the olecranon tip and medial epicondyle. Hemarthrosis was evacuated, and a single frontal shear fragment comprising the capitellum and trochlea was identified. Anatomical reduction was achieved, and fixation was performed using three headless Herbert screws, ensuring compression and preservation of joint congruency.

Postoperative Management

The patient's elbow was immobilized in a plaster splint for two weeks, followed by a structured rehabilitation program. Range-of-motion exercises were initiated early to prevent joint stiffness. Analgesia was managed with NSAIDs and short-term opioids. Follow-up at 2 months showed radiographic union. By 6 months, MEPI was 85/100. Active motion was 110° flexion / 20° extension / 0° pronation, and passive motion was 120° / 20° / 0°. Pronosupination remained normal.

DISCUSSION

Kocher's diacondylar fractures are complex injuries that necessitate precise surgical planning and technique to achieve optimal outcomes. Anatomically, the close proximity of the ulnar and radial nerves during medial and lateral approaches respectively demands careful dissection and protection. During the medial approach, the ulnar nerve should be identified, mobilized, and protected throughout the procedure to avoid iatrogenic neuropathy. Similarly, the radial nerve, particularly its posterior interosseous branch, must be respected during the lateral (Kocher) approach.

In our case, meticulous dissection and strategic planning enabled us to avoid nerve injuries. The dual approach allowed complete visualization of the fracture, enabling accurate reduction and stable fixation with Herbert screws. This method is biomechanically advantageous, providing compression and minimizing hardware prominence in the joint.

Functional outcomes postoperatively are generally favorable for Dubberley type 2A fractures, especially in the absence of comminution or associated injuries. The Disabilities of the Arm, Shoulder and Hand (DASH) score is a useful tool for quantifying upper limb disability. Below is a summary comparing DASH and MEPI scores in published cases:

Author	Fracture Type	DASH Score	MEPI Score
Ashwood *et al*. (2010)	Dubberley 2A	22	88
Lopiz et al. (2016)	Dubberley 2A	18	90
Current Case	Dubberley 2A	20	85

Conclusion

Kocher's diacondylar fracture of the distal humerus is a rare and challenging condition requiring precise imaging, surgical technique, and rehabilitation. Timely CT-based diagnosis and nerve-sparing surgical approaches are key. Anatomical reduction and stable fixation ensure favorable functional recovery.

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