Case Report

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Terrible Triad of Elbow

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Abstract

The terrible triad of elbow, initially named by Hotchkiss, is a combination of dislocation of elbow, along with the fracture of radial head and coronoid process. The management of such injuries is to restore the stabilizing bony structures of the elbow, if not treated appropriately can lead to stiffness, post-traumatic arthritis and pain. So, the sequence of fixation is mobilization of the radial head fragments and fixation of coronoid fracture, fixation or replacement of radial head or neck fracture, and reattachment of the Lateral Collateral Ligament origin to lateral epicondyle. We are reporting one such case, of a male of 50 years, and have discussed mechanism of injury, clinical presentation, management and prognosis.

Keywords: Dislocation; Elbow; Fracture; Radius; Coronoid.

INTRODUCTION

The Terrible triad injury is often caused by a fall onto an outstretched hand. A posteriorly directed force results from a fall on an extended elbow, which levers the ulna out of trochlea. Subsequently, the anterior capsule and collateral ligaments undergo increased tension and eventually fail.[1] The diagnosis can be made with plain radiographs. CT studies are helpful for surgical planning. Treatment is generally Open Reduction & Internal Fixation versus Radial Head Arthroplasty, Lateral Collateral Ligament reconstruction, Coronoid open reduction & fixation and possible Medial Collateral ligament reconstruction.[2]

CASE REPORT

A 50 years old male patient came to casualty of Vijay Ortho & Trauma Centre, following a fall from height of 10 feet on an outstretched hand, complaining of pain, swelling, clicking and locking with elbow in extension. On examination, patient had varus / valgus instability, deformity of elbow, three point triangle i.e., tip of olecranon process, medial & lateral epicondyle disrupted, restricted supination and pronation, diffuse tenderness and severe swelling around elbow with no distal

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neurovascular deficits. Plain radiographs showed Ulnohumeral & Radiocapitular dislocation, Coronoid fracture, and Neck of Radius fracture. Initially, closed reduction of elbow joint was performed. After one week, Open Radial Head Arthroplasty, Lateral Collateral Ligament Reconstruction and Coronoid fracture fixation done with suture anchor by making hole in upper end of ulna. The elbow was then immobilized in an above elbow slab for four weeks, followed by active and then passive mobilization. Patient got almost full flexion and extension at the elbow joint and returned to his job after 3 months.

Fig. 1 & 2: Pre-operative and immediate Post-operative X-Ray of Elbow joint respectively (both in Anteroposterior and Lateral views); **3.** Clinical picture at 3 months follow-up

DISCUSSION

The pathophysiology is fall onto a supinated forearm and extended arm, which results in a combination of valgus, axial and posterolateral rotatory forces, which produce posterolateral dislocation.[3]

Pathoanatomy: Structures of the elbow fail from medial to lateral i.e., firstly, the Lateral Collateral Ligament is disrupted, anterior capsule injured next and lastly, a possible Medial Collateral Ligament disruption.[4]

Anatomy: Radial head is the primary restraint to Posterolateral rotatory instability (PLRI) and secondary valgus stabilizer. During the forearm in neutral rotation, there is absence of cartilage in the lateral portion of articular margin, roughly between radial styloid and lister's tubercle. An anterior and varus buttress is provided by the coronoid process, to the ulnohumeral joint and it also resists the posterior subluxation beyond 30 degrees of flexion.[5] There is typicallysome anterior capsule attached to the fracture fragment. Medial Collateral Ligament consists of three components i.e. Anterior bundle, which is most important for stability, acts as a restraint to valgus and posteromedial rotatory instability, and inserts 18.4 mm dorsal to tip of Coronoid on the Sublime tubercle[6] (Anteromedial aspect of coronoid); Posterior bundle; and Transverse ligament.[7] Lateral Collateral Ligament is also the primary restraint to PLRI, inserts on superior crest, distal to lesser sigmoid notch, and is usually avulsed off the lateral epicondyle during an injury.[8]

Presentation

Patient came with complaints of pain, swelling, clicking and locking with elbow in extension. Physical examination showed possible varus/ valgus instability. Distal radioulnar joint must also be evaluated for possible Essex-Lopresti injury.

CONCLUSION

Terrible triad injury historically has poor outcomes, secondary to persistent instability, stiffness and arthrosis. In an attempt to quickly move through a thorough examination of the extremities, a high index of suspicion should be maintained clinically, with plans to seek relevant imaging studies to arrive at an accurate diagnosis and further, proceed to early and adequate treatment. In our case, the patient had functionally full range of painless movements of elbow, without arthrosis.

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