ISOLATED FRACTURE OF TROCHLEA: A RARE CASE ENTITY

Orthopedics

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ABSTRACT

Isolated fracture of the trochlea is a rare variety of partial articular fracture of the distal humerus. A 32 year old gentleman presented with trauma to the left elbow sustained due to fall from height. Radiographs revealed an isolated fracture of the trochlea. CT Scan was done to better evaluate the fracture geometry. An ORIF(Open reduction internal fixation) was done through medial approach and fracture was fixed with Herbert and Cancellous cannulated screws. Post operatively early range of motion exercises of the elbow was commenced. Patient regained nearly full elbow range of movements.

KEYWORDS

Trochlea , CT Scan ,ORIF ,Herbert ,Cancellous cannulated screws ,early range of motion

BACKGROUND:

Fracture of the distal humerus usually involves capitellum and variable part of trochlea. Trochlear fracture in isolation is a rare entity because of it's deep location within the elbow joint and thus it is protected from direct trauma. These fractures are known to result in elbow stiffness ,post traumatic arthritis and instability. Therefore management of these type of fractures requires a systematic approach, obtaining an articular anatomic reduction and providing a painless ,stable and mobile elbow joint .In this paper I aim at presenting a case of fracture trochlea which was managed operatively and had a good uneventful postoperative recovery.

CASE REPORT:

A 32 year old male patient was admitted to our department for an elbow trauma sustained due to fall from height on an outstretched left hand with his elbow extended and supinated. On examination his left elbow was swollen with tenderness over the medial aspect. Elbow range of motion was restricted and painful. There was no associated neurovascular deficit. Digital radiographs showed an intraarticular semilunar fragment lying anterior and proximal to the distal humerus simulating a fracture of the capitellum. A Computed Tomography(CT Scan) was done which better delineated the fracture geometry and showed an isolated shear fracture of the trochlea.

FIGURE 1: AP and LAT radiographs showing coronal plane shear fracture

Figure 2: CT Scan showing an isolated shear fracture of the trochlea

The patient was surgically managed. The fracture site was approached through a medial approach passing between triceps in the back and brachialis in the front. The ulnar nerve was dissected and protected. Common flexors were detached from medial epicondyle and the capsule was incised. Anatomical reduction was achieved and fracture fixed with 2 herbert screws

and 1 cancellous cannulated screw. Reduction was confirmed by fluoroscopic examination and direct visualisation. Stability and range of motion was checked post fixation. Post operatively limb was immobilized in a long arm slab in 90° flexion.

Figure 3: Immediate postoperative X ray

Sutures were removed at 2 weeks. Elbow range of motion(ROM) exercises were commenced from 3rd week onwards with Hinged elbow brace first passively and then actively. Patient was regularly followed up and at each visit elbow ROM was documented. Patient achieved nearly full range of movements of elbow joint at 4 months postoperatively and returned to his previous work. The fracture had also united by then. Radiographs at 4 months revealed no evidence of arthritis.

Figure 4: Radiograph showing fracture united at 4 months post operatively

Figure 5: Full range of movements at elbow joint (extension-flexion) at 4 months followup

Figure 6: Supination-Pronation movements of elbow joint at 4 months followup

DISCUSSION:

Fractures of the trochlea has been previously described as part of complex fracture of distal end of humerus and in conjunction with elbow dislocation. But the trochlea rarely fractures in isolation. The trochlea has no muscular or ligamentous attachments and the ulnohumeral joint is rarely subjected to shear forces. Moreover it is located deep within the elbow joint and is rarely subjected to direct trauma. Numerous theories have been suggested as to the mechanism of injury of these fractures. Probably an axial load from the coronoid process and a varus stress have led to this fracture.

Diagnosis of these fractures are based on plain radiographs. However it is difficult to detect isolated trochlear fracture on anteroposterior radiographs. Lateral view may show a coronal plane fragment but is difficult to distinguish from capitellar fracture. A Computed Tomography Scan is frequently done for better delineation of fracture geometry and helps in preoperative planning.

Cases reported in literature till date have been managed with good outcomes. The trochlea forms the articular surface of the medial column of elbow and is responsible for allowing ulnohumeral flexion and extension. The fractures if not managed properly may lead to elbow stiffness, instability and post traumatic arthritis. The bony fragment can cause mechanical block to elbow flexion by obstructing the coronoid fossa. The main stay of management of trochlear fracture is surgical stabilization. Open reduction and internal fixation with various materials such as kirschner wires, compression screws, headless compression screws have been used in the treatment of trochlear fractures. Screw fixation allows effective compression at fracture site with good stability and early motion. Medial approach is the most favourable one as it allows direct visualization of fracture fragments.

Early range of motion exercises of the elbow joint was instrumental in achieving a good functional outcome postoperatively.

CONCLUSION:

Isolated fracture of the trochlea is a rare entity and requires prompt diagnosis and effective management. Perfect anatomical reduction and early range of motion exercises is the key to an excellent functional outcome.

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