Radial Head Fracture with Medially Displaced Fragments Excised by Two Incisions

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ABSTRACT

Introduction
Radial head fractures are the most common elbow fractures and it usually presents with fracture fragments displaced outwards and forwards, medially displaced fragments are very rarely documented in the literature. We are describing a case of comminuted radial head fracture with medially displaced fragment without concomitant elbow dislocation.

Case presentation
A 35 year old man presented with a history of fall on outstretched hand. X-rays and CT image reconstruction was done which showed comminuted radial head fracture with two major fragments, one was on the lateral side of elbow joint and another on medial side, without concomitant elbow dislocation. Complete excision of radial head was done using two incisions, one standard Kochers incision and a separate medial incision. Elbow was immobilized for two weeks thereafter gradual range of motion exercises was started. Almost complete range of motion was regained following surgery and no heterotropic ossification was noted after two years of follow-up.

Conclusion
Our case did not fall in any of the two injury patterns described by El Ghawabi and was not associated with concomitant elbow dislocation. We propose comminuted radial head fracture with medially displaced fragments may present without elbow dislocation. We also recommend early institution of elbow mobilization to regain maximum elbow movements.

Key words: radial head, fracture, dislocation

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INTRODUCTION

Radial head is the most commonly fractured bone in the elbow which may or may not be associated with posterior dislocation of elbow. It may also be associated with ulnar nerve palsy which is usually due to traction injury to the nerve. The bony fragments of radial head are usually displaced forwards and laterally, mostly confined to lateral aspect of the elbow1-2. It may also displace proximally3. Medial displacement of radial head fragments are rarely noted and described in the literature4-7. The treatment of radial head fracture depends upon

head comminution, percentage of articular fragment involvement, presence of intra-articular loose bodies and associated ligamentous injury of the elbow.

We are reporting a rare case of comminuted radial head fracture with two major fragments, one in the elbow joint laterally and another medially, lying antero-medial to ulna. Complete excision of the radial head was done using two incisions.

CASE REPORT

35 years old Indian male, presented in Emergency department with severe pain and swelling over left elbow after a history of fall on outstretched hand. There was marked limitation of elbow movements. There was no history suggestive of Elbow dislocation. X-rays showed comminuted radial head fracture with two major fragments, one was on the lateral side of elbow joint and another on medial side (Fig1a&1b). Computed tomography with reconstruction images were done to see associated bony injuries and to locate the anatomical position of fragments. It showed medial fragment lying antero-medially to ulna (Fig2a&2b). Patient was operated and complete excision of radial head was done using two incisions. One Kochers incision for lateral fragment and an antero-medial incision for the other fragment (Fig3a&3b). The antero-medial fragment was found in the belly of flexor digitorumprofundus muscle. Post operatively the elbow was immobilized in above elbow plaster slab for two week, and then gradual assisted elbow mobilization was started. Arm sling support was given for another two weeks. The patient was followed for duration of two year and X-rays showed no evidence of heterotrophic ossification (Fig4a&4b). Patient had full range of motion at last follow-up. Functional rating index of Broberg and Morrey was used which was 91/100 in the last follow-up.

Figure 1a & 1b: Pre operative X-rays showing comminuted radial head fracture with medially displaced fragments.

Figure 2a & 2b: CT reconstruction images.

Figure 3a & 3b: Complete excision of radial head using two incisions.

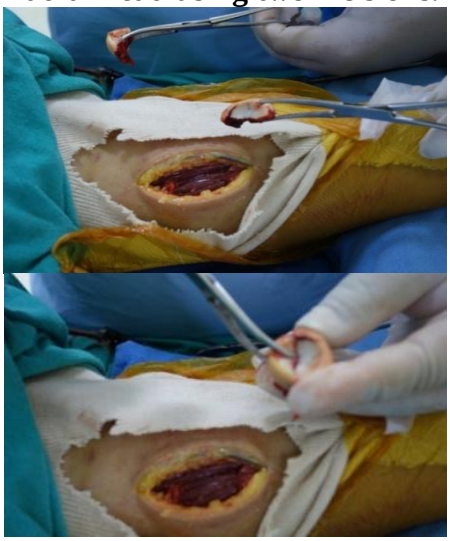

Figure 4a & 4b: Two years post operative x-rays showing no heterotrophic ossification.

DISCUSSION

Radial head is the most commonly fractured bone in the elbow. About one third of elbow fractures are radial head fractures. It may or may not be associated with posterior dislocation of elbow. The mechanism of injury in radial head fractures is fall on outstretched hand with slight flexion and valgus stress at elbow causing compression of radial head against capitellum4. In majority of the cases fracture fragments are displaced outwards and forwards. Medial displacement of radial head fragments is a rare entity. Two such cases were reported by Watson-Jones4, one was associated with ulnar nerve palsy. Eid5 reported eight cases of medial displacement of radial head fragments, out of which six had posterior dislocation of elbow and two had ulnar nerve palsy probably due to traction injury. Tudisco6 et al also reported two cases with medial displacement of radial head fragments, associated with elbow dislocation. El Ghawabi7described three cases of medial displacement of radial head fragments, presenting with and without elbow dislocation. According to El Ghawabi7 radial head gets squeezed between radial shaft and capitellum causing medial displacement of radial head fragments. He postulated two types of injury patterns, in the first type complete radial head is displaced medially without elbow dislocation while in the second type, the radial head is divided into many fragments with some of them lying on ulnar side. This type is associated with severe trauma and patient usually presents with a dislocated elbow. In contrast to this, our case did not present with elbow dislocation and did not fall in any of the two described types.

In present case radial head was comminuted and divided in two major fragments. One was on the lateral side of elbow joint and another was on medial side, lying in the belly of flexor digitorumprofundus muscle. Medial displacement of radial fragments without elbow dislocation may be explained by the Nutcracker effect proposed by Muzaffaret.al. 8. According to it the medial part of the head is squeezed between the capitellum and the radial

shaft and lateral part of the radial head, causing the medial splay of radial fragment. So comminuted radial head fracture with medially displaced fragments need not be associated with concomitant elbow dislocation as seen in our case.

Two incisions, standard Kochers incision and a separate antero-medial incision, are required to excise the radial head completely. Early mobilization should be started to achieve maximum range of motion.

CONCLUSION

Medial displacement of radial head fragments are seen very rarely. Contrary to El Ghawabi7 theory comminuted radial head fracture may present without elbow dislocation, which may be explained by Nutcracker effect8. Furthermore the classification given by El Ghawabi7 is not sufficient to describe all such cases. The authors also recommend early initiation of elbow mobilization to prevent loss of range of motion of elbow.

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