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A Case of Non-Union of Lateral Condyle of Humerus in Paediatric Age-treatment with Milch Osteotomy

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Abstract

Objective: Lateral humeral condyle fractures are troublesome injuries and are common among the lower end humerus epiphyseal injuries. These fractures are prone to go for non union . Preference for treatment of these non- unions, is to be individualised. Methods, varying from open reduction internal fixation with or without bone pegs, varus osteotomy to displacement osteotomy in gross valgus deformity are used. Here I am reporting a case non-union of lateral humeral condyle fracture, reported 3 years after injury , with gross cubitus valgus deformity, without ulnar nerve involvement in a girl of 11 years treated with Milch opening wedge displacement Osteotomy. There are very few case reports in English Literature published of this kind, treated with Milch opening wedge displacement osteotomy infact hardly find any after the Milch's original articles.

Keywords: lateral humeral condyle, non-union, valgus, displacement osteotomy

Introduction

Fracture of lateral condyle of humerus in paediatric age group is notorious for non union. Attempts to treat these fractures usually lead to displacement and requiring open reduction and internal fixtion1-2. Hence these fractures are called "Fracture of necessity". Lateral condyle fractures are classified by Milch classification3 and also depending on displacement. When these fractures, especially Milch type 2 and displaced fractures, are missed, neglected or in-adequately or conservatively treated, they are likely to end up in complications like, non-union, cubitus valgus with increased carrying angle, with or without tardy ulnar nerve palsy. The treatment of these fracture depend on the degree of displacement, deformity and associated ulnar nerve involvement. Non-union of these fractures are difficult to treat and methods of treatment vary from open reduction and internal fixation with bone grafting in form of bone pegs, simple varus osteotomy, dome osteotomy or open wedge displacement osteotomy as described by Milch, with or without ulnar nerve transposition depending on ulnar nerve involvement.

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Case report

A girl of 11 years reported to outpatient department with history of fall on out stretched hand 3 years before the date of visit. She had taken initial treatment in a hospital but later on further treatment was taken with some osteopath in the form immobilisation with bamboo stick. Patient came with complaints of gross progressive outward bowing (valgus deformity) of left elbow. Patient did not have any neurological complaints or pain.

On examination patient had increased carrying angle of 450 with gross valgus deformity , with gross bony prominence of medial epicondyle. The three point bony relation was disturbed, with widening of intercondylar distance and with migration of lateral epicondyle proximally. She had full range of movements. She did not have signs of ulnar neuropathy. Patient's mother had main concern of cosmetic deformity, was unaware of possible ulnar neuropathy.

Her X-ray of Left elbow showed non-union of lateral humeral

Figure 1: a) Pre op clinical ; b) 2.5 mt post op clinical

Figure 2: a) pre op 40 'valgus ; b) 2.5 mt post op clinical

condyle with proximal migration of the lateral condyle and avascular necrosis of the condylar part. Her carrying angle on the affected side was 450 as compared to 160 on the normal side.

In view of poor bone stock on the lateral condyle and gross valgus deformity, without neuro deficit and also taking into consideration of the patient's mother's concern of cosmetic deformity, decision of Milch opening wedge displacement Osteotomy was made. Under general anaesthesia, in lateral position and under tourniquet, posterior approach was used. Ulnar nerve was isolated and a transverse osteotomy was done at the junction of lateral humeral border and forearm axis. A slot was created at the centre on distal part of proximal fragment. Distal fragment was shifted laterally and at the same time valgus was corrected. Osteotomy was fixed with criss-cross k wires. Fracture was not disturbed during the procedure. Ulnar nerve transposition was not done in view absence of any neurological deficit. Intra operatively valgus correction was checked before giving above elbow slab.

Post operatively patient's elbow was immobilised for 6 weeks and followed by active mobilisation. K wires were removed after 8 weeks. At 10 weeks patient had full range of movements with normal carrying angle.

Discussion

Fracture non-union of lateral condyle of humerus in paediatric age group, pose challenge to surgeon in terms of selection of treatment modality. Associated deformity in the form of valgus (increased carrying angle) and possible association of ulnar nerve palsy play key role in decision making. Attempts to get union without addressing these issues and concerns of patient may lead to less than satisfactory results. In such cases of lateral condyle non-union treatment may vary. Masad et al4 in their series , did osteosyntheis, osteotomy and ulnar nerve transposition and concluded osteosynthesis is helpful in painful and apprehensive elbows. Some studies have shown effective results with dome osteotomy6,8. Simple varus osteotomy are reported to give satisfactory results7, but in presence of gross valgus, such osteotomy can produce gross medial condyle prominence and producing unacceptable alignment between humerus and fore arm. In presence of gross valgus deformity (increased carrying angle) Milch varus displacement osteotomy is an excellent option. It helps in achieving following goals- correction of deformity, prevention tardy ulnar nerve palsy, excellent function, cosmetically acceptability.

Figure 3:

Conclusion

Non-union of lateral condyle fracture of humerus with increased carrying angle are usually associated with gross lateral condyle displacement. In such stable elbow with non-union of lateral condyle fracture with increased carrying angle, without ulnar nerve palsy, Milch's medial displacement osteotomy produces excellent functional and cosmetic results.

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