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Management of Malunited Supraconylar Humerus Fractures

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ABSTRACT

Fractures around the elbow are notorious for malunion so they call for meticulous intraarticular reduction as well as accurate limb alignment. Supracondylar fracture is the most common fracture around elbow in children and cubitus varus is the most common long term complication of these fractures. Supra condylar fractures of the elbow in children, as well as fractures involving the distal part of the humerus may lead to residual elbow deformity if not properly treated by reduction and maintenance of reduction. Cubitus varus (gunstock deformity) represents the most common long term complication of those fractures in children. Although functional impairment is rare, the cosmetic deformity of the elbow is significant. A number of children with severe posttraumatic cubitis varus deformity also have an internal rotation deformity of the distal humerus accompanied by changes in the biomechanics of the elbow.Various corrective osteotomy procedures have been proposed for treatment of cubitus varus . These include medial opening wedge osteotomy, lateral closing wedge osteotomy, lateral closing wedge osteotomy with simultaneous derotation arc osteotomy, pentalateral osteotomy and dome osteotomy. The goals of osteotomy are correction of the coronal, sagittal and rotational deformity. Prevention of elbow stiffness, through firm fixation of the osteotomy site and early use of the joint, is also desirable. Most of these cases present themselves in childhood only. Presentation with cubitus varus deformity at the age of 17 is not so common and so is my case report of a 17 year old male patient who reported with a cubitus varus deformity of 18 degrees due to a malunited supracondylar humerus fracture. He had a history of a fall at the age of 5 while playing for which he went to a local bone setter who treated him conservatively with an above elbow slab.A dome osteotomy supported by a buttress plate was performed.

KEYWORDS : Supracondylar humerus fracture,Malunion,Cubitus varus,Gunstock deformity,Osteotomy

1. Introduction

Cubitus varus (gunstock deformity) is the most common long term complication of childhood supracondylar fracture of the humerus.

It has an average incidence of 10-50%, the incidence being higher (58%) in fractures originally managed conservatively[1,2].For a long time cubitus varus deformity has been regarded as a cosmetic deformity only. But additional complications may occur.Cubitus varus shifts the line of pull of the triceps more medially which may cause antero-medial displacement of the medial portion of the triceps during elbow flexion. The ulnar nerve might be pushed or pulled anteromedially resulting in ulnar neuropathy. Cubitus varus may also be associated with posterior instability of the shoulder, recurrent posterior dislocation of the head of radius. The biomechanics of the elbow are also changed. A poor cosmetic appearance of the elbow in many patients was reported because of bulging of the lateral epicondyle, which was more prominent if there was atrophy of the flexor muscles of the forearm[3]. Although rotation of the humerus may be ugly, the rotational deformity without any other deformity, contrary to some reports, cannot be cubitus varus or prominence of the lateral condyle, and such a deformity would be easily compensated for by a rotation of the shoulder joints[4]

2. Materials and Methods

PRE OPERATIVE ASSESSMENT

- Anteroposterior (elbow in full extension and forearm in full supination) and lateral radiographs of both elbows were taken.

- The carrying angle was measured on both sides and the angle of correction was estimated.

- The lateral condylar prominence index (LCPI) was calculated on the affected side as described by H.K.Wong.

LCPI=(AC-BC) x 100/AB.

There is usually a slight medial prominence, making the LCPI predominantly negative.

- Range of motion of the affected elbow was noted, along with complaints of cosmesis, pain and loss of motor power.

PRE-OPERATIVE PLAN FOR OSTEOTOMY

- First the carrying angle on both sides were measured. Then angle of correction was calculated.
- The mid humeral axis of the affected side was then drawn over the anteroposterior radiograph.
- Point O was marked where this axis cut the olecranon fossa, Point A was marked at the junction of lateral condylar epiphysis with distal humerus.
- Point O and point A were then joined. Then the angle of correction making OA as base was drawn.
- Point B was drawn were this angle cut the distal humerus.
- Now O became the center of the dome and OB the radius of the dome. With this radius a dome was drawn making point O as the center.

- The arc of the dome was the proposed site of osteotomy.

3. Observation and Results
POST OP RADIOGRAPH

AP LATERAL

- The range of motion (ROM) remained the same pre op and post op (140^0).
- The carrying angle on the affected side was 18^0varus and 10^0 valgus on the normal side. Post-op the carrying angle on the affected side was 9^0 valgus.
- The lateral condylar prominence index (LCPI) was 13 on the affected side pre op and -9 on the affected side post op.
- No complications were reported.
- The BELLMORE CRITERIA for the assessment of the outcome was used and the result was EXCELLENT.

PREOP *IMMEDIATE POSTOP*

6 MONTHS POSTOP

12 MONTHS POSTOP

6 MONTHS POSTOP RADIOGRAPH-AP

6 MONTHS POSTOP RADIOGRAPH-LATERAL

12 MONTHS POSTOP RADIOGRAPH-AP

12 MONTHS POSTOP RADIOGRAPH-LATERAL

4. Conclusion

Cubitus varus is a common complication after supra condylar fracture of the humerus and there are controversies regarding the technique of osteotomy used for the correction of this deformity. The purpose of this case report is to show that dome osteotomy is an effective procedure for the correction of cubitus varus deformity in terms of cosmesis and functional outcome.

REFERENCES

1. Carlson CS, Rosman MA. Cubitus varus: a new and simple technique for correction. J Pediatr Orthop 1982;2:199–201. | 2. Hoyer A. Treatment of supracondylar fracture of the humerus by skeletal traction in an abduction splint. J Bone Joint Surg 1952;34:623–37. | 3. Wong HK, Lee EH, Balasubramanian P. The lateral condylar prominence: a complication of supracondylar osteotomy for cubitus varus. J Bone Joint Surg [Br] 1990;72:859-61. | 4. Matsushita T, Nagano A: Arc osteotomy of the humerus to correct cubitus varus. Clin Orthop 1997;336:111–5.