

A Comparative Study Of Baumann's Angle And Anterior Humeral Line In Two Methods Of Treatment For Displaced Supracondylar Fractures In Children

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INTRODUCTION:

Supracondylar fractures of humerus constitute about 65.4% of all fractures around the elbow in children. Gartland's Type III is classified as an unstable fracture associated with alteration of Baumann's angle and anterior humeral line. Postoperatively, an increase in Baumann's angle will produce residual varus deformity. If lateral radiograph shows passage of the anterior humeral line in front of lateral condylar ossification center, it indicates the presence of posterior angulation of the distal humerus. We conducted a study to calculate Baumann's angle and anterior humeral line and their clinical importance in two methods of treatment of supracondylar fractures of humerus.

OBJECTIVES:

a) To evaluate cubitus varus by measuring Baumann's angle b) To detect anterior-posterior angulation of the distal humerus by drawing anterior humeral line c) To identify neurological complications.

MATERIALS & METHODS:

A total of 36 patients aged 3 to 12 years with supracondylar of humerus fractures Gartland's Type III were treated at our hospital during the period of January 2009 until January 2016. They were divided into two groups. We retrospectively compared 24 patients (group I) treated with CMR and percutaneous pinning to 12 patients (group II) treated with ORIF with K-wires. Both the fixations were done under image intensifier control. Postoperatively, Plaster of Paris back slab was applied with elbow flexed to 90° in both groups for 3-4 weeks. They were followed up for at least 8 months.

RESULTS:

Elbow x-ray AP view of 5 cases in group I showed significant increase of Baumann's angle compared to the contralateral side (> 10°) whereas this angle was in normal range

for all cases treated with the ORIF group. Posterior displacement of distal part of the humerus was noted in 3 cases from group I after drawing an anterior humeral line which passed in front of the capitellum. However, this line intersected the capitellum in all patients from group II. We had four iatrogenic ulnar nerve palsies in group I where the patients presented with gross swelling of the elbows prior to surgery which made the palpation of the bony landmark difficult. All patients recovered completely within two months postoperatively. No nerve injury was seen in the ORIF group. We observed one superficial pin tract infection in each group and these patients responded to oral cefuroxime for 1 week.

CONCLUSION:

ORIF with K-wires provided better anatomical reduction, fracture stability and satisfactory outcome with less complications compared with CMR and percutaneous K-wiring for supracondylar fractures of the humerus. We found that this ORIF technique is suitable for those cases that had gross swelling over the elbow or presented late to the hospital.

REFERENCES:

1. James R K, James H B. Rockwood and Wilkins fractures in children, 7th Edition. Philadelphia: Lippincott Williams and Wilkins, 2010; 479-529.