

Factors Determining The Outcome Of Acute Lateral Humeral Condylar Fracture In Children

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INTRODUCTION:

Lateral condylar of humerus (LCH) fractures are among the commonest fracture in children. Even with open reduction and internal fixation (ORIF) the outcomes remain variable. This study aims to determine factors influencing the overall functional outcome and to describe the associated complications.

METHODS:

Children younger than their skeletal maturity age, treated conservatively or operatively for at least 1 year, were included. Proper plain radiograph and functional ability of the affected elbow were assessed. The functional outcome, based on activity of daily living, range of motion and carrying angle of the affected elbow were compared with the normal elbow and graded using Dhillon scoring system (Table 1) into excellent, good, poor and fair outcome. The amounts of residual displacement after treatment were documented.

Table 1: Dhillon scoring system

Function			
Pain	ROM (degrees)	Carrying angle	Score points each column
None	0-140	Valgus 7-10	3
Occasional	>15-125	Valgus <20 Varus <0	2
After heavy work (or activities)	>30-110	Valgus 20-30 Varus 0-15	1
With normal activity (motor or sensory loss)	<30-110	Valgus >30 Varus >15	0

ROM, range of motion.
Functional grading (points): excellent (6), good (5), fair (4), poor (<4).
Overall grading (points): excellent (9), good (7-8), fair (5-6), poor (<4).

RESULTS:

Twenty-seven male and six female with the age at time of fracture was within 2 to 12 years old (mean age 6.3 years old) participated. Majority had good and excellent functional outcome (42.4% and 27.3% respectively) followed by fair score (24.2%) and 6.1% had poor score. The

amount of residual displacement post treatment, either medial or lateral, age at time of fracture, treatment type and fixation method were not statistically significant to the functional outcome. Regarding complications, one patient (3.0%) had persistent pain, 14 (42.4%) had lateral condyle prominence, 4 (12%) cubitus varus deformity, 2 (6.1%) had fishtail deformity, 19 (57.6%) had osteophytes and no incidence of AVN and nonunion.

DISCUSSIONS:

Majority of lateral condylar humerus fracture presented like a Salter Harris type IV fracture pattern. Achieving good anatomical reduction is important and ORIF is the preferred option. The goal is to achieve union without residual deformity to ensure good functional outcome. However, several studies reported a good-excellent outcome even with significant residual deformity¹. Conservative and operative treatment were also reported to produce a comparable outcomes².

CONCLUSION:

This study showed good-excellent outcome (69.7%) after at least 1 year of follow up and amount of residual displacement is not statistically correlated with Dhillon scoring.

REFERENCES:

1. Wattenberger JM et. al. J Pediatr Orthop 2002;22:394-398
2. Kyoung et. al. J Pediatr Orthop 2010;Vol 30:No 5