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= Abstract =

## The Result After Surgical Treatment on Lateral Condyle Fracture of Humerus in Children

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Fracture of the lateral condyle of humerus in children are common injury next to supracondylar fracture in children, account for 10 to 15% about the elbow and 18 to 20% about distal humerus fractures. This is the one fracture that can be overlooked clinically and that has a high potential for nonunion and cubitus valgus deformity.

Sixty children treated by closed or open reduction with internal fixation on the lateral condyle fracture of humerus from January 1994 to August 1997, were reviewed. Almost fractures were treated within 12 hours after injury for the purpose of prevention of further displacement and occurrence of complication.

According to Hardacre et al 's criteria, most patients showed excellent and good results. We report the result after surgical treatment on the lateral condyle fracture of humerus in children.

**Key Words** : Fracture, Lateral condyle, Humerus, Children

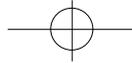
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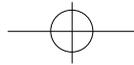
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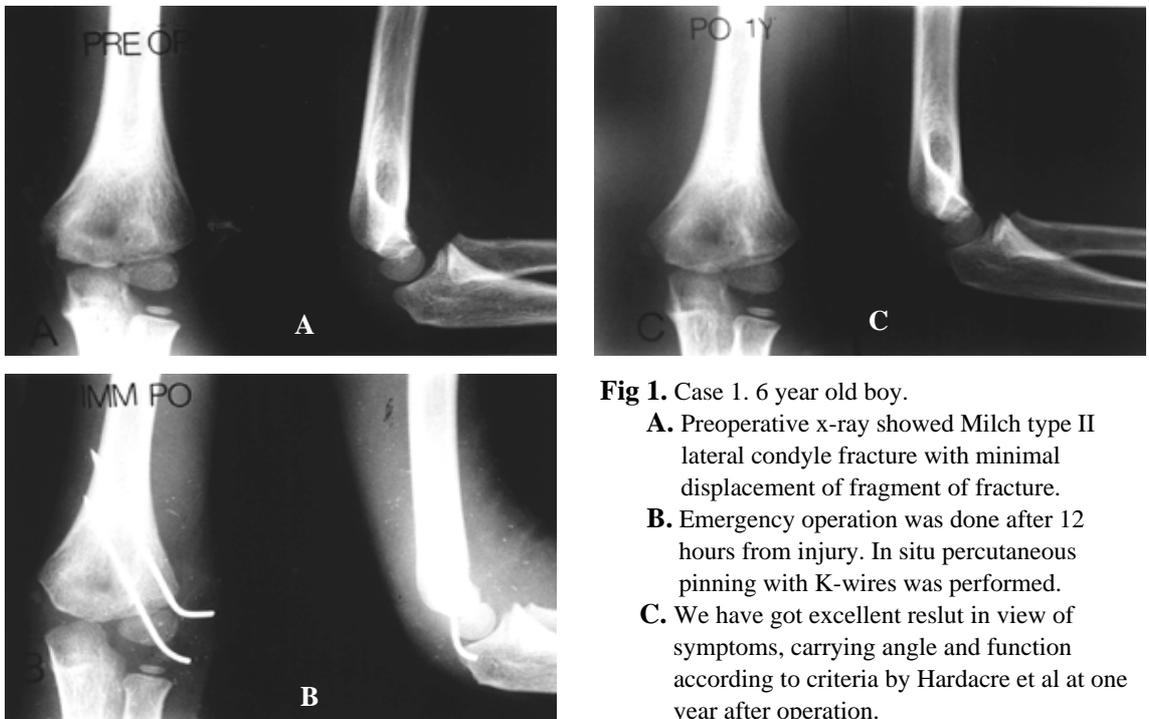
4.9  
 가 45 (75%), 가  
 12 (20%), 가 3 (5%) 30 ,  
 10 30  
 15% 18 1 6  
 20% (10%), 2 54 (90%) 2  
 가  
 가  
 43 (72%)가 12 , 12  
 (20%)가 24 , 5 (8%)가 3  
 Kocher J  
 2 3 K  
 가 30 , 30  
 K-  
 6.3 5 11  
 7.8  
 60  
 1994 1 1997 5 Hardacre<sup>8)</sup> (Table 1)  
 1 가가 30  
 60 2mm  
 39 , 21 1.8 : 1 가  
 11 11 3 ,

**Table 1.** Evaluation of Results (by Hardacre)

	Results	No(%)
Excellent	No loss of motion, No symptoms	57(95%)
	No alteration in the carrying angle	
Good	Lacking no more than 15 degrees of full extension	2(3%)
	Inconspicuously altered carrying angle	
Poor	No arthritic or neurological symptoms	1(2%)
	Disabling loss of motion	
	Conspicuous alteration of the carrying angle	
	Arthritic symptoms or ulnar neuritis	
	Nonunion or avascular necrosis	

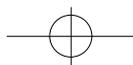


30  
 2 , 1 가  
 . 2 K- Salter-  
 15, 20 Harris 4  
 . Milch<sup>13,14)</sup>  
 13.6 , 13.9 1  
 . 2  
 , , Jacob <sup>10)</sup> McIntyre<sup>12)</sup>  
 , 가  
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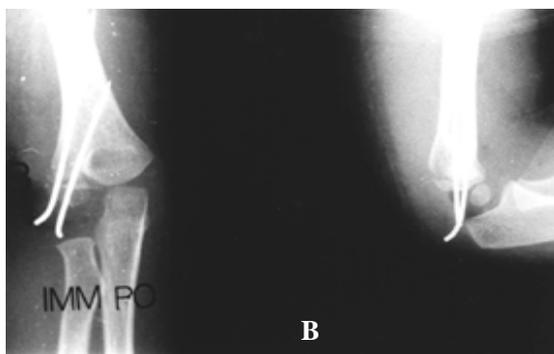
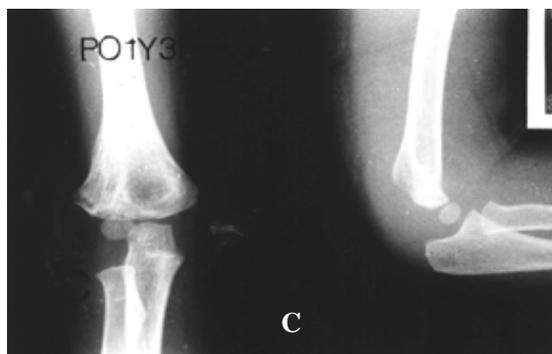
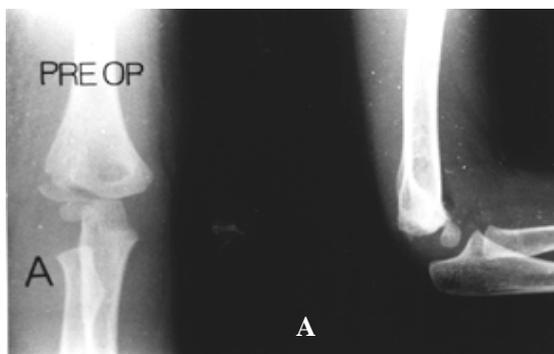
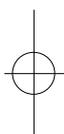


**Fig 1.** Case 1. 6 year old boy.  
**A.** Preoperative x-ray showed Milch type II lateral condyle fracture with minimal displacement of fragment of fracture.  
**B.** Emergency operation was done after 12 hours from injury. In situ percutaneous pinning with K-wires was performed.  
**C.** We have got excellent result in view of symptoms, carrying angle and function according to criteria by Hardacre et al at one year after operation.



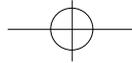


가 가 Foster<sup>5)</sup> 가 Flynn<sup>6)</sup> 3mm  
 Finbogason<sup>5)</sup> 가 가 2mm 2 가  
 가 가 2mm K-  
 3 , 3mm K-  
 Crabbe<sup>3)</sup> K- Mintzer<sup>14)</sup> 2mm 가  
 가 가 K-  
 Sharp<sup>18)</sup> 가  
 가 K- 60 30 가 K-  
 가 가 30 K-  
 가 K- Hardacre<sup>7)</sup> K-  
 가 가



**Fig 2.** Case 2. 5 year old girl

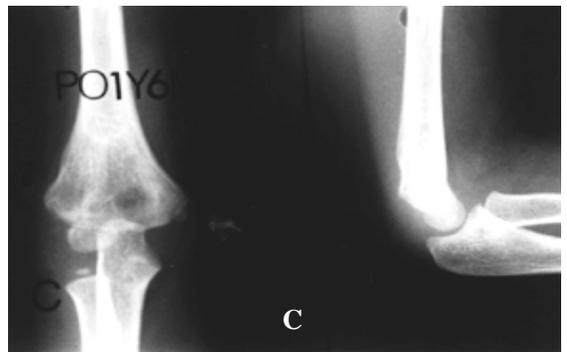
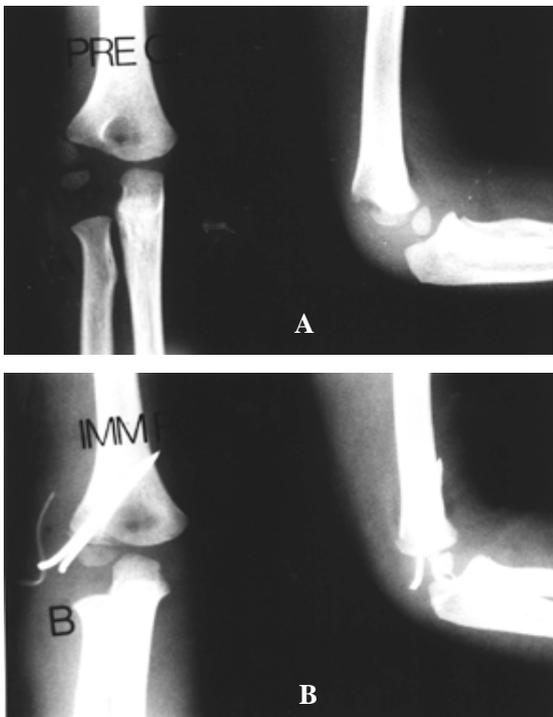
- A.** Preoperative x-ray showed Milch type II lateral condyle fracture with displacement beyond 2mm of fragment of fracture but, articular congruency was maintained by cartilaginous hinge.
- B.** Emergency operation was done with closed reduction and internal fixation with K-wires.
- C.** At 15 months after operation, the result was excellent.



가  
60  
가  
가  
2mm  
2mm  
7.8  
13.6  
2 K-  
13.9  
Hardacre<sup>8)</sup> 60 57 (95%)가  
, 2 (3%)가 , 1 (2%)가

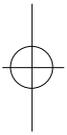
### REFERENCES

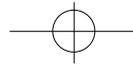
- 1) **Badelon O, Bensahel H, Mazda K, Vie P** Lateral humeral condylar fractures in children : a report of 47 cases, *J Pediatr. Orthoped* 8:31,1988.
- 2) **Conner AN, Smith MG** Displaced fractures of the lateral humeral condyle in children, *J. Bone Joint Surg* 52-B:460,1970.
- 3) **Crabbe W.A.** Treatmentwnt of fracture separation of the Capitular Epiphysis. *J. Bone and Joint Surg.*



**Fig 3.** Case 2. 5 year old girl

- A.** Preoperative x-ray showed Milch type II lateral condyle fracture with displacement beyond 2mm of fragment of fracture but, articular congruency was maintained by cartilaginous hinge.
- B.** Emergency operation was done with closed reduction and internal fixation with K-wires.
- C.** At 15 months after operation, the result was excellent.





- 52:460-464,1970.
- 4) **Dallek M, Jungbluth KH** Histomorphological studies on the development of the radial condyle fracture of the humerus in the growth years. *J Unfall Chir.* 16:57,1990.
  - 5) **Finnbogason T, Karlsson G, Lindberg L, Mortensson W** Nondisplaced and minimally displaced fractures of the lateral humeral condyle in children : a prospective radiographic investigation of fracture stability, *J. Pediatr Orthoped* 15:422,1995.
  - 6) **Foster DE, Sullivan JA, Gross RH** Lateral humeral condylar fractures in children. *J Pediatr Orthop* 5:16-22,1985.
  - 7) **Flynn JC, Richards JF, Saltzman RI** Prevention and treatment of nonunion of slightly displaced fractures of the lateral humeral condyle in children, *J. Bone Joint Surg[Am]* 57:1087-92,1979.
  - 8) **Hardacre JA, Stanley HN, Froimson AJ, Brown JE** Fractures of the lateral condyle of the humerus in children, *J. Bone Joint Surg[Am]* 53:1083-85,1971.
  - 9) **Herring JA** Lateral condyle fracture of the elbow, *J Perdiatr Orthoped*, 6:724-727,1986.
  - 10) **Jacob R, Fowlers J, Rang M, Kassab M** Observations concerning fractures of the lateral humeral condyle in children. *J Bone Joint Surg.* 57-B 430, 1975.
  - 11) **Marcus NW, Agins HJ** Articular cartilage sleeve fracture of the lateral humeral condyle, *J. Pediatr Orthoped* 4:620,1984.
  - 12) **McIntyre W** Lateral Condyle Fracture of the Humerus. In Letts RM ed. Management of Pediatric Fracture. 1st ed. *Churchill Livingstone Inc.* 241. 1994.
  - 13) **Milch H** Fractures and fracture-dislocations of humeral condyle, *J. Trauma* 4:592,1964.
  - 14) **Milch H** Treatment of the external humeral condyle, *JAMA* 160:641,1956.
  - 15) **Mintzer CM, Waters PM, Brown DJ, Kasser JR** Percutaneous pinning in the treatment of displaced lateral condyle fractures, *J. Pediatr Orthoped* 14: 462-465,1994.
  - 16) **Roye DP, Bini SA, Infosino A** Late surgical treatment of lateral condylar fractures in children, *J. Pediatr Orthoped* 11:195,1991.
  - 17) **Rutherford A** Fractures of the lateral humeral condyle in children *J. Bone Joint Surg[Am]* 67:851-6,1985.
  - 18) **Sharp I.K.** Fracture of the lateral humeral condyle in children. *Acta Orthop. Belg.* 31:811, 1965.
  - 19) **Silberstein JJ, Brodeur AE, Gravis ER** Some vagaries of the lateral condyle, *J. Bone Joint Surg* 64-1:444,1981.

