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: 1994 1999

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Oppenheim

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(Humeral-Elbow-Wrist)
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Fig. 1A. Preoperative radiograph of 10 year-old female, showing nonunion of lateral condyle and carrying angle of 40°.

1B. After closing wedge osteotomy and bone graft for the nonunion, radiograph shows improved carrying angle to 9°.

1C. Postoperative 8 month radiograph shows solid union and carrying angle of 10°.



Fig. 2A. Preoperative radiograph of 27 year-old male, showing nonunion of lateral condyle and carrying angle of 29°.

2B. After closing wedge osteotomy and bone graft for the nonunion, radiograph shows internal fixation with Y plate and 4.0 mm cannulated screw and improved carrying angle to 10°.

2C. 16 months after operation, implants were removed and normal alignment was achieved.

Table 1. Patients clinical data and results

Case	Sex	Age at op	Age at injury	Carrying angle		Elbow motion (Ext / Flex)		Follow up (Ms)	Results	Method of fixation	Initial treatment	Complication
				Preop	Postop	Preop	Postop					
1	M	29	11.0	25.0	9.26	*-5/135	-10/140	9	Excellent	Plate	CR	-
2	M	28	5.4	26.4	11.8	0/135	-15/130	33	Good	Plate	Neglect	-
3	M	15	10.2	40.2	10.0	0/135	-15/135	46	Poor	K-wire	CR	Non-union
4	M	27	6.0	29.0	10.4	0/140	-5/135	52	Excellent	Plate	CR	-
5	F	10	5.3	40.4	10.0	-5/140	-5/135	27	Excellent	K-wire	Neglect	-
6	F	29	4.7	26.2	10.2	-10/135	-10/130	25	Good	Plate	CR	-

* - : Flexion contracture

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8~9%

²²⁾,

Blount⁴⁾ 18.5%, Beaty

1

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Kasser²⁾ 16.9%
Beaty Kasser²⁾

20

가

,

Y

가

K-

4.0

mm

9 (0~20)

10,12,13,16,20)

Blount Cassidy⁵⁾

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Wadsworth²¹⁾

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Abstract**Surgical Treatment for the Non-union of the Lateral Humeral Condyle Fracture using Closing Wedge Osteotomy and Bone Graft**

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Purpose: To evaluate the clinical results of the surgical treatment for established nonunion of lateral humeral condyle fracture using closing wedge osteotomy and bone graft.

Materials and Methods: Six patients diagnosed as symptomatic established nonunion of lateral humeral condyle fracture and cubitus valgus deformity were reviewed retrospectively. The average age was 23 years old and mean follow up period was 32 months. We investigate the changes of the symptoms and radiographic findings, and determine the results by Oppenheim's criteria.

Results: According to Oppenheim's criteria, 3 patients showed excellent, 2 good, 1 poor. Carrying angle is improved to 10.2° and range of motion was decreased by mean 9° . All of the patients' muscle weakness and pain were improved, and was achieved solid union at the last follow up.

Conclusion: In the treatment of symptomatic established lateral humeral fracture and cubitus valgus deformity, better functional and cosmetic results are anticipated by a closing wedge osteotomy and bone graft.

Key Words: Lateral humeral condyle fracture, Nonunion, Closing wedge osteotomy, Bone graft

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