

13, 1, 2000 1

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Ilizarov

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: 가

가

: 1996 6 1998 7 16

7, - 2 3, 2, 2, -

5, 6 2 가

가

: 12.7 Stewart Hundley
가 14

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: , ,

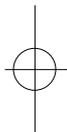
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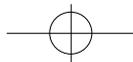
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371-7-206 (120-752)

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* 1999

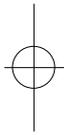




가
1996 6 1998 7
가
가 12 가
3 , 1
가
2.
(supine
Orthopaedic
position)
Trauma Table
가 16
(inferior)
가
“ ㄱ ”
1.
1996 6 1998 7
C-arm
X-
가
(Preassembly system)
16 12 half
24 16 , half
2 , - 7 , - 2 full , 5/8
1 , 9 , - 1 , 5
(Table 1).
1 1 half pin , 가
16
5 , 가9 , 가7 half pin sleeve
가 18 61 ,
41 . T-

Table 1. Location and pattern of humeral fractures (No. of fractures)

Location	Pattern			Total
	Transverse/ short oblique	Segmental/ butterfly component	Severely comminuted	
Proximal	1		1	2
Middle	3			3
Distal	1		1	2
Proximal-middle		4	3	7
Middle-distal		1	1	2
Total	2	5	9	16



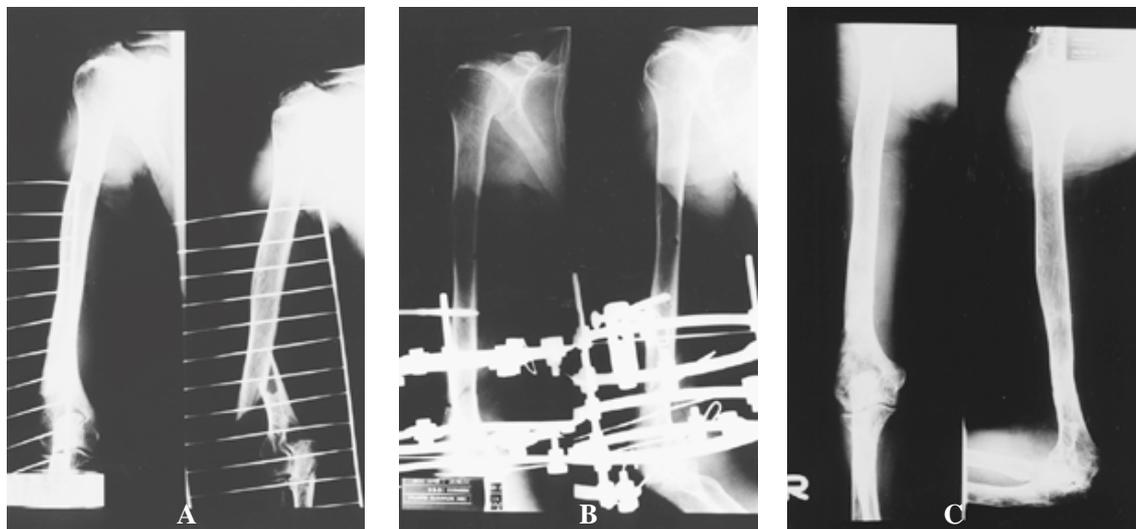
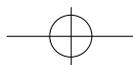
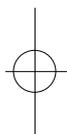


Fig 1-A. Humerus of 61-year-old female with open distal humeral fracture. Initial AP and Lateral view. B. Post-operative X-ray that reveals good reduction with simple Ilizarov frame. C. Final result at 14 months after operation. The functional result was excellent.



half pin
 half pin Rancho (Fig.1-A),
 cubes centering sleeves half pin bayonet full
 full , full half bayonet full
 half (Fig.1-B), 14 (Fig.1-C).
 half pin towel clip 가 2
 가 36
 가 , washer half
 Rancho cubes half pin (Fig.2-B). 1 3
 (Fig.2-C).
 1 3
 61 42 2



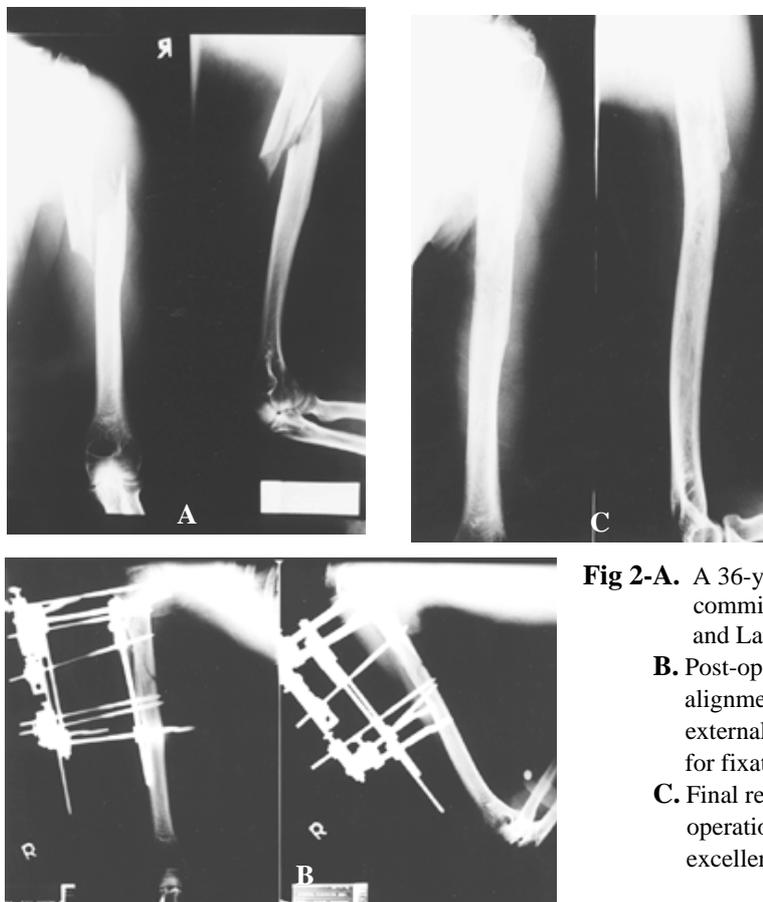
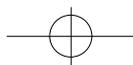


Fig 2-A. A 36-year-old female patient with closed comminuted humeral fracture. Initial AP and Lat view.
B. Post-operative X-ray that reveals good alignment after closed reduction. Ilizarov external fixator system using only half pins for fixation.
C. Final result at 1 year 3 months after operation. The functional result was excellent.

(Fig.3-A).

Stewart Hundley¹⁸⁾

half , full , (50%), 가 8
 , 가 20% 10
 , 가 6 (38%), 10
 (Fig.3-B). , 20%
 1 6 2 (12%)
 (Table 2).

(Fig.3-C).

가

12.7 (Table 3).

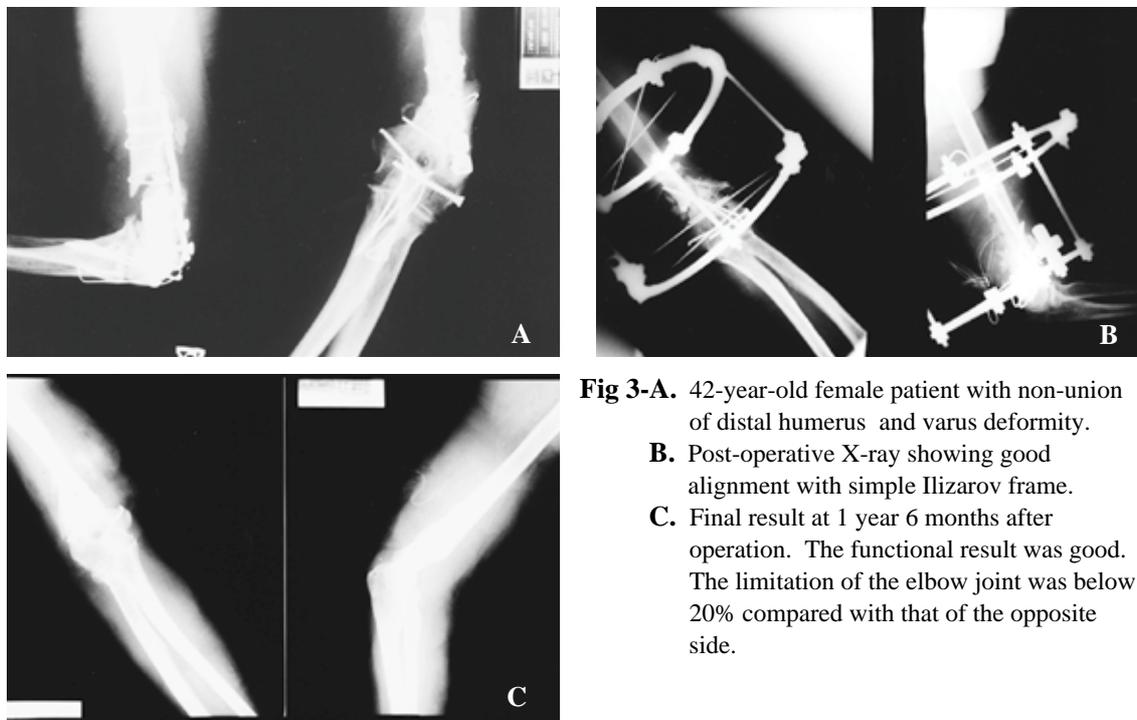
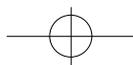


Fig 3-A. 42-year-old female patient with non-union of distal humerus and varus deformity.
B. Post-operative X-ray showing good alignment with simple Ilizarov frame.
C. Final result at 1 year 6 months after operation. The functional result was good. The limitation of the elbow joint was below 20% compared with that of the opposite side.

Table 2. Functional recovery

	Excellent	Good	Fair	Poor
Pain	-	-	Occasional	Persistent
Function impairment	-	Satisfactory for ordinary purpose	Satisfactory for light duties	+
Elbow/shoulder LOM*	-	20%	20%	40%
Angulation	-	10 °	10 °	Malposition
Union	Solid	Solid	Solid	Nonunion
Result	8(50%)	6(38%)	2(12%)	0(0%)

* LOM : Limitation of motion

8 가 , 1
 half pin , 5,9,12)
 , U , Velpeau
 bandage, , 2,17
 가 , 16) 가 .

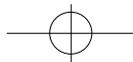


Table 3. Radiological union

	Transverse/ short oblique	Segmental/ butterfly component	Severely communitied	Total
6-8 weeks	1			1
8-12 weeks	1	1	2	4
12-16 weeks		4	6	10
16-20 weeks			1	1

가

16), 가

Iizarov

, Parkinsonism

15) 11)

Stewart

Rush pin, Ender nail, Kuntscher nail, Hundley18) 가 8 (50%),

interlocking nail 가 6 (38%), 2 (12%)

4,6,8) Mono-fixator 가

Iizarov 가

14) 가

가 Tucker 19) 가

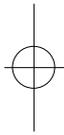
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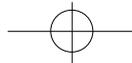
가 Tucker 19) 가

3,10,17)

가 11) half pin

가 (Hybrid advanced type, HA)





frame

half pin

가

가

16

12.7

Stewart Hundley18)

가8 (50%), 가

6 (38%),

2 (12%)

8 가

, 1

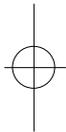
half pin

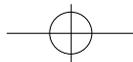
half pin

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Abstract

Treatment of Humerus Fracture using Ilizarov External Fixator

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Purpose : Recently, the incidence of humerus fracture not allowing open reduction and internal fixation has been increased with increment of traffic accident and industrial accident. But, there have been a few reports in the use of Ilizarov external fixator. The purpose of this study is to report the authors' experience with Ilizarov external fixation for the treatment of the patients with fractures of the humerus.

Materials and Methods : From June 1996 to July 1998, we reviewed sixteen patients with humeral fracture who were treated by the Ilizarov external fixator. Three fractures were in the middle third of the shaft; two, in the proximal third; two, in the distal third; seven, in the proximal-middle; two, in the middle-distal. The fractures that were located within the joint of the shoulder or the elbow were excluded. Five fractures had been open and six had been associated with multiple trauma. Two had been initially treated by open reduction and internal fixation but failed : one, because of infection; the other, because of loss of fixation. We performed the Ilizarov external fixator procedure in the case of soft tissue trauma so severe that internal fixation was impossible, and in the case of the comminution too extensive and severe for internal fixation.

Results : The average time to radiologic union was 12.7 weeks. According to Stewart and Hundley's functional assessment system, excellent or good results were obtained in 14 cases. There was no poor result.

Conclusion : Although the Ilizarov external fixator was a technically demanding procedure, it was a good method comparing with any other operative methods for the treatment of fractures of the humerus not allowing the open reduction and internal fixation.

Key Words : Humerus, Fracture, Ilizarov External Fixator

