
<	>								
:									
	:	가						1	
(16-62)	:	가	20 (21)			17	,	3	33
	:		가 14						
	:		Essex-Lopresti					가	
	:		17			,	4		
	:	Böhler			가	Paley	Hall	가	
	:	Böhler	2.8		25.1			가	3
13	,	4	,	1	.	3		,	1
	:								
	:	3	,	2		.	1		3
	:					.	1		, 1
	:	가							

:

634-18

: 063-250-1760, 1770

: 063-271-6538

: kysong@moak.chonbuk.ac.kr

18 (90%)

2.

가 14 (70%)

6 (30%)

가

3.

가 Rowe¹⁹⁾, Essex-
Lopresti⁶⁾ 20 10 (50%), 7 (35%)
20, 가 3 (15%)
2, 1

11 (52%) 가

가 5 (24%), 4 (19%),
1 (4%), 3 (14%)
22.

4 (19%)

1 (4%)

4.

McReynolds¹⁰⁾가 , Ross Sowerby¹⁹⁾가

가

가

Essex-Lopresti⁶⁾
가
17 (81%) , 4 (19%)

1996 4 2001 1

가

가 20 (21) 1

Rowe¹⁹⁾ Essex-Lopresti⁶⁾
Böhler²⁾
가 Paley Hall³⁾ 5 23 (9.73)

가 L

1.

가 20 17 (85%), 3 (15%)
가 , 16 62
(33) , 20 40 가

가 K-
(reconstruction)

plate) 1

2 3 , Cave³⁾ Rowe¹⁹⁾

4-6 가 ,¹⁶⁾ 26.8% ,

8 8) 21% 가

가 , 5 (24%) 11 (52%)

1 , ,

Böhler²⁾ 가

Paley Hall 가¹³⁾ 90-100

, 72-89 , 41-71 , 1-40 4),

Böhler -22 ,

20 2.8 7 37 25.1

가 3 (14%), 13 가 1,16,18)

(62%), 4 (19%), 1 (4%) 가

, Rowe¹⁹⁾ Essex-Lopresti⁶⁾

3 (14%) , 1 (4%)

, 1 (4%) Rowe Essex-Lopresti

3 , 3 , 17 (81%)

(14%), 2 (10%) , 4 (19%)

1 , 1

1 (4%) , ,

가

Cave³⁾ 60% , Whittaker²²⁾가¹⁾

Rowe¹⁹⁾ 1-2% , ,

75% 1948 Palmer¹⁴⁾가

11) , 17) 20 30 90%

가 , Essex-Lopresti⁶⁾ 45 , Maxfield McDermott⁹⁾ Ross

가 Sowerby¹⁸⁾ 8) , 17)

33 , 20 40 가 17

가 17 (85%) 70-80%

가 , 21) .

McReynolds¹⁰⁾ 2 .

Staple ,

82% .

Ross Sowerby¹⁸⁾ .

McReynolds Burdeaus¹⁰⁾ . 1

가 가

Stephenson²⁰⁾ .

가

Harris⁷⁾, Dick⁵⁾, Pannel¹⁵⁾ 가

, Harris⁷⁾ 가

가 가

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가 Böhler²⁾ .

가 Paley Hall¹³⁾ .

가 Böhler , Böhler .

가 Paley .

Hall 가

, 가

, ,

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Table 1. Associated injury

Site of injury	No. of case	Percent
Lower extremity	11	52
Spine	5	24
Upper extremity	4	19
Pelvis	1	4
Abdomen	1	4

*Seventeen among twenty-two patients

Three cases had more than two associated injuries

Table 2. Bohler 's angle

Bohler 's angle	Number(before reduction)	Number(after reduction)
-30- -21	2	
-20- -11	1	
-10- 0	7	
1- 10	1	1
11- 20	8	5
21- 30	1	11
31- 40		3
Total	20	20

Table 3. Clinical result

Result	No. of case	Percent
Excellent	3	14
Good	13	62
Fair	4	19
Poor	1	4

Table 4. Complications*

Complications	No. of case	Percent
Postoperative		
Wound dehiscence	3	14
Infection	1	4
Sural nerve injury	1	4
Late		
ROM limitation of ankle**	3	14
Sustained pain	3	14
Post-traumatic arthritis	2	9

*2 cases had both postoperative and late complications.

**1 cases of them had sustained pain and 1 of them had post-traumatic arthritis.



Fig. 1, 2 : Preoperative AP, lateral radiographs of joint depression type calcaneal fracture of 38 years old male patient.



Fig. 3, 4 : Postoperative AP, lateral radiographs showed restoration of Bohler angle from 3 degree to 25 degree.

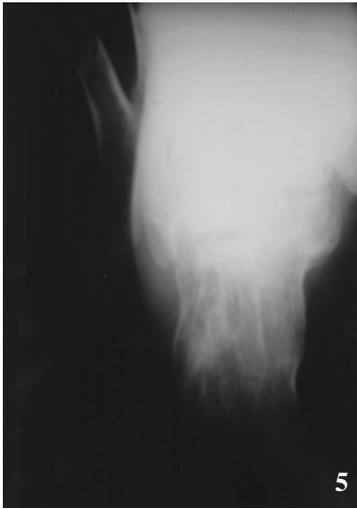


Fig. 5, 6 : 14 months after operation, showed bone union and we performed metal removal and clinical result was good.

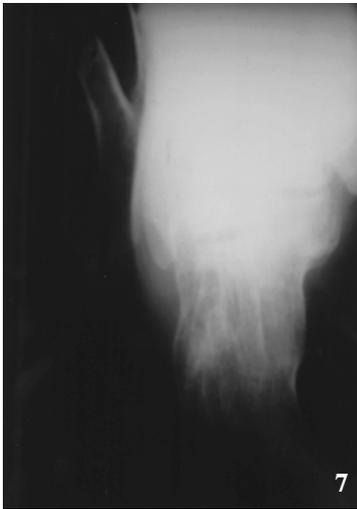


Fig. 7, 8 : Preoperative AP, lateral radiographs of joint depression type calcaneal fracture of 34 years old female patient.



Fig. 9, 10 : Postoperative AP, lateral radiographs showed restoration of Bohler angle from -6 degree to 20 degree.

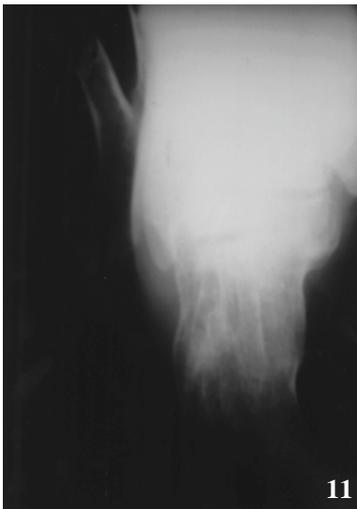


Fig. 11, 12 : 18 months after operation, showed bone union and we performed metal removal and clinical result was excellent.

Abstract

Open Reduction using Lateral Approach in Displaced Intra-articular Fracture of Calcaneus

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Purpose : This study was designed to investigate the usefulness of lateral approach for accurate reduction and rigid internal fixation in comminuted intra-articular fractures of calcaneus.

Material and Method : Twenty patients(21 cases) who had intra-articular fracture of calcaneus and underwent an open reduction and internal fixation using lateral approach were enrolled. Using Essex-Lopresti classification, all cases were intra-articular fracture, which joint depression type was 17 cases and 4 of severe comminuted tongue type. We compared the preoperative and postoperative change of Böhler's angle and clinical results were analyzed using Paley and Halls evaluation protocol and scoring system.

Results : The average Böhler's angle was restored from 2.8 to 25.1 after operations and clinical results classified 4 well, 12 good, 4 fair, 1 poor cases. Postoperative complications were 2 cases of wound dehiscence, 1 of infection and one had sural nerve injury. Late complications included 3 cases of limitation of motion of ankle that disturb usual activity, 3 of sustained pain and 2 of traumatic arthritis and 2 cases had 2 complications at the same patients.

Conclusion : The lateral approach is valuable for the comminuted intra-articular fractures of calcaneus that enables accurate anatomical reduction and rigid internal fixation by providing direct exposure of subtalar joint, and also with little morbidity of neurovascular injury.

Key Words : Calcaneus, Intra-articular fracture, Lateral approach