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

:

634-18

: 063-250-1760, 1770

: 063-271-6538

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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

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

4 (19%) ,
1 (4%) .

4.

McReynolds¹⁰⁾가 , Ross Sowerby¹⁹⁾가

가

가 ,
가 ,
Rowe¹⁹⁾

Essex-Lopresti⁶⁾
가
17 (81%) , 4 (19%)

5.

1996 4 2001 1 ,

가

1

가 20 (21) 4 (19%) ,
Rowe¹⁹⁾ Essex-Lopresti⁶⁾ (81%)
Böhler²⁾
가 Paley Hall¹³⁾ 5 23 (9.73)

가

L

1. 가

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

plate)

1

2 3 , Cave³⁾ Rowe¹⁹⁾
 4-6 , 가 , ¹⁶⁾ 26.8% ,
 8 8) 21% 가
 . 11 (52%)
 가 , 5 (24%) .

1 , , ,
 Böhler²⁾ , 가
 Paley Hall 가 ¹³⁾ 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 ¹⁾.
 Cave³⁾ 60% , Whittaker²²⁾가 ,
 Rowe¹⁹⁾ 1-2% , , ,
 . 1948 Palmer¹⁴⁾가 90%
 75% ¹¹⁾ , ¹⁷⁾ 20 30
 가 , Essex-Lopresti⁶⁾ 45 , Maxfield McDermott⁹⁾ Ross
 가 Sowerby¹⁸⁾ 8) , ¹⁷⁾
 33 , 20 40 가 17
 . 가 17 (85%)

Harris⁷⁾, Dick⁵⁾, Pannel¹⁵⁾ 가
, Harris⁷⁾
가
가
가

	가	Böhler ²⁾
	,	가 Paley Hall ¹³⁾
가		. Böhler
		, Böhler
		.
		. 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.

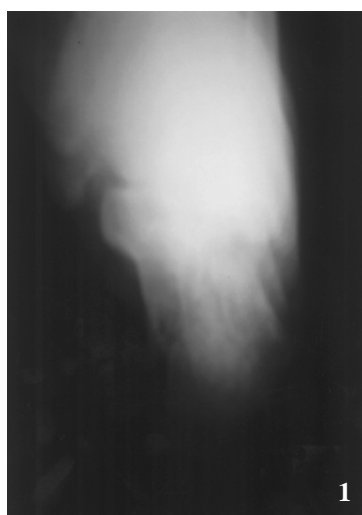


Fig. 1, 2 : Preoperative AP, lateral radiographs of joint depression type calcaneal fracture of 38 years old male patient.



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

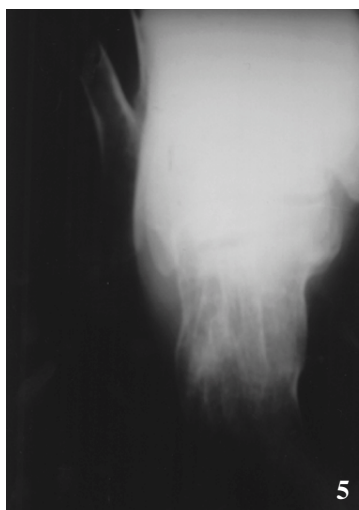


Fig. 5, 6 : 14 months after operation, showed bone union and we performed metal removal and clinical result was good.

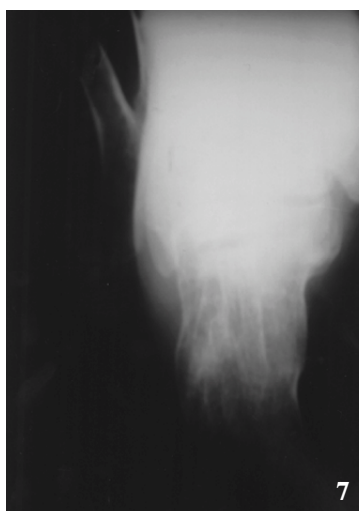


Fig. 7, 8 : Preoperative AP, lateral radiographs of joint depression type calcaneal fracture of 34 years old female patient.



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

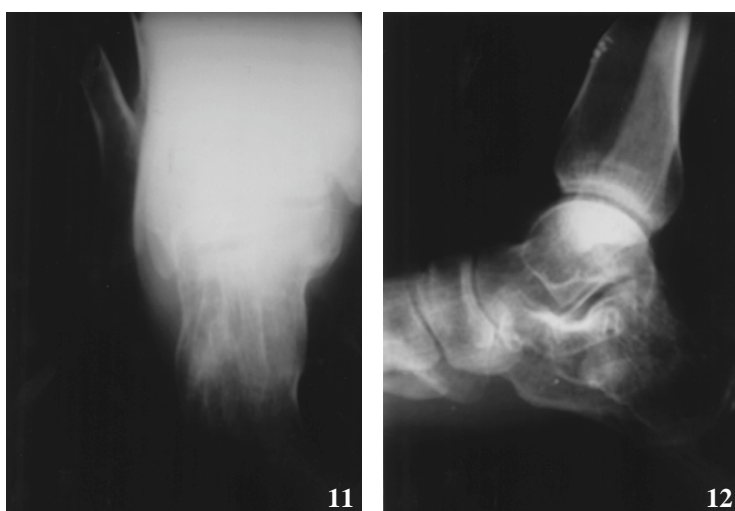


Fig. 11, 12 : 18 months after operation, showed bone union and we performed metal removal and clinical result was excellent.

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