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Foot and Ankle Society) Ankle - Hindfoot Scale

: 103 (36~192)

AOFAS Ankle - Hindfoot Scale

AOFAS (the American Orthopedic

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: (02) 970-8258, Fax: (02) 970-8259
e-mail: cnh2406@yahoo.com

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cast (Aircast[®], Summit, New Jersey, USA)
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Table 1. AOFAS Ankle-Hindfoot Scale (100 points total)

Pain (40 points)	
None	40
Mild, occasional	30
Moderate, daily	20
Severe, almost present	0
Function (50 points)	
Activity limitations, support requirement	
No limitations, No support	10
No limitation of daily activities, limitation of recreational activities, no support	7
Limited daily and recreational activities, cane	4
Severe limitation of daily and recreational activities walker, crutches, wheelchair, brace	0
Maximum waling distance, blocks	
>6	5
4~6	4
1~3	2
<1	0
Walking surfaces	
No difficulty on any surface	5
Some difficulty on uneven terrain, stairs, inclines, ladders	3
Severe difficulty on uneven terrain, stairs, inclines, ladders	0
Gait abnormality	
None, slight	8
Obvious	4
Marked	0
Sagittal motion (flexion plus extension)	
Normal or mild restriction ($\geq 30^\circ$)	8
Moderate restriction ($15\sim 29^\circ$)	4
Severe restriction ($< 15^\circ$)	0
Hindfoot motion (Inversion plus eversion)	
Normal or mild restriction (75~100% normal)	6
Moderate restriction (25~74% normal)	3
Marked restriction ($< 25\%$ normal)	0
Ankle-hindfoot stability (anteroposterior, varus-valgus)	
Stable	8
Definitely unstable	0
Alignment (10 point)	
Good, plantigrade foot, ankle-hindfoot well aligned	10
Fair, plantigrade foot, some degree of ankle-hindfoot malalignment observed, no symptoms	5
Poor, nonplantigrade foot, severe malalignment, symptoms	0

Fig. 1A, B)

Aircast
Aircast

8



A

B

Fig. 1A, B. Aircast brace.

(1, 3, 5, 8)
Leeds Ehrlich¹⁰⁾

가 AOFAS (the American Orthopedic Foot and Ankle Society) Ankle-Hindfoot Scale (Table 1),

13,15)

11 8 가 3

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6

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103 (36~192) , 8

AOFAS Ankle-Hindfoot Scale 85 ,



A

B

C

Fig. 2. Anteroposterior radiographs of the right ankle. 56 years old, female.

2A. 1 day after trauma.

2B. at 8 weeks after trauma.

2C. at last F/U.



Fig. 3. Mortise radiographs of the right ankle. 29 years old, female.
3A. 1 day after trauma.
3B. at 8 weeks after trauma.

AOFAS Ankle-Hindfoot Scale
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가
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 , Zeegers ¹⁸⁾ , Ryd
 Bengtsson¹⁴⁾
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REFERENCES

Brink⁶⁾ 3~5 , 4
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 Magnusson¹⁰⁾ 791
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1) , , , :
 , 11: 873-879, 1998.
 2) , , , :
 가. , 10:
 588-596, 1997.
 3) **Ahl T, Dalen N, Holmberg S and Selvik G:** Early weight bearing of malleolar fractures. Acta Orthop Scand, 57: 526-529, 1986.
 4) **Bauer M, Bergstrom B, Hemborg A and Sandegard J:** Malleolar fractures: Nonoperative versus operative treatment: A control study. Clin Orthop, 199: 17-27, 1985.
 5) **Bauer M, Jonsson K and Nilsson B:** Thirty-years follow-up of ankle fractures. Acta Orthop Scand, 56: 103-106, 1985.
 6) **Brink O, Staunstrup H and Sommer J:** Stable lateral malleolar fractures treated with Aircast ankle brace and

- DonJoy R.O.M.-walker brace: A prospective randomized study. *Foot Ankle Int*, 17: 679-684, 1996.
- 7) **Cedell C:** Is closed treatment of ankle fractures advisable? Guest Editorial. *Acta Orthop Scand*, 56: 101-102, 1985.
 - 8) **Hughes JL, Weber H, Willenegger H and Kuner EH:** Evaluation of ankle fractures, Non-operative and Operative treatment. *Clin Orthop*, 138: 111-119, 1979.
 - 9) **Leeds HC and Ehrlich MG:** Instability of the distal tibiofibular syndesmosis after bimalleolar and trimalleolar ankle fractures. *J Bone Joint Surg*, 66-A: 490-503, 1984.
 - 10) **Magnusson R:** On the late results in non-operated cases of malleolar fractures. *Acta Chir Scand (Suppl 84)*, 1944.
 - 11) **Marsh JL and Saltzman CL:** Ankle fractures. In: Bucholz RW and Heckman JD ed. *Rockwood*. 5th ed, Philadelphia, Lippincott Williams & Wilkins: 2026-2027, 2001.
 - 12) **Michelson JD:** Current concepts review-fracture about the ankle. *J Bone Joint Surg*, 77-A: 142-152, 1995.
 - 13) **Michelson JD, Ahn U and Magid D:** Economic analysis of roentgenogram use in the closed treatment of stable ankle fractures. *J Trauma* 39: 1119-1122, 1995.
 - 14) **Ryd L and Bengtsson S:** Isolated fracture of the lateral malleolus requires no treatment. 49 prospective cases of supination-eversion type II ankle fractures. *Acta Orthop Scand*, 63: 443-446, 1992.
 - 15) **Stuart PR, Brumby C and Smith SR:** Comparative study of functional bracing and plaster cast treatment of stable lateral malleolar fractures. *Injury*, 20: 323-326, 1989.
 - 16) **Yablon IG, Heller FG and Shouse L:** The key role of the lateral malleolus in displaced fractures of the ankle. *J Bone Joint Surg*, 59-A: 169-173, 1977.
 - 17) **Yde J and Kristensen KD:** Ankle fractures: supination-eversion fractures of stage II. Primary and late results of operative and non-operative treatment. *Acta Orthop Scand*, 51: 695-702, 1980.
 - 18) **Zeegers AV, Van Raay JJ and van der Werken C:** Ankle fractures treated with a stabilizing shoe. *Acta Orthop Scand*, 60: 597-599, 1989.

Abstract

Non-operative Treatment of Lateral Malleolar Fracture using Ankle Brace

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Purpose: The purpose of this study was to evaluate the outcome of conservative treatment for minimal displaced lateral malleolar fracture using ankle brace.

Materials and Methods: Eleven patients (eleven ankles) underwent conservative treatment with ankle brace for 8 weeks with full weight bearing ambulation. Inclusion criteria were minimal displacement (<3 mm) of fracture, no or mild tenderness or swelling on medial malleolar area and no lateral shift of talus. The patients were evaluated with AOFAS (the American Orthopedic Foot and Ankle society) Ankle-Hindfoot scale.

Results: Average follow up was 103 weeks (36~192). All cases had normal range of motion of ankle. The average score of AOFAS Ankle-Hindfoot scale was 95 points.

Conclusion: The advantages of conservative treatment with ankle brace were early return to daily activity and work, comfort to the patients and a short period of rehabilitation. Conservative treatment with ankle brace for minimal displaced lateral malleolar fracture is recommended.

Key Words: Lateral malleolus, Minimal displaced, Conservative treatment

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