

Closed treatment of ankle fractures

Stage II supination-eversion fractures followed for 20 years

Ninety-four conservatively treated patients with Lauge Hansen Stage II supination-eversion fractures of the ankle were interviewed after 16-25 years. Patients with pain were examined clinically and radiographically. Eighty-nine patients had good and five medium results. Our observations compare well with published reports of open treatment. We conclude that this particular fracture type is so benign that it can be treated closed without reduction.

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During the past 20 years increasing importance has been attached to obtaining anatomic union of lateral malleolus fractures (Willenegger 1961, Weber 1966, Cedell 1967, Riede et al. 1969). Riede et al. (1969) demonstrated experimentally that a 2 mm displacement of the malleolus may entail a talar displacement of 1-2 degrees of external rotation, reducing the articular surface contact between the tibia and talus by 50 per cent. Therefore, they concluded that union with displacement of the lateral malleolus may eventually cause arthrosis.

The supination-eversion fracture Stage II (Figure 1, Lauge Hansen 1942) is the most common ankle fracture; it constitutes about 30 per cent of all ankle fractures (Yde 1980), and it is relatively benign (Cedell 1967, Yde & Kristensen 1980). Larger series comparing open and closed treatment with a follow-up of more than 10 years do not exist. We have therefore recorded the subjective results of closed treatment after a long period of observation.

Patients and method

During the 10-year period 1958 through 1967, 136 supination-eversion fractures Stage II in patients aged from 15 to 49 years were treated at the casualty department, Odense Hospital, Denmark. All the fractures had closed treatment without reduction; the patients were not admitted to the hospital. After the swelling had subsided, a below-knee walking cast was applied and worn until 5-7 weeks after the trauma.

At follow-up in January 1984, 24 patients were dead, eight could not be traced, and five did not respond to several summons. Three had a new injury in the same region, and two had rheumatoid arthritis which prevented an evaluation. Ninety-four patients were evaluated: 20 by questionnaire, 62 by telephone, and 12 were examined clinically and radiographically because of pain. The mean age at trauma was 32 years (Table 1), the mean follow-up period was 21 (16-25) years. The primary displacement according to the classification of Cedell (1967) was anatomic in three cases, good in two and poor in 89 cases. Forty-two of the 89 fractures with poor primary position had a dorsal displacement less than 2 mm, and 47 fractures had a lateral displacement less

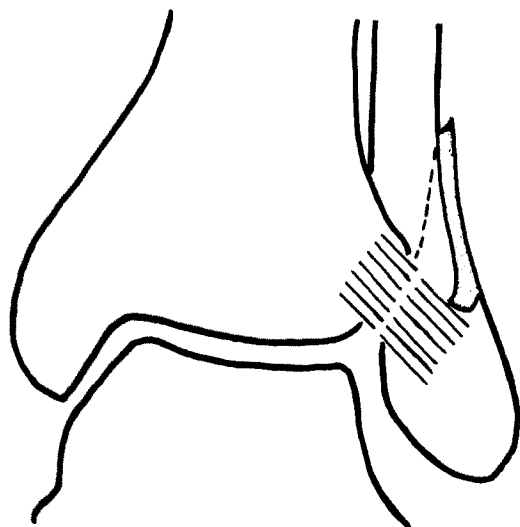


Figure 1. The supination-eversion fracture Stage II includes rupture of the anterior tibiofibular ligament and distal oblique fibular fracture.

Table 1. Age and sex distribution of primary treatment of ankle fractures

Age (years)	15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total
Males	13	10	5	5	7	9	8	57
Females	5	6	3	5	5	8	5	37
Total	18	16	8	10	12	17	13	94

than 2 mm and/or a dorsal displacement of 2-5 mm (Figure 2).

The subjective symptoms at follow-up were recorded according to the classification of Cedell (1967), as it makes the strictest demands compared with other studies, for example that of Kristensen (1953). The occupational strain on the ankle (Yde & Kristensen 1980) was assessed at follow-up as unprotected in 53 patients, 15 of whom made heavy demands on the joint; possibility of protection in 32; and minimal in nine patients.

Results

Seventy-three patients were completely symptom-free, and 16 had negligible symptoms of pain (seven patients) or tiredness (nine patients) after extra exertion. Five complained of moderate pain after exertion, but none had reduced capacity for unprotected work or exercise. Four of the five patients with moderate symptoms had pain at pressure over the anterior tibiofibular ligament, and one had limited dorsiflexion of the ankle. The seven patients with negligible symptoms of pain had normal

objective findings. None had radiographic signs of arthrosis according to the classification of Magnusson (1944).

Discussion

This material may erroneously include a few Stage IV supination-eversion fractures with injury of the deltoid ligament, probably giving less favourable late results. However, our late subjective results compare well with the analyses of open and closed treatment of Cedell (1967) and of Yde & Kristensen (1980) after a maximum follow-up of 10 years (Table 2).

Our results demonstrate that Stage II supination-eversion fractures after 16-25 years cause minimal complaints. Open treatment demands hospitalization, at least for a few days, whereas our patients were treated as out-patients. The period off work is probably about the same with the two methods (Yde & Kristensen 1980). We conclude, therefore, that the Stage II supination-eversion fracture is a benign injury which should be treated closed and without reduction, as recommended by Lauge Hansen (1942).

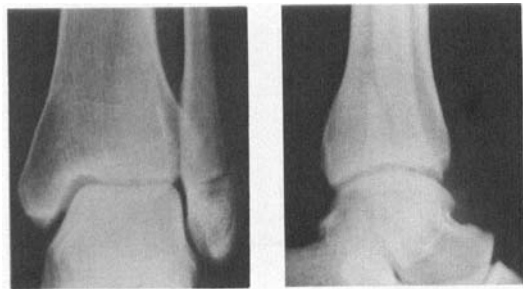


Figure 2. In 1964, a 34-year-old country housewife injured her left ankle when she fell in the cow-house. Radiography showed a Stage II supination-eversion fracture with 1-2 mm lateral and 3 mm dorsal displacement of the lateral malleolus. She was treated weight-bearing in a below-knee walking cast for 6 weeks with no attempt at reduction. At follow-up in 1984, she was completely free of symptoms and was participating in the working of the farm.

Table 2. Comparison according to Cedell (1967) of the late subjective results following supination-eversion ankle fracture Stage II

Treatment	Yde & Kristensen (1967)		Cedell study	
	Open	Closed	Open	Closed
Observation (years)	3-10		5-10	16-25
Good	30	29	36	89
Medium	4	6	1	5
Poor	0	0	1	0
Total	34	35	38	94

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