



15, 2, 2002 4

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&lt; &gt;

:

: 1998 1 2000 8 21

, 52 (20 -73 ) , 가 14

, AO/OTA

A1 8 , A2 6 , A3 3 , C1 4

1-2cm

(narrow LC-DCP, Synthes®, Swiss)

:

15.2 (8-24 ) ,

13.2

1

, 5

1cm

. 1

가

가 3

, 가 Olerud Molander ankle score 89.1%

:

:

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가가

, (C-arm fluoroscopy)

가 K, Schantz Joy stick

1-2cm

(biologic fixation) narrow LC-DCP(Synthes®, Swiss) 3 4.5mm

가 가

2-3 (patellar-tendon bearing brace)

6-8

1. 2-3 4-6

1998 1 2000 8

21

52

(20 -73 ) 가 14

가 14

가 7, Gustillo-Anderson

1 2

(Fig. 1)

(Fig. 2)

AO/OTA A1 8, A2 6, A3

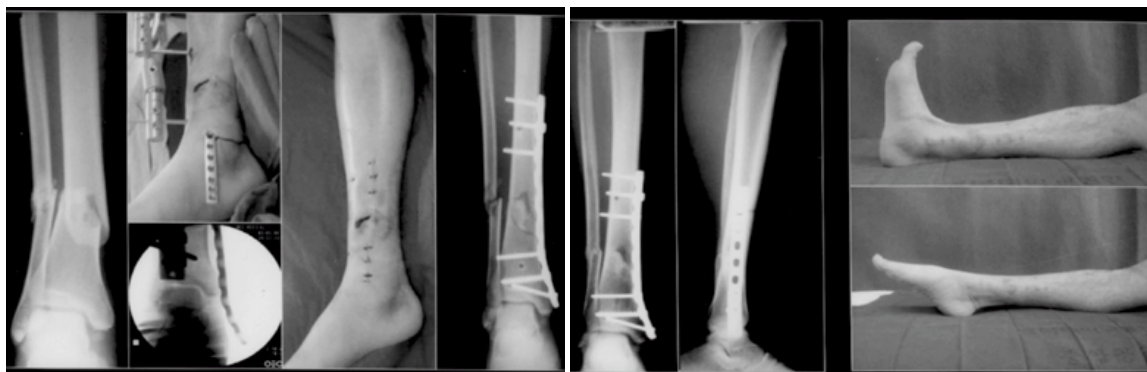
3, C1 4 20

(12 -30 )

4

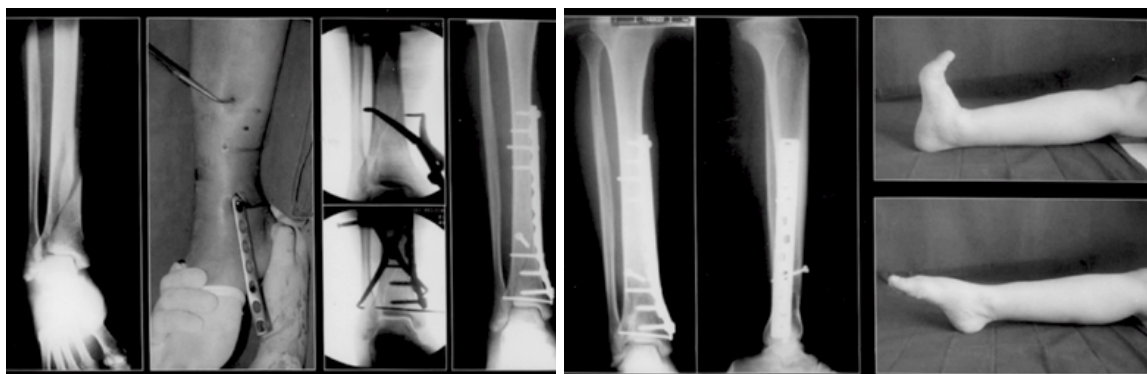
2. Olerud Molander ankle score<sup>13)</sup> 90%

, 80% 90% , 80%



**Fig 1-a** (Case 18) : The initial film showed a transverse fracture of the distal tibia with a grade I open wound. With the use of a distracter, a temporary reduction was gained and the plate was inserted. The post-operative film shows a well-reduced state.

**Fig 1-b** : At 14 weeks, the fracture was united and the motion of the ankle was nearly normal with minimal operative scarring on the medial leg.



**Fig 2-a** (Case 3) : The initial film shows a spiral fracture of the distal tibia extending to the ankle joint. With manual traction and reduction-forcep, the plate was inserted subcutaneously and a good alignment was achieved.

**Fig 2-b** : At 10 weeks, the fracture was united and the motion of the ankle was satisfactory.

20 , 5 1cm  
 , 1  
 (dressing)  
 , 5  
 10  
 1



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**Table 1.** Patients of distal tibia metaphyseal fractures treated by percutaneous plate osteosynthesis

No	Sex	Age (Years)	*Class	Open fracture (Gustilo)	Union time (weeks)	#OMA score	Complications
1	M	49	43A2		12	95	
2	M	61	43A1		16	85	
3	F	50	43A1		10	90	
4	F	20	43A1		8	100	
5	F	57	43A3		12	90	
6	M	55	43A2		16	90	
7	M	53	43A1		12	90	
8	F	55	43A2		16	90	
9	M	42	43A1		12	95	
10	M	44	43A2		14	95	
11	M	57	43C1	I	20	80	
12	F	48	43C1		16	95	
13	M	33	43A1		12	85	
14	M	73	43A3		20	80	
15	F	59	43A2		16	90	
16	M	46	43A3		24	80	Internal rotation 10°
17	F	44	43C1		20	85	
18	M	55	43A2	I	14	90	
19	M	72	43C1		20	85	
20	M	63	43A1		16	90	
21	M	54	43A1		16	90	
Mean		51.9			15.2	89.1	

\* Class is the fracture classification of the distal tibia fractures according to AO/OTA.

#OMA score is the functional score of the ankle according to Olerud-Molander.

가 , ( 가 가 ,

5 ) 가3 (indirect reduction)

score 89.1% ,

(80-100) (Table 1).

가 .

AO/ASIF

가 ,



가 , 가

4, 10, 12, 14, 20)

3, 5, 21)

가

1, 18)

가

6, 8, 9, 16, 19)

15)

가

가

가

7)

(narrow LC-DCP,

Synthes<sup>®</sup> Swiss)

17),

Helfet <sup>11)</sup>

(semitubular plate)

가 ,

가

가

가 가

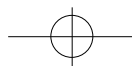
, 가

. 10

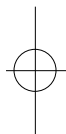
가 1

(twisting)

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## Abstract

## Treatment of distal tibia metaphyseal fractures by percutaneous plate osteosynthesis

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**Purpose:** We retrospectively reviewed the outcomes and efficacy of the percutaneous plate osteosynthesis for the distal tibia metaphyseal fracture.

**Materials and Methods:** Twenty-one patients suffering from fractures of the distal tibial metaphysis, with or without minimally displaced extension into the ankle joint, were treated by percutaneous plate osteosynthesis with narrow LC-DCP. According to the AO/OTA classification, 17 fractures had no articular involvement (A1=8, A2=6, A3=3) while 4 included intraarticular extension (C1=4).

**Results:** At the final follow-ups(mean=20months), all the fractures healed without second procedures and the mean union time was 15.2 weeks. Only one patient had a malunion of rotational deformity due to inadequate prebending of plate, but there were no angular deformities over 5 degrees nor any shortenings of more than 1cm. There were no deep infections, nor any soft tissue compromise. Three patients had a partial limitation of ankle motion, but all the patients had excellent or satisfactory ankle function with mean OMA score of 89.1%.

**Conclusion:** Percutaneous plate osteosynthesis is a safe and worthwhile method of managing distal tibia metaphyseal fracture while avoiding some of the complications associated with conventional open plating methods.

**Keywords:** Distal tibia metaphyseal fracture, Percutaneous plate osteosynthesis

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