



Fig. E-1



Fig. E-2

Fig. E-1 Medial ankle arthritis with medial translation of the talus and mortise widening. Note the shape of the medial malleolus (white arrow). **Fig. E-2** Measurement of mortise widening (a dashed line) on a valgus stress radiograph.



Fig. E-3A



Fig. E-3B

Figs. E-3A and E-3B Weight-bearing anteroposterior radiographs of a sixty-two-year-old woman with medial ankle osteoarthritis. **Fig. E-3A** Preoperative weight-bearing anteroposterior radiograph showing medial ankle osteoarthritis with mortise widening and talar tilt of 6°. **Fig. E-3B** Weight-bearing anteroposterior radiograph at forty-seven months after distal tibial osteotomy without fibular osteotomy, showing congruent mortise and talar tilt of 6.5°.



Fig. E-4A



Fig. E-4B

Figs. E-4A through E-4E A patient with stage-II ankle osteoarthritis, according to the modified Takakura classification. **Fig. E-4A** Preoperative standing anteroposterior radiograph. **Fig. E-4B** On a valgus stress radiograph, the width of medial clear space is 3.0 mm, which is almost the same as the width of the joint space between the tibial plafond and the talar dome. Although the width of the medial clear space was 3 mm, we thought intraoperative reassessment was needed.



Fig. E-4C



Fig. E-4D



Fig. E-4E

Fig. E-4C Intraoperative photograph of valgus stress on the ankle, showing definite widening of the medial joint space of >5 mm from the anterior to the posterior part of the medial gutter.

Fig. E-4D Radiograph made immediately after distal tibial osteotomy without fibular osteotomy. **Fig. E-4E** Radiograph made two years after surgery showing a balanced mortise.

TABLE E-1 Demographic Data and Clinical and Radiographic Findings

Case	Sex	Side	Age (yr)	Duration of Follow-up (mo)	Sprain History (times/duration)	Medial Clear Space Width (mm)	
						Preop	Postop
1	F	R	62	66	None	5.5	
2	M	R	57	66	Dozens/20 yr	6	
3	F	R	50	47	Dozens/14 yr	3.5	
4	F	R	57	37	Dozens/40 yr	7.5	
5	F	L	59	35	Dozens/4 yr	3.5	
6	F	R	56	33	None	7	
7	M	R	53	31	3/14 yr	4	
8	F	R	56	31	None	3	
9	F	R	59	30	Dozens/10 yr	3.5	
10	F	R	57	29	2/10 yr	4	
11	M	L	49	29	Dozens/4 yr	4	
12	F	L	56	29	Dozens/5 yr	5	
13	F	R	61	25	Once/12 yr	4	
14	F	L	64	25	Once/15 yr	4	
15	F	R	60	25	Once/5 yr	4.5	
16	F	R	54	24	None	5	
17	F	R	55	24	Dozens/11 yr	2.5	
18	F	L	56	24	Once	4	
Mean			56.7	33.9		4.5	
95% CI			54.9-58.4	28.8-40.4		3.9-5.1	

*OA = osteoarthritis.

TABLE E-1 (continued)

Stage of Ankle Arthritis*			Medial Distal Tibial Angle (deg)		Anterior Distal Tibial Angle (deg)	
Preop	Ipsilateral Side	Contralat. Side	Preop.	Follow-up	Preop.	Follow up
IIIA	I	No evidence of OA	87.5	92	87.5	91
IIIB	II	IIIA	86	88	75	83.5
IIIA	II	No evidence of OA	88	98	85.5	87
IIIA	I	IIIA	83.5	99	75	85
IIIA	I	IIIA	84	93	87	83.5
IIIA	IIIB	IIIA	85	96	83	90
IIIA	II	II	87	93.5	80.5	81
IIIA	II	II	87	91.5	87	86.5
IIIB	IV	IIIB	92	94.5	83.5	70
IIIA	II	IIIA	89	97	77	86.5
II	II	I	86.5	91	79.5	83
IIIA	II	II	85	91.5	88	89
IIIA	II	I	85	90.5	71	83
IIIA	II	No evidence of OA	86	91.5	77.5	80.5
II	II	I	88.5	91.5	86	87.5
II	I	II	85.5	92.5	74	80
IIIA	IIIA	IIIA	86	90	77	80
IIIA	II	II	88	92.5	87	91
			86.6	92.9	81.1	84.3
			85.7-87.6	91.6-94.3	78.6-83.6	81.9-86.4

TABLE E-2 Preoperative and Postoperative Clinical and Radiographic Findings

Case	Talar Tilt Angle (deg)		Talus Center Migration (mm)		Talar Tilt Angle on Varus Stress Test (deg)	Anterior Drawer Test (mm)
	Preop.	Follow-up	Preop.	Follow-up		
1	6	6.5	5.5	0	11	5
2	11	3.5	13	1.5	11	8.5
3	6.5	11	6.5	-3	25	4.5
4	4.5	6	9.5	-5	18	8
5	3	2.5	2.5	-3.5	6.5	4.5
6	9	19.5	5	-8	17.5	6.5
7	5	5	5.5	1	11	5.5
8	3.5	3.5	2	1	7	3.5
9	9	0	0	-3.5	11.5	5.5
10	4	7.5	1.5	-4	2.5	6.5
11	4	3	0	-2.5	11	9.5
12	3.5	3.5	3	-2	2	6.5
13	4.5	3.5	4	0	3.5	6.5
14	5	9.5	3	0	9.5	8.0
15	7.5	3.5	-1.5	-1.5	7	6.5
16	5.5	5	0	-5.5	6	4.5
17	6	4	0	-2.5	8	7.5
18	4	2.5	3.5	-2	10.5	5
Mean	5.6	5.5	3.5	-2.2	9.9	6.2
95% CI	4.8 to 6.6	3.8 to 7.6	1.9 to 5.2	-3.4 to -1.1	7.5 to 12.4	5.5 to 6.9

*OA = osteoarthritis.

TABLE E-2 (continued)

Heel Alignment Angle (deg) Preop.	Follow-up	Surgical Approach	Postop. Timing of Hardware Removal (mo)	Additional Procedures	Complications*
10	3	Medial	4	None	Pain over metal device
10	4	Medial	11	None	Intra-articular fracture and pain over metal device
0.5	0.5	Medial	None	None	Lateral osseous impingement
7.5	0	Medial	26	None	Pain over metal device
4.5	-6	Medial	20	None	Pain over metal device
2	4.5	Medial	12	None	Pain over metal device
8	-1	Medial	17	None	Lateral osseous impingement and pain over metal device
0	-0.5	Anterior	None	None	Lateral osseous impingement
4	7	Anterior	None	None	Lateral osseous impingement and progression of ankle OA
11	8.5	Anterior	None	None	None
5.5	0.5	Anterior	None	None	None
8.5	-5	Anterior	None	None	None
2.5	4.5	Anterior	17	None	Pain over metal device
6.5	2.5	Anterior	None	None	Lateral osseous impingement
4	-9	Anterior	None	None	None
10.5	12	Anterior	10	None	Pain over metal device
5	12	Anterior	5	None	Pain over metal device
-6	0.5	Anterior	None	Medial calcaneal osteotomy	Lateral osseous impingement
5.2	2.1				
3.1 to 7.2	-0.5 to 4.6				