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TABLE E-1 Ankles That Underwent Metal Component Revision, Including Seven Conversions to Tibiotalocalcaneal Arthrodesis and Four Revisions to HINTEGRA Prostheses

Case	Age* *(yr)*	Sex	BMI* *(kg/m^2)*	Diagnosis† (Secondary Diagnosis)	Time to Revision *(mo)*	Revision Diagnosis	Revised to
7	50	M	28.4	PTOA (ankle malleolar fracture)	76	Severe osteolysis, failed implant, polyethylene bearing exchange at 50 months due to severe wear	Tibiotalocalcaneal arthrodesis
8	73	F	22.1	Primary OA	122	Acute and severe subsidence of talar component	Pantalar arthrodesis
10	70	F	25.8	PTOA (history of severe sprain)	120	Lytic lesions of talus and fibula, fracture along talar posterior aspect to subtalar joint posterior facet	Tibiotalocalcaneal arthrodesis
19	75	M	28.6	PTOA (recurrent sprains)	63	Severe osteolysis, cyst formation, fractured polyethylene bearing	Tibiotalocalcaneal arthrodesis
23	33	M	24.4	OA secondary to deformity (clubfoot)	39	Severe osteolysis, talar component subsidence	Transtibial amputation
37	58	F	26.6	PTOA (remote ankle fracture, pes cavus)	13	Severe osteolysis, talar component subsidence	Tibiotalocalcaneal arthrodesis
41	55	F	25.8	PTOA (remote ankle fracture, hindfoot varus)	38	Osteolysis, recurrent hindfoot varus deformity	HINTEGRA total ankle replacement
48	73	F	31.1	OA secondary to deformity (pes planus)	19	Severe osteolysis (had fibular fracture during original surgery)	HINTEGRA total ankle replacement
54	69	F	30.9	PTOA (ankle malleolar fracture)	7	Malposition of talus	HINTEGRA total ankle replacement
92	60	M	23.9	OA secondary to deformity (pes planus)	58	Recurrent valgus deformity, tibial and talar loosening, severe osteolysis	Tibiotalocalcaneal arthrodesis
93	60	F	23.6	OA secondary to deformity (skewfoot)	39	Recurrent varus deformity	HINTEGRA total ankle replacement of talar component and polyethylene bearing; STAR tibial component remained in place
94	60	M	23.9	OA secondary to deformity (pes planus)	46	Recurrent valgus deformity, tibial and talar loosening, severe osteolysis	Tibiotalocalcaneal arthrodesis
95	56	M	28.6	PTOA (recurrent ankle instability)	32	Talar loosening and subsidence, severe osteolysis	Tibiotalocalcaneal arthrodesis

*As recorded at the time of the original total ankle replacement. †PTOA = posttraumatic osteoarthritis, and OA= osteoarthritis.

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TABLE E-2 Ankles That Underwent Polyethylene Bearing Exchange

Case	Age* *(yr)*	Sex	BMI* *(kg/m²)*	Diagnosis (Secondary Diagnosis)†	Time to Polyethylene Exchange *(mo)*	Reason	Comments
3	65	F	24.8	Primary OA	86	Osteolysis	Cyst debridement and bone-grafting; Achilles lengthening
4	44	F	39.0	Primary OA	97	Fractured bearing	
6	65	M	22.7	PTOA (recurrent sprain)	67	Fractured bearing	
7	50	M	28.4	PTOA (ankle malleolar fracture)	50	Severe wear	Bearing exchange at 50 months; revised to tibiotalocalcaneal arthrodesis at 76 months
18	75	M	28.6	PTOA (recurrent sprain)	52	Fractured bearing	
22	57	M	31.5	PTOA (pilon fracture)	26	Fractured bearing	
25	68	F	32.3	Primary OA	62	Fractured bearing	
35	63	F	46.5	Primary OA	70	Fractured bearing	
39	48	M	31.5	PTOA (tibial shaft fracture)	18	Fractured bearing	
44	61	F	27.4	PTOA (ankle malleolar fracture)	65	Asymmetric wear	Bearing exchange; talonavicular joint arthrodesis
96	58	M	28.1	PTOA (recurrent sprain)	36	Incomplete bearing fracture with wear	Bearing exchange and bone graft of tibial cysts at 36 months after total ankle arthroplasty; second bearing fracture and replacement at 96 months after total ankle arthroplasty
97	63	F	25.7	PTOA (recurrent sprain)	40	Asymmetric wear	Bearing exchange and bone graft of osteolytic cysts
98	61	M	28.2	PTOA (recurrent sprain)	111	Incomplete fracture with wear	
99	72	M	25.3	Primary OA	54	Fractured bearing	
100	53	F	31.8	Rheumatoid arthritis	67	Fractured bearing	
101	72	M	29.6	PTOA (recurrent sprain)	63	Fractured bearing	
102	60	M	28.5	Primary OA	32	Fractured bearing	Bearing fractured and replaced three times, at 32, 52, and 85 months after total ankle replacement
103	69	M	33.9	OA secondary to deformity (pes cavus)	61	Fractured bearing	
104	59	M	38.5	PTOA (pilon fracture)	89	Fractured bearing	
109	70	F	28.9	Primary OA	93	Fractured bearing	

*As recorded at the time of the original total ankle arthroplasty. †PTOA = posttraumatic osteoarthritis, and OA= osteoarthritis.

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TABLE E-3 Metal Component Revisions and Polyethylene Bearing Exchanges, Stratified by Primary Diagnosis*

Primary Diagnosis	Study Cohort (N = 111)	Total Revisions and Bearing Exchanges	Metal Revision (N = 13)	Polyethylene Bearing Exchange (N = 20)
All osteoarthritis†	84	32 (38%)	13	19
Posttraumatic osteoarthritis	60	18 (30%)	7	11
Ankle malleolar fracture	22	5 (23%)	3	2
Recurrent sprain	19	10 (53%)	4	6
Pilon fracture	11	2 (18%)	0	2
Talar fracture	5	0	0	0
Traumatic rupture of tibialis posterior tendon	2	0	0	0
Tibial shaft fracture	1	1 (100%)	0	1
Primary osteoarthritis	16	8 (50%)	1	7
Osteoarthritis secondary to deformity	8	6 (75%)	5	1
Rheumatoid arthritis	22	1 (5%)	0	1
Hemochromatosis	4	0	0	0
Seronegative arthritis	1	0	0	0

*Values are presented as the number of ankles with the percentage of the category in parentheses. †Patients with osteoarthritis underwent significantly more metal revisions and polyethylene bearing exchanges (p = 0.0003).

TABLE E-4 Major Complications Other Than Metal Revision or Polyethylene Bearing Exchange

Case	Age *(yr)*	Sex	BMI *(kg/m²)*	Complication	Comments	Glazebrook Classification*
4	44	F	39.0	Deep-vein thrombosis		2
7	50	M	28.4	Delayed wound healing	Admitted and treated with intravenous antibiotics	1
22	57	M	31.5	Medial malleolar stress fracture	Two years after polyethylene bearing exchange	2
44	61	F	27.4	Tarsal tunnel syndrome on operative side	Polyethylene bearing exchange due to asymmetric wear, and talonavicular joint arthrodesis at 65 months after total ankle replacement	2
69	44	M	25.7	Upper gastrointestinal tract bleed, postoperatively		1
107	57	M	27.0	Wound debridement and free flap reconstruction		1
110	67	M	25.8	Wound debridement and free flap reconstruction		1
111	60	F	21.9	Wound debridement and free flap reconstruction		1

*Glazebrook classification system for categorizing complications in total ankle arthroplasty[36].

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TABLE E-5 Demographics for Patients with Clinical Outcome Scores Preoperatively and at Least Two Years Postoperatively

	Total Cohort (N = 111)	Complete Set of Outcome Scores (N = 74)
Sex *(no. [%])*		
Male	57 (51.4%)	35 (47.3%)
Female	54 (48.6%)	39 (52.7%)
Age* *(yr)*	61.9 ± 11.7	62.0 ± 12.5
BMI* *(kg/m^2)*	27.9 ± 5.5	28.0 ± 5.5
Operative side *(no. [%])*		
Right	63 (56.8%)	40 (54.1%)
Left	48 (43.2%)	34 (45.9%)
Primary diagnosis *(no. [%])*		
Posttraumatic osteoarthritis	60 (54.1%)	43 (58.1%)
Rheumatoid arthritis	22 (19.8%)	14 (18.9%)
Primary osteoarthritis	16 (14.4%)	10 (13.5%)
Osteoarthritis secondary to deformity	8 (7.2%)	4 (5.4%)
Hemochromatosis	4 (3.6%)	2 (2.7%)
Seronegative osteoarthritis	1 (0.9%)	1 (1.4%)
Cause of posttraumatic osteoarthritis† *(no. [%])*		
Ankle malleolar fracture	22 (36.7%)	14 (32.6%)
Recurrent sprains	19 (31.7%)	15 (34.9%)
Pilon fracture	11 (18.3%)	8 (18.6%)
Talar fracture	5 (8.3%)	4 (9.3%)
Traumatic rupture of tibialis posterior tendon	2 (3.3%)	1 (2.3%)
Tibial shaft fracture	1 (1.7%)	1 (2.3%)
COFAS classification of end-stage ankle arthritis[20]† *(no. [%])*		
Level 1	29 (26.1%)	16 (21.6%)
Level 2	35 (31.5%)	33 (44.6%)
Level 3	14 (12.6%)	10 (13.5%)
Level 4	32 (28.8%)	15 (20.3%)
Not known	1 (0.9%)	0

*The values are presented as the mean and standard deviation. †Percentages calculated as the proportion of ankles in patients with a primary diagnosis of posttraumatic osteoarthritis (i.e., n = 60 for the total cohort and n = 43 for those with a complete set of outcome scores).