

TABLE E-1 Comparison of the Outcomes of Distraction Osteogenesis for First and Fourth Brachymetatarsia Between Children and Adults

	First Brachymetatarsia (n = 32 metatarsals)		P Value	Fourth Brachymetatarsia (n = 42 metatarsals)		P Value
	Children (13)	Adults (19)		Children (17)	Adults (25)	
Age (range) (yr)	14 (12-18)	26 (20-34)		14 (11-18)	24 (19-34)	
Healing index (range) (days/cm)	67.2 (42.7-90.3)	76.8 (68.6-103)	< 0.05	63.5 (53.9-73.5)	71.9 (59.3-83.7)	< 0.05
Lengthening gain (range) (cm)	1.8 (1.4-2.1)	1.6 (1.3-2)	> 0.05	1.6 (1.1-2.1)	1.5 (1.0-2.1)	> 0.05
Lengthening gain (range) (%)	45.4 (35.4-54.3)	38.7 (34.0-51.2)	> 0.05	41.9 (27.3-51.7)	34.6 (17.8-45.2)	> 0.05
AOFAS score*	92 (80-100)	90.4 (80-100)	> 0.05	94.3 (80-100)	91.6 (80-100)	> 0.05
Number of complications						
MTP stiffness†	5	8		4	8	
Malalignment						
Hallux valgus	2	1				
Cavus deformity	1	2			2	
Varus angulation					4	
Callus fracture		3		1	2	
Pin breakage	1	1		1		
Pin-track infection	1	1		1	2	
MTP arthritis					1	

*AOFAS score = American Orthopaedic Foot and Ankle Society hallux metatarsophalangeal-interphalangeal and lesser metatarsophalangeal-interphalangeal scoring systems. †MTP stiffness is defined as moderate (30° to 75°) or marked restriction ($>75^{\circ}$) of MTP joint motion. MTP = metatarsophalangeal joint.

TABLE E-2 Literature Review of Recorded Results of Distraction Osteogenesis for First and Fourth Brachymetatarsia

Site	Study	No. of Patients (metatarsals)	Lengthening Gain		Healing Index (days/cm)	Follow-up (mo)	AOFAS Score*	Complications (Most Common)
			(mm)	(%)				
First								
	Takakura et al. ¹⁵	4 (7)	15.5	31.4	74.6	52.6	N/A†	2 MTP‡ stiffness
	Choi et al. ⁸	N/A (2)	19.5	43.5	76.5	55.2	N/A	1 pin-track infection
	Kim et al. ¹¹	5 (10)	20.0	50.0	60.0	36.0	E:3, G:5, F:2	2 malalignment, 2 callus fracture, 1 MTP stiffness
	Oh et al. ¹	8 (13)	17.6	49.2	72.4	27.0	E:11, G:2	13 MTP stiffness, 6 malalignment
	Wada et al. ³	1 (2)	16.0	42.0	98.0	33.6	N/A	None
	Shim and Park ¹³	N/A (16)	19.5	48.8	72.0	38.4	N/A	MTP stiffness or subluxation‡
	Mean	Total 50	18.0	44.2	73.7	40.5		
	Present study	19 (32)	17.2	42.9	71.0	58.1	E:22 G:9, F:1	13 MTP stiffness, 6 malalignment
Fourth								
	Choi et al. ⁸	N/A (6)	13.5	29.8	47.1	55.2	N/A	1 MTP stiffness
	Masada et al. ¹⁰	4 (6)	16.0	31.0	82.0	42.4	N/A	5 malalignment, 3 pin-track infection
	Kim et al. ¹¹	5 (10)	19.0	50.0	60.0	36.0	E:3, G:5, F:2	None
	Song et al. ⁵	16 (22)	16.5	38.9	72.9	30.0	E:13, G:8, F:1	5 MTP subluxation, 3 malalignment, 2 pin-track infection
	Oh et al. ¹⁶	31 (47)	14.6	32.8	72.3	33.3	E:28, G:14, F:3, P:2	17 malalignment, 13 MTP stiffness
	Wada et al. ³	4 (6)	21.5	45.2	69.5	34.8	N/A	3 pin-track infection
	Shim and Park ¹³	N/A (20)	17.1	36.2	78.0	38.4	N/A	MTP stiffness or subluxation§
	Wilusz et al. ¹⁷	4 (5)	16.0	29.2	43.4	7.5	N/A	4 malalignment, 3 callus fracture
	Mean	Total 122	17.2	37.7	69.4	34.7		

	Present study	29 (42)	16.3	37.3	67.3	56.1	E:29, G:11, F:2	12 MTP stiffness, 6 malalignment
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*AOFAS score = American Orthopaedic Foot and Ankle Society hallux metatarsophalangeal-interphalangeal and lesser metatarsophalangeal-interphalangeal scoring systems: excellent (>85), good (71-85), fair (56-70), or poor (<56). †N/A = not available. ‡MTP = metatarsophalangeal joint. §Total 9 cases of MTP stiffness or subluxation both first and fourth brachymetatarsia; however, each complication was not described in detail.