

Supplementary table. Summary of all included articles

	Level of evidence	Cases	Bone Segment	Mean Defect Size (mm)	Defect Aetiology	Treatment Strategy	Fixation Method	Mean number of surgeries	Mean time to union	Complications
Allende (2010)	4	20	Radius (6) Ulna (8) Humerus (6)	NR	Osteomyelitis (20)	Induced Membrane	Plating 17 External fixation (1) None (1) Nail (1)	2	5	None
Molina et al. (2010)	5	1	Radius	65	Trauma	Vascularized fibula graft	Plating	1	6	None
Gopisankar et al. (2011)	4	7	Humerus (7)	13.1	COM (7)	Non-vascularized fibula graft	Plating	1	5.4	Infection (3, 43%)
Soucacos et al. (2011)	4	18	Radius (13) R&U (2) Humerus (2)	100	Not Reported	Vascularized fibula graft	Plating	1	3	Non-union (3, 17%)
Windhofer et al. (2011)	4	4	Radius (1) Ulna (3)	31.8	Osteomyelitis (3) Trauma (1)	Vascularized fibula graft	Plating	1	3.8	None
Kerfant et al. (2012)	4	5	Humerus (5)	12.3	Non-union (5)	Vascularized fibula graft	Plating	1	5	None
Liu et al. (2012)	4	10	Ulna (10)	54.3	Osteomyelitis (10)	Bone transport	External fixation	1.5 (1-2)	NR	Poor regenerate (1, 10%) Docking site non-union (2, 20%) Pin site infection (6, 60%)
Jacoby et al. (2013)	4	10	R&U	NR	Trauma	One-bone forearm	Plating	NR	NR	Non-union (5, 50%) Fracture (1, 10%) Skin necrosis (1, 10%) Radio-carpal impingement (2, 20%)
Liu et al. (2013)	4	21	Radius (6) Ulna (13) R&U (2)	33.1	Osteomyelitis (19) Non-union (2)	Bone transport	External fixation	1.4 (1-2)	5 (2.5-7.5)	Poor regenerate (2, 10%) Docking site non-union (4, 19%) Infection (3, 14%)
Eljabu et al. (2013)	5	1	Radius	25	Osteomyelitis	Bone transport	External fixation over nail	1	NR	None
Hanna et al. (2013)	5	1	Radius	41	Trauma	Induced Membrane	Plating	3	3	Repeat graft
Noaman (2013)	4	13	Radius (8) R&U (5)	80	Osteomyelitis (9) Trauma (5)	Vascularized fibula graft	Plating	1.1 (1-2)	3.5	None
Cavadas et al. (2014)	5	1	R&U	55	Trauma	Vascularized fibula graft	Plating	1	NR	None
ElSayed et al. (2014)	4	6	Radius (6)	12.3	Osteomyelitis	Vascularized fibula graft	K-wire	1.7 (1-2)	5.1	Delayed union (3, 50%)
Zhang et al. (2014)	4	16	Radius (9) Ulna (7)	38,1	Osteomyelitis (16)	Bone transport	External fixation	1.4 (1-2)	6.2 (3-10)	Poor regenerate failure (2, 13%) Docking site non-union (3, 19%) Pin site infection (9, 56%)
Kawakami et al. (2015)	4	3	R&U (3)	35	Osteomyelitis (3)	Induced Membrane	Plating (1) External fixation (1) Nail (1)	2.3 (2-3)	4 (3-6)	Infection (33%)
Micev et al. (2015)	5	1	Radius	45	Osteomyelitis	Induced Membrane	Plating	2	22	Graft resorption
Birkholtz et al. (2016)	5	1	R&U	50	Osteomyelitis	Bone transport	External fixation	3	6.5	None
Giannoudis et al. (2016)	4	15	Radius (7) Ulna (3)	32.1	Osteomyelitis (6) Trauma (9)	Induced Membrane	Plating	2	3.6 (2-6)	Non-union (1, 7%)

			R&U (4) Humerus (1)							
Kashayi-Chowdojrai et al. (2016)	4	17	Humerus (17)	107.6	Non-union (17)	Non-vascularized fibula graft	Plating	1	3.5 (3-5)	Graft fracture (1, 6%) Failure (1, 6%)
Kyriakopoulos et al. (2016)	5	1	Ulna	80	Osteomyelitis	Induced Membrane	External fixation	2	6	None
Luo et al. (2016)	4	8	Radius (1) Ulna (3) R&U (4)	NR	Osteomyelitis (8)	Induced Membrane	Plating	4.9 (3-6)	NR	Delayed union (1, 13%) Infection (2, 25%) Repeat graft (8, 100%)
Anoumou et al. (2017)	4	6	Radius (1) Ulna (1) R&U (2) Humerus (2)	41.7	Osteomyelitis (1) Trauma (4) Non-union (1)	Induced Membrane	Nail (1) Plating (5)	2.2 (2-3)	4.6	Infection (1, 17%)
Borzunov et al. (2017)	4	8	Radius (3) Ulna (5)	49.4	Non-union (8)	Bone transport	External fixation	1	3.8 (2.5-6.5)	None
Ditsios et al. (2017)	5	1	R&U	60	Osteomyelitis	Bone transport	External fixation	2	13.5	None
Kim et al. (2017)	4	8	R&U	NR	Trauma	One-bone forearm	NR	NR	NR	Infection (1, 13%) Fracture (1, 13%) Skin necrosis (2, 25%)
Kombate et al. (2017)	4	2	Humerus (2)	27.5	Non-union (2)	Induced Membrane	Plating	5.5 (5-6)	6.5	None
Monreal (2017)	5	1	Ulna	NR	Trauma	Vascularized fibula graft	Plating	2	NR	None
Suranigi et al. (2017)	5	1	Ulna	80	Osteomyelitis	Induced Membrane	Plating	2	4	None
Attias et al. (2018)	4	2	Radius (1) Humerus (1)	75	Trauma (2)	Titanium mesh cage	Plating	1	NR	None
Cano-luis et al. (2018)	4	14	Radius (6) Ulna (2) R&U (6)	78.6	Osteomyelitis (7) Trauma (7)	Vascularized fibula graft	Plating	1.2 (1-2)	4.3 (2-7)	Infection (1, 7%) Delayed union (1, 7%) Non-union (2, 14%)
Vicenti et al. (2018)	5	1	Radius	65	Non-union	Vascularized fibula graft	Plating	1	12	None
Wang et al. (2018)	5	1	Ulna	55	Trauma	Vascularized fibula graft	Plating	1	7	None
Ebied et al. (2019)	4	6	Radius (2) Ulna (2) R&U (2)	21.7	Osteomyelitis (6)	Bone transport	External fixation	3	4.3 (3-5)	Pin site infection (5, 83%)
Demir et al. (2019)	4	5	Radius (2) Ulna (3)	74	Osteomyelitis (5)	Bone transport	External fixation	2	5.8 (4-9)	Pin site infection (2, 40%)
Devendra et al. (2019)	4	36	R&U	NR	Trauma (16) Osteomyelitis (16) Non-union (4)	One-bone forearm	NR	1 (1-3)	6.7 (3-18)	Infection (4, 11%) Non-union (4, 11%)
Dhar et al. (2019)	4	12	Radius (5) Ulna (7)	51.3	Osteomyelitis (12)	Induced Membrane	Plating	2	7.8 (6-12)	None
Kliushin et al. (2019)	5	1	Ulna	33	Osteomyelitis	Bone transport	External fixation	1	8	None
Masquelet et al. (2019)	4	4	Radius (1) Ulna (1) Humerus (2)	60	Trauma (4)	Induced Membrane	Plating (2) External fixation (2)	2	4	None

Walker et al. (2019)	4	9	Radius (7) Ulna (2)	40.2	Osteomyelitis (3) Trauma (5) Non-union (1)	Induced Membrane	Plating (6) External fixation 3)	2.7 (2-4)	4.6 (3-12)	Graft resorption (4, 44%)
Bech et al. (2020)	5	1	Ulna	25	Osteomyelitis	Induced Membrane	Plating	5	6	Infection Repeat graft
Bourgeois et al. (2020)	4	6	Radius (3) Ulna (3)	63.5	Osteomyelitis (2) Trauma (3) Non-union (1)	Induced Membrane	Plating	2.3 (2-4)	4	Infection (1, 17%) Non-union (1, 17%) Repeat graft (1, 17%)
Gaillard et al. (2020)	4	5	Humerus (5)	61.6	Osteomyelitis (3) Non-union (2)	Induced Membrane	Plating	4.2 (2-6)	18(14-24)	Repeat graft (4, 80%)
Litvina et al. (2020)	5	1	Humerus	120	Osteomyelitis	Induced Membrane	Plating	3	6	Repeat graft
Liu et al. (2020)	4	12	Radius (10) Ulna (2)	50.8	Osteomyelitis (12)	Bone transport	External fixation	2.3 (2-3)	7.6 (6-9)	Docking site non-union (1, 8%)
Wang et al. (2020)	4	18	R&U	NR	Trauma	One-bone forearm	NR	NR	5.8 (4-15)	Infection (1, 6%) Non-union (1, 6%)

Data is presented as mean (range) / median (interquartile rage) or as counts with frequencies indicated in parentheses. NR, not reported.