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TABLE E-1 Patient Demographics in Studies That Used Cement for Fixation of the Acetabular Component*

					Diagnosis			
Study	Type of Data Collection	No. of Hips (Patients)	Mean Age *(yr)*	Female *(%)*	OA *(%)*	IA *(%)*	DDH *(%)*	FHN *(%)*
Alho A, 2000[35]	Retrospective	110 (NR)	71	66	83	13		
Berry DJ, 2002[5]	Prospective	2000 (1689)	63.5	50	82.3	8.3	5.8	5.1
Brady LP, 1986[36]	Retrospective	352 (296)	60.8	54	58	5	2	14
Brick GW, 1988[37]	Retrospective	212 (181)	63	74	100	–	–	–
Callaghan JJ, 2004[6]	Prospective	330 (262)	65.1	51	74	5	6	1
Chmell MJ, 1997[33]	Retrospective	66 (39)	19.9	58	–	100	–	–
Della Valle CJ, 2004[38]	Retrospective	123 (107)	60.2	64	75	3	4	9
Devitt A, 1997[3]	Retrospective	167 (122)	42.3	60	34	37	18	
Dorr LD, 1994[39]	Retrospective	108 (81)	31.1	57	41	33	–	26
Garellick G, 1994[40]	Retrospective	95 (90)	67	64	100	–	–	–
Goto K, 2009[41]	Prospective	118 (94)	55	92	–	–	100	–
Keener JD, 2003[42]	Retrospective	93 (69)	42	50	12	9	30	8
Klapach AS, 2001[4]	Retrospective	357 (320)	69	57				
Kobayashi S, 1997[43]	Retrospective	66 (NR)	37.1	74	5	45	25.5	5
	Retrospective	273 (NR)	62	76	39	–	44	–
Lehtimäki MY, 1997[44]	Retrospective	186 (116)	31	88	–	100	–	–
Levy BA, 2000[45]	Retrospective	132 (112)	79.4	52	100	–	–	–
McCoy TH, 1988[46]	Retrospective	100 (92)	60	72	55	21		
Mulroy WF, 1995[47]	Retrospective	162 (141)	61	55	25	9	10	6
Nich C, 2006[48]	Retrospective	122 (96)	50.8	27	–	–	–	100

Older J, 2002[25]	Retrospective	5089 (NR)	63	57	74	8		
Ortiguera CJ, 1999[49]	Prospective	94 (79)	58	63	–	–	–	100
	Prospective	94 (79)	58	63	100	–	–	–
Ritter MA, 1987[50]	Prospective	242 (181)	59	46	70	8		10
	Prospective	403 (324)	62	57	67	7		11
	Prospective	146 (96)	70	83	67	3		11
Sochart DH, 1997[34]	Retrospective	43 (24)	28.8	29	–	100	–	–
Sochart DH, 1998[51]	Retrospective	242 (195)	55.7	54	90	10		
	Retrospective	224 (191)	58.2	62	84	16		
Somford MP, 2008[52]	Retrospective	28 (22)	49	90	–	–	100	–
Unger AS, 1987[53]	Retrospective	83 (51)	39.9	80	–	100	–	–
Urban JA, 2001[54]	Retrospective	64 (56)	69	55	86			6
Veitch SW, 2010[2]	Retrospective	263 (243)	66.3	64	80	5	5	3
Welten ML, 2000[55]	Retrospective	69 (63)	56	80	42	31	27	

*OA = osteoarthritis, IA = inflammatory arthropathy, DDH = developmental dysplasia of the hip, FHN = femoral head necrosis, and NR = not reported.

TABLE E-2 Patient Demographics in Studies That Used Cementless Fixation of the Acetabular Component*

					Diagnosis			
Study	Type of Data Collection	No. of Hips (Patients)	Mean Age *(yr)*	Female *(%)*	OA *(%)*	IA *(%)*	DDH *(%)*	FHN *(%)*
Aldinger PR, 2004[10]	Retrospective	221 (NR)	57	52	52	2	26	10
	Retrospective	127 (NR)	57	45	56	2	19	14
Belmont PJ Jr, 2008[56]	Retrospective	223 (215)	55.0	50	79	8	4	8
Berli BJ, 2007[57]	Prospective	280 (261)	67.4	63	87	−	6	3
Bidar R, 2009[58]	Retrospective	111 (101)	63.1	51	48	8	19	12
Bojescul JA, 2003[59]	Prospective	100 (91)	58	32	62	11	6	15
Bourne RB, 2001[60]	Retrospective	307 (283)	64	51	85			
Civinini R, 2008[61]	Prospective	118 (109)	62.9	62	51.9	7.5	20.8	9.4
Clarius M, 2010[8]	Retrospective	221 (209)	57	52	52	2	26	10
Clarius M, 2010[7]	Retrospective	127 (116)	57	57	56	2	19	14
Della Valle CJ, 2004[62]	Prospective	204 (184)	52	55	60	11		25
Duffy GP, 2001[63]	Retrospective	82 (72)	32	46	2.7	21	36.1	19.5
Duffy GP, 2004[64]	Retrospective	84 (73)	38	38	10.7	18	31	23.8
Gabbar OA, 2008[65]	Retrospective	92 (82)	54	NR	76	4	6	4
Gaffey JL, 2004[66]	Retrospective	120 (108)	62.6	61	68	2	6	1
Garcia-Rey E, 2007[13]	Retrospective	43 (40)	57.5	68	57.5	10	5	20
Götze C, 2006[67]	Retrospective	231 (201)	59	67	57.7	−	16	24.1
Grant P, 2004[12]	Prospective	116 (102)	62	76	64	1	14	−
Grobler GP, 2005[68]	Retrospective	100 (93)	54	48	60	10	9	10

Grübl A, 2006[69]	Retrospective	208 (200)	61	60	59	4	18	5
	Retrospective	414 (NR)	53	59	50	7.7	21.3	
Hallan G, 2010[70]	Retrospective	1344 (NR)	55	61	44	7.6	19.4	
	Retrospective	3417 (NR)	59	65	51	7.6	18.3	
Ihle M, 2008[71]	Prospective	93 (80)	52	48	55	1	19	21.5
Kawamura H, 2001[72]	Retrospective	311 (279)	61	NR	82	7	3	5
Kim YG, 2005[73]	Retrospective	65 (54)	53	8				100
Kim YH, 2010[74]	Prospective	93 (64)	38.2	14				100
Kim YH, 2011[26]	Prospective	109 (78)	43.4	20	12.8	2.6	2.6	66.7
	Prospective	110 (79)	46.8	27	15.2	5.1	1.3	65.8
Kim YH, 1999[75]	Prospective	55 (55)	47.6	52	31		–	34
Kim YH, 2005[76]	Prospective	119 (131)	48.4	NR	22	3		47
Kim YH, 2007[77]	Prospective	194 (184)	49.1	NR	22.2	8.7		63.6
Lee YK, 2010[78]	Prospective	100 (84)	41	39	17	2		50
Little BS, 2006[79]	Prospective	133 (123)	55	48	78	5		10
Lybäck CC, 2006[80]	Retrospective	60 (51)	37	70	–	100		–
Malchau H, 1996[81]	Prospective	107 (98)	47	59	32	6.5		11
McLaughlin JR, 2010[82]	Prospective	172 (162)	64	51	84	10	2	2
	Prospective	100 (89)	54	42	68.4	14	9.4	7.4
McLaughlin JR, 2006[14]	Prospective	109 (99)	57	59	61	14	12	10
Müller LA, 2011[83]	Prospective	86 (NR)	50	71	66	3	9	11
Parvizi J, 2004[84]	Prospective	90 (80)	57.5	44	59	14	11	8
Petsatodis GE, 2010[85]	Retrospective	109 (100)	46	68	17	3	48	24

Pospischill M, 2005[86]	Retrospective	152 (148)	59.2	70	62.8	4.1	15.5	17.6
Raj D, 2008[87]	Prospective	38 (36)	51	56	63	24	3	3
Reigstad O, 2008[88]	Retrospective	75 (70)	52	50	35	8	28	7
	Retrospective	195 (167)	47	67	16		61	
Reikerås O, 2006[89]	Retrospective	128 (109)	49	70	19		55	
Suckel A, 2009[90]	Retrospective	320 (303)	67	57	82	8.4	0.6	0.9
Trebse R, 2005[91]	Retrospective	149 (135)	47	68	49	7	11	9
Utting MR, 2008[92]	Retrospective	70 (53)	40	55	49	9	26	11
Zweymüller KA, 2007[93]	Retrospective	376 (365)	62.8	50	74.6		16.4	4.7

*OA = osteoarthritis, IA = inflammatory arthropathy, DDH = developmental dysplasia of the hip, FHN = femoral head necrosis, and NR = not reported.

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TABLE E-3 Clinical Results and Implants Types in Studies That Used Cement for Fixation of the Acetabular Component*

Study	Type of Implant	Revision *(%)*	Survivorship (Time) *(% [yr])*	No. of Hips (Patients) Lost to Follow-up	Mean Follow-up *(yr)*
Alho A, 2000[35]	Lubinus all-polyethylene	NR	86 (12)	NR	12
Berry DJ, 2002[5]	All-polyethylene	NR	87 (25)	1459 (1228)	NR†
Brady LP, 1986[36]	Charnley all-polyethylene	6.2	NR	182 (151)	10
Brick GW, 1988[37]	All-polyethylene	14	NR	NR	11.9
Callaghan JJ, 2004[6]	All-polyethylene	7.9	(30)	296 (235)	NR†
Chmell MJ, 1997[33]	All-polyethylene	NR	70 (15)	11 (6)	16
Della Valle CJ, 2004[38]	All-polyethylene	NR	92.3 (21)	83 (74)	NR†
Devitt A, 1997[3]	Charnley all-polyethylene	NR	84 (20)	57 (45)	18.1
Dorr LD, 1994[39]	All-polyethylene	67	(NR)	59 (46)	16.2
Garellick G, 1994[40]	All-polyethylene	NR	93 (16)	48 (45)	14
Goto K, 2009[41]	All-polyethylene	NR	96.6 (15)	14 (14)	12.7
Keener JD, 2003[42]	All-polyethylene	NR	72 (30)	35 (26)	25.7
Klapach AS, 2001[4]	Charnley all-polyethylene	5.4	(NR)	NR (238)	20
Kobayashi S, 1997[43]	Charnley all-polyethylene	NR	68 (16)	11 (NR)	14
	Charnley all-polyethylene	NR	88.7 (16)	NR	13.1
Lehtimäki MY, 1997[44]	All-polyethylene	NR	87.8 (15)	NR	NR†
Levy BA, 2000[45]	T-28 all-polyethylene	2	(NR)	110 (94)	14.6
McCoy TH, 1988[46]	Charnley all-polyethylene	NR	96 (15)	60 (57)	15.3
Mulroy WF, 1995[47]	All-polyethylene	16	NR	60 (51)	15

Nich C, 2006[48]	All-polyethylene Charnley-Kerboull	9	88.5 (15)	40 (32)	12.8
Older J, 2002[25]	All-polyethylene	7.9	87.2 (20)	2016 (NR)	14.4
Ortiguera CJ, 1999[49]	Charnley all-polyethylene	4	NR	NR (23)	17.8
	Charnley all-polyethylene	13	NR	NR (22)	17.8
Ritter MA, 1987[50]	Charnley all-polyethylene	NR	93 (10)	7 (NR)	NR
	T-28 all-polyethylene	NR	96 (10)	18 (NR)	NR†
	Muller all-polyethylene	NR	88 (10)	20 (NR)	NR†
Sochart DH, 1997[34]	All-polyethylene	NR	70 (30)	7 (4)	22.7
Sochart DH, 1998[51]	Wrightington 72% all-polyethylene, 28% metal-backed	3.3	(NR)	NR (20)	10.6
	Charnley all-polyethylene	7.1	(NR)	NR (14)	10.6
Somford MP, 2008[52]	All-polyethylene	7	85 (15)	2(2)	11.6
Unger AS, 1987[53]	All-polyethylene	12	(NR)	NR	12.1
Urban JA, 2001[54]	All-polyethylene cemented COP	5	(NR)	NR	18
Veitch SW, 2010[2]	All-polyethylene Exeter	NR	89.9 (15)	123 (115)	14.6
Welten ML, 2000[55]	All-polyethylene	NR	96 (10)	22 (20)	12.3

*NR = not reported, and COP = ceramic on polyethylene. †The mean follow-up was not reported but the minimum follow-up was more than 10 years.

TABLE E-4 Clinical Results and Implants Types in Studies That Used Cementless Fixation of the Acetabular Component*

Study	Type of Implant	Revision *(%)*	Survivorship (Time) *(% [yr])*	No. of Hips (Patients) Lost to Follow-up	Mean Follow-up *(yr)*
Aldinger PR, 2004[10]	Mecring threaded acetabular cup with smooth surface	NR	63.8 (14)	NR	11.9
	Weill threaded acetabular cup with smooth surface	NR	76.2 (14)	NR	13.3
Belmont PJ Jr, 2008[56]	Tri-Spike cup	NR	85.8 (20)	104 (102)	22
Berli BJ, 2007[57]	Morscher Press-Fit Cup with porous coating	4.6	95.3 (15)	146 (140)	14.7
Bidar R, 2009[58]	ABG I HA-coated	NR	83.2 (13)	36 (34)	13
Bojescul JA, 2003[59]	PCA	18	86 (15)	36 (36)	15.6
Bourne RB, 2001[60]	HexLoc	10	90 (10)	NR (39)	10
Civinini R, 2008[61]	Reflection second-generation porous-coated	4.7	96.4 (12)	12 (11)	12.1
Clarius M, 2010[8]	Mecring threaded acetabular cup with smooth surface	NR	49 (17)	46 (NR)	17
Clarius M, 2010[7]	Weill threaded acetabular cup with smooth surface	NR	75 (17)	43 (40)	17
Della Valle CJ, 2004[62]	Harris-Galante Type I	NR	93 (15)	62 (56)	16.3
Duffy GP, 2001[63]	47% PCA, 27% Harris-Galante Type I, 26% Osteonics Dual-Geometry	NR	84.6 (10)	NR	NR†
Duffy GP, 2004[64]	Harris-Galante Type I	NR	80.7 (10)	6 (5)	10
Gabbar OA, 2008[65]	Furlong HA-coated threaded cup COP	NR	94.29 (12)	NR	11

Gaffey JL, 2004[66]	Harris-Galante Type I	18	81 (15)	48 (42)	14
Garcia-Rey E, 2007[13]	Tri-Lock Plus, Profile	NR	63.9 (14)	3 (3)	11.5
Götze C, 2006[67]	Metal-Cancellous Cementless Lübeck (MCCL), porous-coated	NR	90 (14.9)	NR (84)	12.8
Grant P, 2004[12]	Lord threaded cup	NR	64 (17.5)	46 (43)	17.5
Grobler GP, 2005[68]	Duraloc 300-series, porous-coated	NR	95.39 (10)	27 (26)	10
Grübl A, 2006[69]	Conical screw cup (CSF)	NR	85 (15)	100 (98)	15.5
Hallan G, 2010[70]	Gemini, plasma-coated	NR	78 (12)	NR	14.7
	Atoll, blasted HA	NR	74 (12)	NR	12.6
	Tropic, blasted HA	NR	84 (12)	NR	10
Ihle M, 2008[71]	RM, polyethylene-coated with a thin layer of pure titanium particles	NR	83 (20)	25 (24)	NR†
Kawamura H, 2001[72]	PCA	3	92.7 (14)	123 (109)	14
Kim YG, 2005[73]	Harris-Galante porous Type I, mesh of titanium fiber	NR	85 (15)	16 (13)	12.5
Kim YH, 2010[74]	Duraloc with ceramic liner	1	99 (11.1)	NR	11.1
Kim YH, 2011[26]	Duraloc 100 or 1200-series acetabular component	13	87 (18)	NR	18
	Duraloc 100 or 1200-series acetabular component	16	84 (18)	NR	18
Kim YH, 1999[75]	AML trispiked acetabular	15	87 (10)	5 (5)	11.3
Kim YH, 2005[76]	Porous-coated	NR	79 (20)	21 (19)	19.4

Kim YH, 2007[77]	Duraloc porous-coated	NR	98 (12)	NR	11.2
Lee YK, 2010[78]	Plasmacup, ceramic liner	2	NR (10)	12 (10)	11
Little BS, 2006[79]	PCA chromium-cobalt alloy porous ingrowth surface press fit	32.3	69 (16)	42 (41)	15.3
Lybäck CC, 2006[80]	Lord threaded cup, smooth surface	NR	64.3 (15)	NR	13.8
Malchau H, 1996[81]	Lord threaded cup, smooth surface	NR	70 (10)	8 (8)	10
McLaughlin JR, 2010[82]	Fully porous-coated hemispherical threaded titanium shell	2	98 (15)	49 (47)	14
	T-tap threaded ring, titanium shell	NR	39 (18)	5 (5)	14.6
McLaughlin JR, 2006[14]	T-tap threaded ring, titanium shell	NR	26 (18)	6 (6)	14.3
Müller LA, 2011[83]	Rough-blasted threaded Weill cup	8	86 (17)	NR	17
Parvizi J, 2004[84]	Harris-Galante porous Type I mesh of titanium fibre	NR	95.7 (15)	NR (3)	14.9
Petsatodis GE, 2010[85]	BIOLOX cup made of aluminum oxide ceramic	7.1	82 (20)	24 (22)	20.8
Pospischill M, 2005[86]	Alloclassic Ti alloy threaded with rough surface	NR	97.5 (10)	49 (49)	14.4
Raj D, 2008[87]	C-Fit uncemented	61	59 (10)	NR	12.3
Reigstad O, 2008[88]	Endler titanium-backed threaded cup	NR	89 (18)	25 (23)	16
	HA-coated press-fit cup	NR	74 (15)	NR	13
Reikerås O, 2006[89]	HA-coated threaded cup	NR	91 (16)	NR	13

Suckel A, 2009[90]	thread-screw cup, microporous, corundum-blasted surface	NR	98 (17)	NR (169)	NR†
Trebse R, 2005[91]	RM nonmodular	36	56 (15)	NR (25)	15
Utting MR, 2008[92]	Harris-Galante Type I	NR	84 (13.6)	NR	13.6
Zweymüller KA, 2007[93]	Threaded cup, grit blasting	NR	99.3 (10)	144 (140)	10.3

*NR = not reported, HA = hydroxyapatite, and COP = ceramic on polyethylene. †The mean follow-up was not reported but the minimum follow-up was more than 10 years.

TABLE E-5 Patient Demographics in Studies That Compared Cemented and Cementless of the Acetabular Component*

						Diagnosis			
Study	Type of Data Collection	Cup Cementation	No. of Hips (Patients)	Mean Age *(yr)*	Female *(%)*	OA *(%)*	IA *(%)*	DDH *(%)*	FHN *(%)*
Bjørgul K, 2010[28]	Prospective	Cemented	120	65	76	93	1	24	
	Prospective	Cementless	120	66	71	94	3	18	1
Clohisy JC, 2001[30]	Retrospective	Cemented	45 (39)	61	54	100	–	–	–
	Retrospective	Cementless	45 (39)	62	54	100	–	–	–
Corten K, 2011[27]	Prospective	Cemented	124 (124)	61	48	100	–	–	–
	Prospective	Cementless	126 (126)	62	46	100	–	–	–
Eskelinen A, 2005[11]	Retrospective	Cemented	802 (NR)	NR	48	100	–	–	–
	Retrospective	Cementless	650 (NR)	NR	48	100	–	–	–
Hamadouche M, 2002[94]	Retrospective	Cemented	85 (NR)	62.2	67	64	–	20	7
	Retrospective	Cementless	33 (NR)	62.2	67	64	–	20	7
Hartofilakidis G, 2009[95]	Retrospective	Cementless	58 (41)	39.6	92	–	–	63	–
	Retrospective	Cemented	59 (44)	45.4	86	–	–	74	–
Malviya A, 2011[96]	Retrospective	Cemented	18 (NR)	27.4	70	–	100	–	–
	Retrospective	Cementless	27 (NR)	27.4	70	–	100	–	–

*OA = osteoarthritis, IA = inflammatory arthropathy, DDH = developmental dysplasia of the hip, FHN = femoral head necrosis, and NR = not reported.

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TABLE E-6 Clinical Results and Implants Types in Studies That Compared Cemented and Cementless Fixation of the Acetabular Component*

Study	Cup Cementation	Revision *(%)*	Survivorship (Time) *(% [yr])*	Mean Follow-up *(yr)*	No. of Hips (Patients) Lost to Follow-up	Type of Implant
Bjørgul K, 2010[28]	Cemented	7.5	NR	10.0	31	Charnley cup
	Cementless	4.2		10.0	26	Duraloc 1200 cup, threaded porous-coated
Clohisy JC, 2001[30]	Cemented	2	NR	11.2	NR	All-polyethylene eccentric Harris cup
	Cementless	4		10.4	NR	Harris-Galante I and II
Corten K, 2011[27]	Cemented	NR	88	19.5	80 (80)	Mallory-Head cup, cemented
	Cementless	NR	75	19.5	77 (77)	Mallory-Head cup, without cement
Eskelinen A, 2005[11]	Cemented	19	87 (10)	11.0	NR	All-polyethylene cemented
	Cementless	35	69 (10)	10.0	NR	Smooth-surface threaded
Hamadouche M, 2002[94]	Cemented	NR	61.2 (20)	19.7	NR	Cemented all-alumina cup (Ceraver Osteal)
	Cementless	NR	85.6 (20)	19.7	NR	Uncemented all-alumina cup (Ceraver Osteal)
Hartofilakidis G, 2009[95]	Cementless	35	84 (12)	12.4	7 (5)	Harris-Galante I
	Cemented	28	90 (12)	15.4	9 (7)	All-polyethylene Charnley
Malviya A, 2011[96]	Cemented	33.3	61.9 (19)	18.4	NR	Not specifically mentioned
	Cementless	38	52.3 (19)	21.3	NR	Not specifically mentioned

*DDH = developmental dysplasia of the hip, and NR = not reported.