

TABLE E-1 Description of Groups at Trial Entry

	Metal-Backed	Non-Metal-Backed	Patellar Resurfacing	No Patellar Resurfacing	Mobile Bearing	Fixed Bearing
Total number of patients recruited	202	207	861	854	276	263
Age [yr]						
Mean (SD)	69 (9)	70 (8)	70 (8)	70 (8)	69 (8)	69 (9)
Min., max.	22, 93	43, 90	40, 92	32, 92	43, 87	38, 90
Sex						
Male [n (%)]	99 (49.0)	96 (46.4)	387 (44.9)	373 (43.7)	108 (39.1)	108 (41.1)
Female [n (%)]	103 (51.0)	111 (53.6)	474 (55.1)	481 (56.3)	168 (60.9)	155 (58.9)
BMI	N=196	N=202	N=810	N=796	N=249	N=234
Mean (SD)	28.7 (4.6)	28.7 (4.6)	29.5 (5.5)	29.8 (5.2)	29.5 (5.3)	30.3 (6.0)
ASA [n (%)]	N=193	N=201	N=802	N=781	N=254	N=247
Completely fit and healthy	22 (11.4)	27 (13.4)	153 (19.1)	143 (18.3)	35 (13.8)	43 (17.4)
Some illness but has no effect on normal activity	120 (62.2)	127 (63.2)	500 (62.3)	497 (63.6)	155 (61.0)	149 (60.3)
Symptomatic illness present but minimal restriction	50 (25.9)	46 (22.9)	144 (18.0)	136 (17.4)	63 (24.8)	52 (21.1)
Symptomatic illness causing severe restriction	1 (0.5)	1 (0.5)	5 (0.6)	5 (0.6)	1 (0.4)	3 (1.2)
Primary type of knee arthritis [n (%)]	N=199	N=203	N=831	N=827	N=260	N=250
Osteoarthritis	189 (95.0)	193 (95.1)	800 (96.3)	789 (95.4)	242 (93.1)	234 (93.6)
Rheumatoid	10 (5.0)	9 (4.4)	29 (3.5)	37 (4.5)	18 (6.9)	15 (6.0)
Both	0 (0.0)	1 (0.5)	2 (0.2)	1 (0.1)	0 (0.0)	1 (0.4)
Extent of knee arthritis affecting mobility [n (%)]	N=202	N=207	N=861	N=854	N=276	N=263
One knee	49 (24.3)	46 (22.2)	225 (26.1)	229 (26.8)	65 (23.6)	64 (24.3)
Both knees	75 (37.1)	80 (38.6)	366 (42.5)	342 (40.0)	98 (35.5)	96 (36.5)
General	78 (38.6)	81 (39.1)	270 (31.4)	283 (33.1)	113 (40.9)	103 (39.2)
	N=199	N=203	N=831	N=820	N=263	N=244
Other conditions affecting mobility [n (%)]	22 (11.1)	23 (11.3)	101 (12.2)	127 (15.5)	48 (18.3)	50 (20.5)
Medical	12 (6.0)	8 (3.9)	61 (7.3)	66 (8.0)	19 (7.2)	23 (9.4)
Locomotor/musculoskeletal	14 (7.0)	16 (7.9)	55 (6.6)	78 (9.5)	38 (14.4)	32 (13.1)
	N=199	N=203	N=829	N=824	N=263	N=248
Previous knee surgery [n (%)]	76 (38.2)	73 (36.0)	281 (33.9)	268 (32.5)	94 (35.7)	93 (37.5)
Ipsilateral osteotomy [n (%)]	1 (0.5)	1 (0.5)	11 (1.3)	13 (1.6)	5 (1.9)	5 (2.0)
Ipsilateral patellectomy [n (%)]	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.4)	0 (0.0)
Contralateral previous knee replacement [n (%)]	33 (16.6)	27 (13.3)	112 (13.5)	94 (11.4)	24 (9.1)	27 (10.9)
Other previous knee surgery [n (%)]	44 (22.1)	48 (23.6)	167 (20.1)	172 (20.9)	67 (25.5)	65 (26.2)
Arthroscopy [n (%)]	34 (17.1)	42 (20.7)	146 (17.6)	150 (18.2)	58 (22.1)	58 (23.4)
Other [n (%)]	12 (6.0)	8 (3.9)	26 (3.1)	23 (2.8)	12 (4.6)	7 (2.8)

BMI = body mass index; ASA = American Society of Anesthesiologists; SD = standard deviation.

TABLE E-2 Actual Management and Operation Details

	Metal-Backed	Non-Metal-Backed	Patellar Resurfacing	No Patellar Resurfacing	Mobile Bearing	Fixed Bearing
Total number of patients recruited	202	207	861	854	276	263
Allocated procedure followed [n (%)]	N=197	N=202	N=822	N=812	N=256	N=252
Yes	193 (98.0)	173 (85.6)	690 (83.9)	721 (88.8)	230 (89.8)	244 (96.8)
No	4 (2.0)	29 (14.4)	132 (16.1)	91 (11.2)	26 (10.2)	8 (3.2)
Lateral patellar retinacular release [n (%)]	N=192	N=196	N=797	N=783	N=253	N=242
Yes	23 (12.0)	20 (10.2)	136 (17.1)	121 (15.5)	37 (14.6)	38 (15.7)
No	169 (88.0)	176 (89.8)	661 (82.9)	662 (84.5)	216 (85.4)	204 (84.3)
Intraoperative complications [n (%)]	N=196	N=202	N=821	N=813	N=256	N=248
Preexisting circumstances that make the procedure more difficult	3 (1.5)	0 (0.0)	4 (0.5)	6 (0.7)	0 (0.0)	0 (0.0)
Technical difficulties during the procedure	0 (0.0)	1 (0.5)	7 (0.9)	3 (0.4)	6 (2.3)	3 (1.2)
Problems caused by the operation	4 (2.0)	3 (1.5)	7 (0.9)	8 (1.0)	3 (1.2)	7 (2.8)
Time from entrance to anesthesia room to leaving operating theater (mins)	N=196	N=202	N=827	N=813	N=258	N=247
Median	110	100	120	117	120	120
25th percentile	80	85	95	95	100	100
75th percentile	135	125	150	140	140	135
Mean (SD)	109 (34)	104 (28)	126 (60)	124 (63)	125 (62)	127 (88)
Operating surgeon grade [n (%)]	N=198	N=201	N=825	N=818	N=257	N=252
Consultant	143 (72.2)	135 (67.2)	478 (57.9)	474 (57.9)	169 (65.8)	150 (59.5)
Associate specialist/staff grade	5 (2.5)	9 (4.5)	128 (15.5)	121 (14.8)	24 (9.3)	40 (15.9)
SPR	46 (23.2)	56 (27.9)	212 (25.7)	216 (26.4)	55 (21.4)	53 (21.0)
SHO	4 (2.0)	1 (0.5)	7 (0.8)	7 (0.9)	9 (3.5)	9 (3.6)
Grade of senior surgeon present [n (%)]	N=198	N=201	N=825	N=818	N=258	N=252
Consultant	189 (95.5)	186 (92.5)	652 (79.0)	660 (80.7)	215 (83.3)	208 (82.5)
Associate specialist/staff grade	4 (2.0)	5 (2.5)	102 (12.4)	98 (12.0)	18 (7.0)	26 (10.3)
SPR	5 (2.5)	10 (5.0)	71 (8.6)	60 (7.3)	25 (9.7)	18 (7.1)

Note: Numbers in analyses vary depending on number of patients with information available (allowing for withdrawal and non-response). SD = standard deviation; SPR = specialist registrar; SHO = senior house officer.

TABLE E-3 In-Hospital Care and Short-Term Complications

	Metal-Backed	Non-Metal-Backed	Patellar Resurfacing	No Patellar Resurfacing	Mobile Bearing	Fixed Bearing
Total number of patients recruited	202	207	861	854	276	263
	N=197	N=202	N=825	N=813	N=258	N=249
Any postoperative complications [n (%)]	30 (15.2)	35 (17.3)	127 (15.4)	121 (14.9)	34 (13.2)	27 (10.8)
Knee dislocation [n (%)]	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.2)	1 (0.4)	0 (0.0)
Proven wound infection [n (%)]	1 (0.5)	1 (0.5)	10 (1.2)	9 (1.1)	2 (0.8)	3 (1.2)
Septicemia [n (%)]	0 (0.0)	0 (0.0)	1 (0.1)	1 (0.1)	0 (0.0)	1 (0.4)
Treated DVT or pulmonary embolism [n (%)]	3 (1.5)	5 (2.5)	21 (2.5)	22 (2.7)	3 (1.2)	6 (2.4)
Confirmed cerebrovascular accident [n (%)]	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)
Confirmed myocardial infarction [n (%)]	1 (0.5)	1 (0.5)	6 (0.7)	2 (0.2)	1 (0.4)	1 (0.4)
Other serious complication [n (%)]	27 (13.7)	28 (13.9)	94 (11.4)	91 (11.2)	27 (10.5)	19 (7.6)
Medical complications	16 (8.1)	14 (6.9)	54 (6.5)	44 (5.4)	10 (3.9)	8 (3.2)
Surgical complications	3 (1.5)	0 (0.0)	12 (1.5)	18 (2.2)	6 (2.3)	6 (2.4)
Fall	1 (0.5)	0 (0.0)	0 (0.0)	2 (0.2)	0 (0.0)	1 (0.4)
Suspicion of infection	4 (2.0)	8 (4.0)	7 (0.8)	9 (1.1)	2 (0.8)	1 (0.4)
Confirmed infection	0 (0.0)	0 (0.0)	1 (0.1)	1 (0.1)	0 (0.0)	0 (0.0)
Skin complications	2 (1.0)	2 (1.0)	8 (1.0)	13 (1.6)	2 (0.8)	1 (0.4)
Stiffness	1 (0.5)	2 (1.0)	6 (0.7)	4 (0.5)	2 (0.8)	1 (0.4)
Suspected thrombolytic complications	2 (1.0)	3 (1.5)	6 (0.7)	1 (0.1)	1 (0.4)	0 (0.0)
Urinary complications	2 (1.0)	3 (1.5)	20 (2.4)	14 (1.7)	4 (1.6)	5 (2.0)
	N=196	N=201	N=825	N=813	N=257	N=250
Any additional knee surgery [n (%)]	1 (0.5)	4 (2.0)	14 (1.7)	19 (2.3)	5 (1.9)	6 (2.4)
Additional knee surgery [n (%)]	N=196	N=201	N=825	N=813	N=257	N=250
Manipulation under anesthesia	0 (0.0)	2 (1.0)	2 (0.2)	8 (1.0)	2 (0.8)	3 (1.2)
Wound problem	0 (0.0)	0 (0.0)	1 (0.1)	2 (0.2)	2 (0.8)	1 (0.4)
Stiffness	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.2)	0 (0.0)	0 (0.0)
Suspicion of infection	1 (0.5)	2 (1.0)	8 (1.0)	7 (0.9)	1 (0.4)	1 (0.4)
Confirmed infection	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Dislocation	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	1 (0.4)
Prosthetic complication	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)
Unknown	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)
Status at discharge [n (%)]	N=196	N=202	N=830	N=809	N=257	N=250
Alive	196 (100.0)	201 (99.5)	826 (99.5)	807 (99.8)	256 (99.6)	249 (99.6)
Dead	0 (0.0)	1 (0.5)	4 (0.5)	2 (0.2)	1 (0.4)	1 (0.4)
	N=196	N=202	N=830	N=809	N=257	N=250
Discharged to home [n (%)]	190 (96.9)	192 (95.0)	795 (95.8)	756 (93.4)	245 (95.3)	243 (97.2)
	N=196	N=203	N=832	N=817	N=255	N=248

Days in hospital [median (IQR)]	8 (7, 11)	9 (8, 12)	9 (7, 11)	9 (7, 11)	8 (7, 11)	8 (7, 11)
Mean (SD)	9.70 (4.7)	10.38 (4.7)	10.21 (5.7)	9.84 (4.5)	9.74 (6.5)	9.93 (4.9)

Note: Numbers in analyses vary depending on number of patients with information available (allowing for withdrawal and non-response). DVT = deep vein thrombosis; IQR = interquartile range; SD = standard deviation.

TABLE E-4 Patient-Assessed Outcomes at Baseline, 3, 12, and 24 Months

	Metal-Backed	Non-Metal-Backed	Patellar Resurfacing	No Patellar Resurfacing	Mobile Bearing	Fixed Bearing
Total number of patients recruited	202	207	861	854	276	263
Oxford Knee Score						
Baseline [mean (SD)]	17.87 (7.78)	17.35 (7.67)	18.49 (7.39)	18.15 (7.66)	17.18 (7.64)	16.49 (7.35)
3 months [mean (SD)]	31.01 (9.93)	29.28 (9.41)	31.19 (9.56)	30.49 (9.45)	30.39 (9.77)	29.37 (9.58)
1 year [mean (SD)]	34.66 (10.19)	32.74 (9.75)	34.66 (9.44)	34.53 (10.16)	33.43 (10.45)	32.59 (10.73)
2 years [mean (SD)]	35.41 (10.67)	33.26 (10.53)	35.61 (9.83)	35.25 (10.15)	33.61 (10.49)	32.81 (10.38)
Difference at 1 year (95% CI)*	0.91 (−1.68, 3.51)		0.02 (−1.10, 1.14)		−0.25 (−2.08, 1.58)	
Difference at 2 years (95% CI)*	1.33 (−1.44, 4.10)		0.27 (−1.00, 1.53)		−0.13 (−1.88, 1.61)	
EQ-5D						
Baseline [mean (SD)]	0.40 (0.31)	0.36 (0.32)	0.40 (0.30)	0.39 (0.31)	0.32 (0.32)	0.34 (0.31)
3 months [mean (SD)]	0.68 (0.25)	0.64 (0.24)	0.70 (0.23)	0.69 (0.24)	0.66 (0.27)	0.66 (0.24)
1 year [mean (SD)]	0.72 (0.26)	0.69 (0.24)	0.74 (0.23)	0.73 (0.25)	0.72 (0.29)	0.69 (0.29)
2 years [mean (SD)]	0.72 (0.26)	0.69 (0.27)	0.74 (0.24)	0.72 (0.27)	0.71 (0.28)	0.67 (0.27)
Difference at 1 year (95% CI)*	0.02 (−0.04, 0.07)		0.01 (−0.02, 0.03)		0.02 (−0.04, 0.08)	
Difference at 2 years (95% CI)*	0.01 (−0.06, 0.09)		0.01 (−0.01, 0.04)		0.03 (−0.04, 0.10)	
SF-12 (v2) Physical						
Baseline [mean (SD)]	30.53 (8.08)	29.78 (7.42)	31.07 (8.05)	31.26 (8.50)	31.04 (8.12)	30.39 (7.95)
3 months [mean (SD)]	38.90 (10.08)	37.76 (9.23)	39.42 (9.35)	38.68 (9.06)	38.50 (9.52)	38.13 (9.68)
1 year [mean (SD)]	40.37 (11.02)	38.00 (10.02)	40.82 (10.51)	40.72 (10.39)	40.36 (10.63)	38.69 (10.80)
2 years [mean (SD)]	40.26 (10.88)	38.08 (10.67)	40.66 (10.99)	40.84 (10.39)	40.38 (11.44)	38.70 (10.61)
Difference at 1 year (95% CI)*	1.71 (−1.23, 4.65)		0.14 (−0.91, 1.19)		0.86 (−1.33, 3.04)	
Difference at 2 years (95% CI)*	1.69 (−0.34, 3.71)		−0.10 (−1.30, 1.11)		0.81 (−0.61, 2.23)	
SF-12 (v2) Mental						
Baseline [mean (SD)]	49.14 (12.56)	49.52 (12.23)	50.70 (11.37)	49.73 (11.20)	48.09 (11.97)	48.62 (11.94)
3 months [mean (SD)]	50.73 (11.21)	49.96 (11.66)	51.21 (10.60)	51.14 (10.97)	48.19 (11.80)	49.47 (10.99)
1 year [mean (SD)]	51.16 (11.57)	51.38 (10.49)	52.31 (10.20)	51.47 (11.10)	50.55 (11.20)	50.14 (12.14)
2 years [mean (SD)]	51.44 (10.19)	50.98 (10.19)	51.64 (9.95)	50.87 (11.07)	49.78 (10.76)	50.77 (11.25)
Difference at 1 year (95% CI)*	−0.11 (−2.04, 1.82)		0.54 (−0.59, 1.68)		0.05 (−1.84, 1.93)	
Difference at 2 years (95% CI)*	0.47 (−2.72, 3.67)		0.29 (−0.78, 1.35)		−0.85 (−2.37, 0.67)	

*Calculated with use of analysis of covariance adjusting for minimization factors and baseline score and for surgeon. SD = standard deviation; CI = confidence interval.

TABLE E-5 Clinical Events in First 24 Months After Surgery

	Metal-Backed	Non-Metal-Backed	Patellar Resurfacing	No Patellar Resurfacing	Mobile Bearing	Fixed Bearing
Total number of patients recruited	202	207	861	854	276	263
Count of hospital readmissions	27	22	108	126	41	39
Reason for readmission [n (%)]						
Related to knee	20 (9.9)	19 (9.2)	71 (8.2)	106 (12.4)	35 (12.7)	25 (9.5)
Possibly related to surgery	7 (3.5)	3 (1.4)	37 (4.3)	20 (2.3)	6 (2.2)	14 (5.3)
Patients requiring a readmission [n (%)]	25 (12.4)	17 (8.2)	91 (10.6)	91 (10.7)	29 (10.5)	34 (12.9)
Additional knee surgery [n (%)]	15 (7.4)	12 (5.8)	44 (5.1)	55 (6.4)	17 (6.2)	13 (4.9)
Readmissions requiring additional knee surgery						
No such readmissions	187 (92.6)	195 (94.2)	817 (94.9)	799 (93.6)	259 (93.8)	250 (95.1)
One such readmission	14 (6.9)	9 (4.3)	35 (4.1)	38 (4.4)	12 (4.3)	12 (4.6)
Two such readmissions	1 (0.5)	2 (1.0)	8 (0.9)	11 (1.3)	2 (0.7)	1 (0.4)
Three such readmissions	0 (0.0)	1 (0.5)	0 (0.0)	5 (0.6)	2 (0.7)	0 (0.0)
Four such readmissions	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	1 (0.4)	0 (0.0)
Five such readmissions	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)
Count of readmissions requiring additional knee surgery	16	16	55	80	26	14
No. of reasons for additional surgery						
1	16	16	52	79	26	13
2	0	0	2	1	0	0
3	0	0	1	0	0	1
Reasons for additional knee surgery						
Wound problems (not infected)	0	2	5	4	1	2
Stiffness	9	5	16	19	5	6
Musculoskeletal/ligamentous (including imbalance)	0	0	0	3	0	0
Patellar complication	0	0	5	5	0	1
Suspicion of infection	3	0	16	13	5	2
Confirmed infection	1	3	13	27	9	1
Dislocation	0	0	1	0	0	1
Prosthetic complication	2	4	2	4	5	2
Serious comorbidity	1	0	0	1	0	0
Other	0	2	1	5	1	1
Type of knee surgery						
Above-the-knee amputation	1	1	0	1	0	0
1st-stage revision	0	0	5	10	2	1
2nd-stage revision	0	0	5	9	1	0
Staged revision	0	0	10	19	3	1
Single-stage revision	1	4	3	4	4	3

1st patellar resurfacing	0	0	2	6	1	1
Débridement	3	2	6	9	4	0
Washout	4	3	11	19	10	2
Manipulation under anesthesia	8	5	17	19	5	6
Aspiration	2	1	13	6	0	2
Other	3	5	10	20	5	3
Type of knee surgery (hierarchical—1 value per readmission)	16	16	55	80	26	14
Above-the-knee amputation	1 (0.5)	1 (0.5)	0 (0.0)	1 (0.1)	0 (0.0)	0 (0.0)
Staged revision	0 (0.0)	0 (0.0)	9 (1.0)	18 (2.1)	3 (1.1)	1 (0.4)
Single-stage revision	1 (0.5)	4 (1.9)	3 (0.3)	4 (0.5)	4 (1.4)	3 (1.1)
1st patellar resurfacing	0 (0.0)	0 (0.0)	2 (0.2)	6 (0.7)	1 (0.4)	1 (0.4)
Débridement	3 (1.5)	1 (0.5)	5 (0.6)	7 (0.8)	4 (1.4)	0 (0.0)
Washout	2 (1.0)	2 (1.0)	6 (0.7)	11 (1.3)	6 (2.2)	1 (0.4)
Manipulation under anesthesia	8 (4.0)	5 (2.4)	16 (1.9)	19 (2.2)	5 (1.8)	5 (1.9)
Aspiration	1 (0.5)	1 (0.5)	10 (1.2)	5 (0.6)	0 (0.0)	2 (0.8)
Other	0 (0.0)	2 (1.0)	4 (0.5)	9 (1.1)	3 (1.1)	1 (0.4)