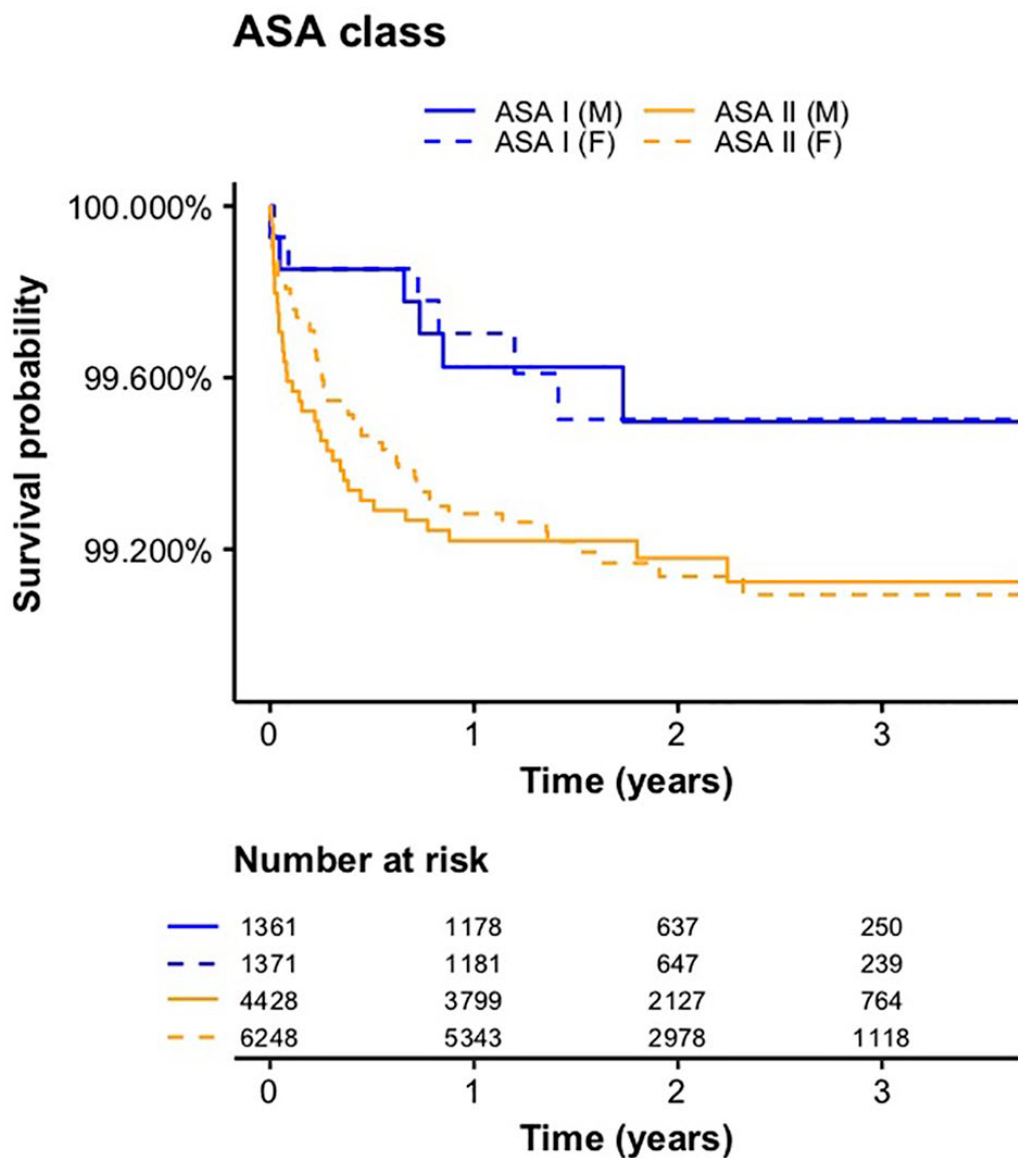


Appendices

Appendix 1. Kaplan–Meier plot of ASA class I vs. ASA class II in the multivariable model after stratification.



Appendix 2. Patient and surgical characteristics at the time of primary operation.

Values are mean S.D. for continuous variables and total number (%) for categorical variables.

Characteristic	Total			Dislocation			No dislocation		
	N availabl e	N/ mean	% / S.D.	N availabl e	N/ mea n	% / S.D.	N availabl e	N/ mean	% / S.D.
Number of hips	33337			264			33073		
Age (years)	33330			264			33066		

≤ 55	4507 (13.5)	29 (11.0)	4478 (13.6)
56–65	8333 (25.0)	55 (20.8)	8278 (25.0)
66–75	1239		
≥ 76	9 (37.2)	99 (37.5)	12300 (37.2)
	8091 (24.3)	81 (30.7)	8010 (24.2)
Sex	33319	264	33055
Male	1431		
	7 (43.0)	103 (39.0)	14214 (43.0)
Female	1900		
	2 (57.0)	161 (61.0)	18841 (57.0)
ASA physical status classification	32697	261	32436
ASA I	4013 (12.3)	16 (6.1)	3997 (12.3)
	1611		
ASA II	7 (49.3)	112 (42.9)	16005 (49.4)
	1256		
ASA III–IV	7 (38.4)	133 (51.0)	12434 (38.3)
Body mass index (kg/m ²)	30045	239	29806
< 25	8345 (27.8)	68 (28.5)	8277 (27.8)
	1230		
25–30	9 (41.0)	100 (41.8)	12209 (40.9)
> 30	9391 (31.2)	71 (29.7)	9320 (31.3)
Preoperative diagnosis	32315	255	32060
Primary osteoarthritis	2796		
	5 (86.6)	192 (75.3)	27773 (86.6)
Fracture	1366 (4.2)	33 (12.9)	1333 (4.2)
Other	2984 (9.2)	30 (11.8)	2954 (9.2)
Hospital volume	33333	264	33069
Low	1304		
	2 (39.1)	86 (32.6)	12956 (39.2)
	1027		
Medium	9 (30.9)	87 (32.9)	10192 (30.8)
	1001		
High	2 (30.0)	91 (34.5)	9921 (30.0)
Level of education (surgeon)	29853	237	29616
Orthopedic specialist	2843		
	8 (95.3)	223 (94.1)	28215 (95.3)
Resident	1415 (4.7)	14 (5.9)	1401 (4.7)
Level of education (assistant)	29003	232	28771
Orthopedic specialist	2877 (9.9)	25 (10.8)	2852 (9.9)
Resident	8162 (28.2)	66 (28.4)	8096 (28.2)
No	1189 (4.1)	6 (2.6)	1183 (4.1)
	1677		
Other	5 (57.8)	135 (58.2)	16640 (57.8)
Surgical approach	32652	260	32392

Anterolateral (modified Hardinge)	6151 (18.8) 2620	22 (8.5)	6129 (18.9)
Posterior	3 (80.3)	235 (90.4)	25968 (80.2)
Anterior (Smith–Peterson)	298 (0.9)	3 (1.1)	295 (0.9)
Intraoperative bleeding	31381	253	31128
< 500 ml	2183 9 (69.6)	159 (62.8)	21680 (69.6)
≥ 500 ml	9542 (30.4)	94 (37.2)	9448 (30.4)
Duration (min)	27645 78 (28)	220 79 (30)	27425 78 (28)
Anesthesia (spinal)	32604	260	32344
No	2485 (7.6) 3011	23 (8.8)	2462 (7.6)
Yes	9 (92.4)	237 (91.2)	29882 (92.4)
Anesthesia (epidural)	32604	260	32344
No	3181 3 (97.6)	247 (95.0)	31566 (97.6)
Yes	791 (2.4)	13 (5.0)	778 (2.4)
Anesthesia (general)	32604	260	32344
No	3007 2 (92.2)	239 (91.9)	29833 (92.2)
Yes	2532 (7.8)	21 (8.1)	2511 (7.8)
Anesthesia (nerve block)	32604	260	32344
No	3259 8 (100.0)	(100.0) 260)	32338 (100.0)
Yes	6 (0.0)	0 (0.0)	6 (0.0)
Anesthesia (LIA)	32604	260	32344
No	2636 7 (80.9)	226 (86.9)	26141 (80.8)
Yes	6237 (19.1)	34 (13.1)	6203 (19.2)
Complications during surgery (fracture)	31395	249	31146
No	3099 3 (98.7)	246 (98.8)	30747 (98.7)
Yes	402 (1.3)	3 (1.2)	399 (1.3)
Previous operation to the same joint	28071	220	27851
No	2746 6 (97.8)	212 (96.4)	27254 (97.9)
Yes	605 (2.2)	8 (3.6)	597 (2.1)
Fixation	30150	247	29903
Cementless	1865 5 (61.9)	133 (53.8)	18522 (61.9)

Cemented	3008 (10.0)	33 (13.4)	2975 (10.0)
Hybrid	6837 (22.7)	69 (27.9)	6768 (22.6)
Reverse hybrid	1650 (5.4)	12 (4.9)	1638 (5.5)
Bearing	25107	210	24897
Metal-on-UHXLPE	1265 2 (50.4)	132 (62.9)	12520 (50.3)
Ceramic-on-ceramic	2786 (11.1)	13 (6.2)	2773 (11.1)
Ceramic-on-UHXLPE	7063 (28.1)	51 (24.3)	7012 (28.2)
Ceramized metal-on-UHXLPE	1445 (5.8)	3 (1.4)	1442 (5.8)
Other	1161 (4.6)	11 (5.2)	1150 (4.6)
Oblique liner	30228	228	30000
No	2365 8 (78.3)	173 (75.9)	23485 (78.3)
Yes	6570 (21.7)	55 (24.1)	6515 (21.7)
Femoral head size (mm)	32452	252	32200
32	7836 (24.1) 2395	87 (34.5)	7749 (24.1)
36	8 (73.8)	158 (62.7)	23800 (73.9)
>36	311 (1.0)	4 (1.6)	307 (0.9)
28	347 (1.1)	3 (1.2)	344 (1.1)

Appendix 3. Univariate analysis of all predictors with incident of revision for dislocation.

Characteristic	Hazard ratio	95% CI	p-value
Age			0.05
≤ 55	Reference		
56–65	1.0	(0.7 – 1.6)	0.9
66–75	1.2	(0.8 – 1.9)	0.3
≥ 76	1.6	(1.0 – 2.4)	0.04
ASA physical status classification			<0.001
ASA I	Reference		
ASA II	1.8	(1.0 – 3.0)	0.03
ASA III – IV	2.7	(1.6 – 4.5)	<0.001
Body mass index (kg/m ²)			0.9
< 25	Reference		
25 – 30	1.0	(0.7 – 1.3)	0.9
> 30	0.9	(0.7 – 1.3)	0.7
Preoperative diagnosis			<0.001
Primary osteoarthritis	Reference		
Fracture	3.6	(2.5 – 5.2)	<0.001
Other	1.5	(1.0 – 2.1)	0.05
Hospital volume			0.06
Low	Reference		

Medium	1.3 (1.0 – 1.8)	0.08
High	1.4 (1.0 – 1.9)	0.03
Level of education (surgeon)		
Orthopedic specialist	Reference	
Resident	1.2 (0.7 – 2.1)	0.4
Level of education (assistant)		0.6
Orthopedic specialist	Reference	
Resident	1.0 (0.6 – 1.5)	0.9
No	0.6 (0.2 – 1.5)	0.3
Other	1.0 (0.6 – 1.5)	0.9
Surgical approach		<0.001
Anterolateral (modified Hardinge)	Reference	
Posterior	2.6 (1.7 – 4.1)	<0.001
Anterior (Smith – Peterson)	2.9 (0.9 – 9.6)	0.09
Intraoperative bleeding		
< 500 ml	Reference	
≥ 500 ml	1.3 (1.0 – 1.7)	0.04
Duration (min)	1.0 (1.0 – 1.0)	1.0
Anesthesia (spinal)		
No	Reference	
Yes	0.8 (0.5 – 1.3)	0.3
Anesthesia (epidural)		
No	Reference	
Yes	2.0 (1.2 – 3.6)	0.01
Anesthesia (general)		
No	Reference	
Yes	1.1 (0.7 – 1.7)	0.7
Anesthesia (LIA)		
No	Reference	
Yes	0.6 (0.5 – 0.9)	0.02
Complications during surgery (fracture)		
No	Reference	
Yes	0.9 (0.3 – 2.9)	0.9
Previous operation to the same joint		
No	Reference	
Yes	1.7 (0.8 – 3.4)	0.1
Fixation		0.02
Cementless	Reference	
Cemented	1.6 (1.1 – 2.4)	0.01
Hybrid	1.4 (1.1 – 1.9)	0.01
Reverse hybrid	1.4 (0.8 – 2.5)	0.3
Bearing		<0.001
Metal-on-UHXLPE	Reference	
Ceramic-on-ceramic	0.4 (0.2 – 0.7)	0.003
Ceramic-on-UHXLPE	0.7 (0.5 – 1.0)	0.03

Ceramized metal-on-UHXLPE	0.2 (0.1 – 0.6)	0.006
Other	0.9 (0.5 – 1.6)	0.7
Oblique liner		
No	Reference	
Yes	1.3 (0.9 – 1.7)	0.1
Femoral head size (mm)		
32	Reference	
36	0.6 (0.5 – 0.8)	<0.001
>36	1.1 (0.4 – 3.1)	0.8
28	0.8 (0.2 – 2.4)	0.7

Appendix 4. Multivariable analysis of all predictors with incident of revision for dislocation.

Only patients without any missing data for variables of interest (N=21,706) were included in the final multivariable models.

Characteristic	Hazard ratio	95% CI	p-value
Age (years)			0.8
≤55	Reference		
56–65	1.2	(0.7 – 2.2)	0.5
66–75	1.3	(0.7 – 2.4)	0.3
≥76	1.3	(0.7 – 2.6)	0.4
ASA physical status classification			0.09
ASA I	Reference		
ASA II	1.7	(0.9 – 3.3)	0.09
ASA III – IV	2.0	(1.0 – 3.9)	0.04
Preoperative diagnosis			<0.001
Primary osteoarthritis	Reference		
Fracture	3.0	(1.9 – 4.7)	<0.001
Other	1.4	(0.9 – 2.2)	0.2
Surgical approach			<0.001
Anterolateral (modified Hardinge)	Reference		
Posterior	3.1	(1.7 – 5.5)	<0.001
Anterior (Smith – Peterson)	3.6	(1.0 – 13.1)	0.05
Intraoperative bleeding			
< 500 ml	Reference		
≥ 500 ml	1.3	(0.9 – 1.7)	0.1
Anesthesia (spinal)			
No	Reference		
Yes	0.6	(0.2 – 2.1)	0.4
Anesthesia (epidural)			
No	Reference		
Yes	1.4	(0.6 – 3.1)	0.5
Anesthesia (general)			

No	Reference	
Yes	0.9 (0.2 – 3.4)	0.9
Anesthesia (LIA)		
No	Reference	
Yes	0.8 (0.5 – 1.3)	0.4
Fixation		
Cementless	Reference	
Cemented	1.2 (0.7 – 2.3)	0.5
Hybrid	1.0 (0.7 – 1.5)	1.0
Reverse hybrid	1.2 (0.5 – 3.0)	0.7
Bearing		
Metal-on-UHXLPE	Reference	
Ceramic-on-ceramic	0.6 (0.3 – 1.3)	0.2
Ceramic-on-UHXLPE	0.9 (0.6 – 1.3)	0.5
Ceramized metal-on-UHXLPE	0.3 (0.1 – 1.0)	0.06
Other	0.6 (0.2 – 1.3)	0.2
Femoral head size (mm)		
32	Reference	
36	0.5 (0.4 – 0.7)	<0.001
>36	0.4 (0.0 – 2.6)	0.3
28	0.5 (0.1 – 3.4)	0.4
Hospital volume		
Low	Reference	
Medium	1.4 (1.0 – 2.0)	0.07
High	1.3 (0.9 – 2.0)	0.2