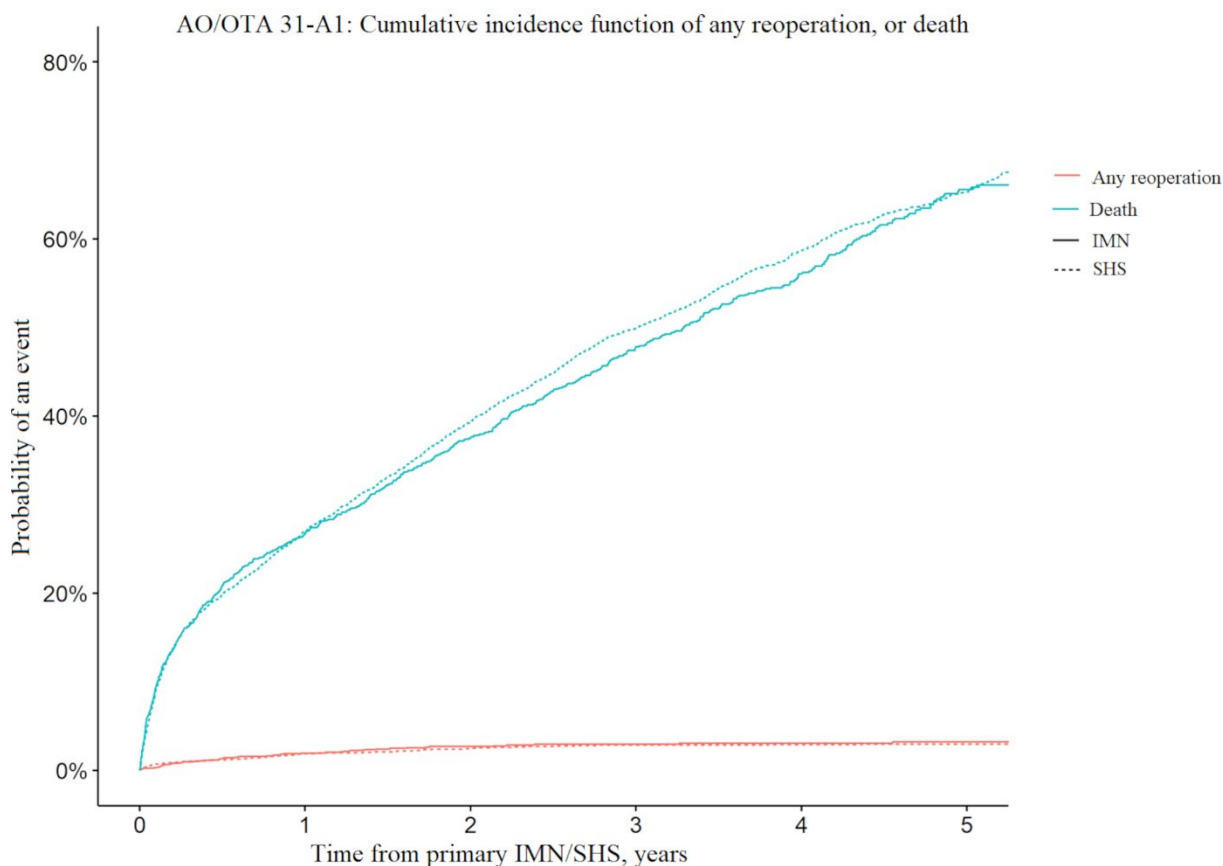
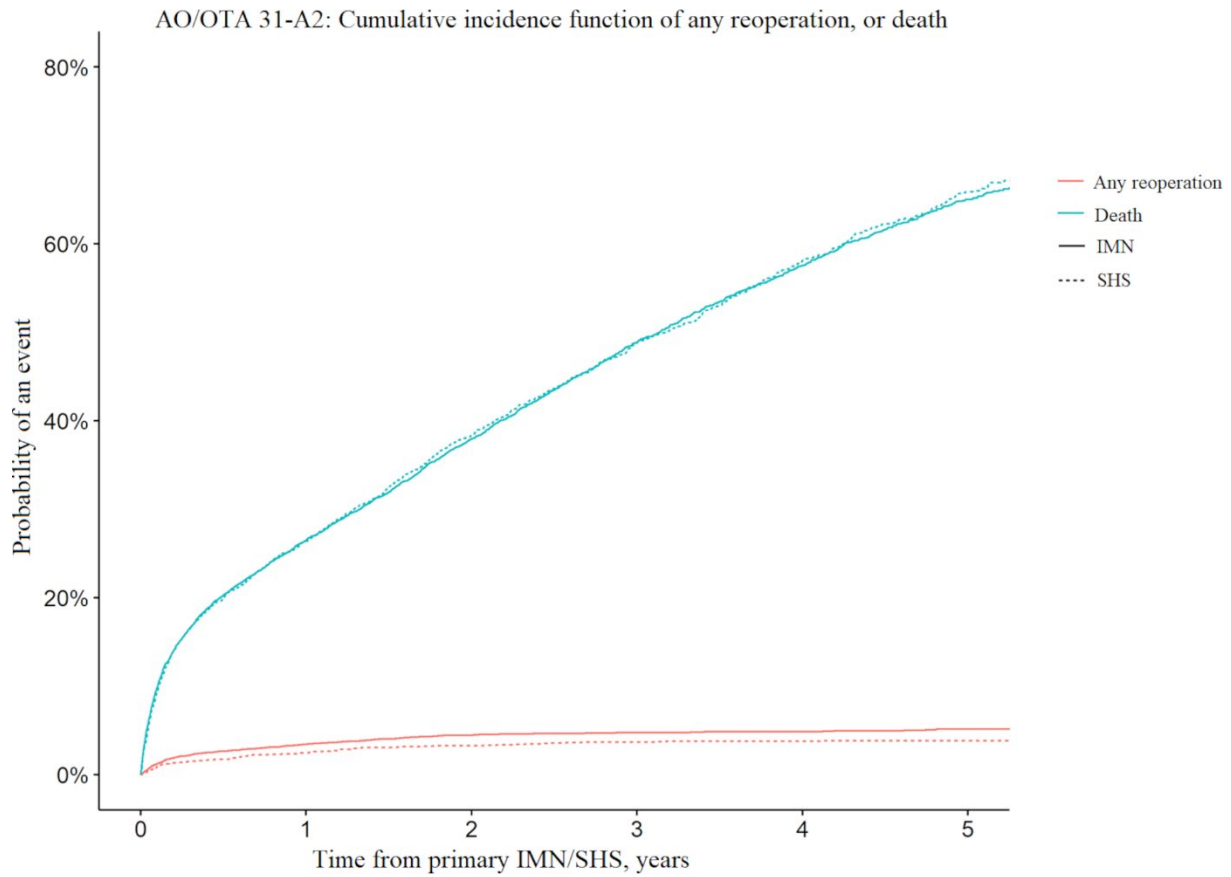


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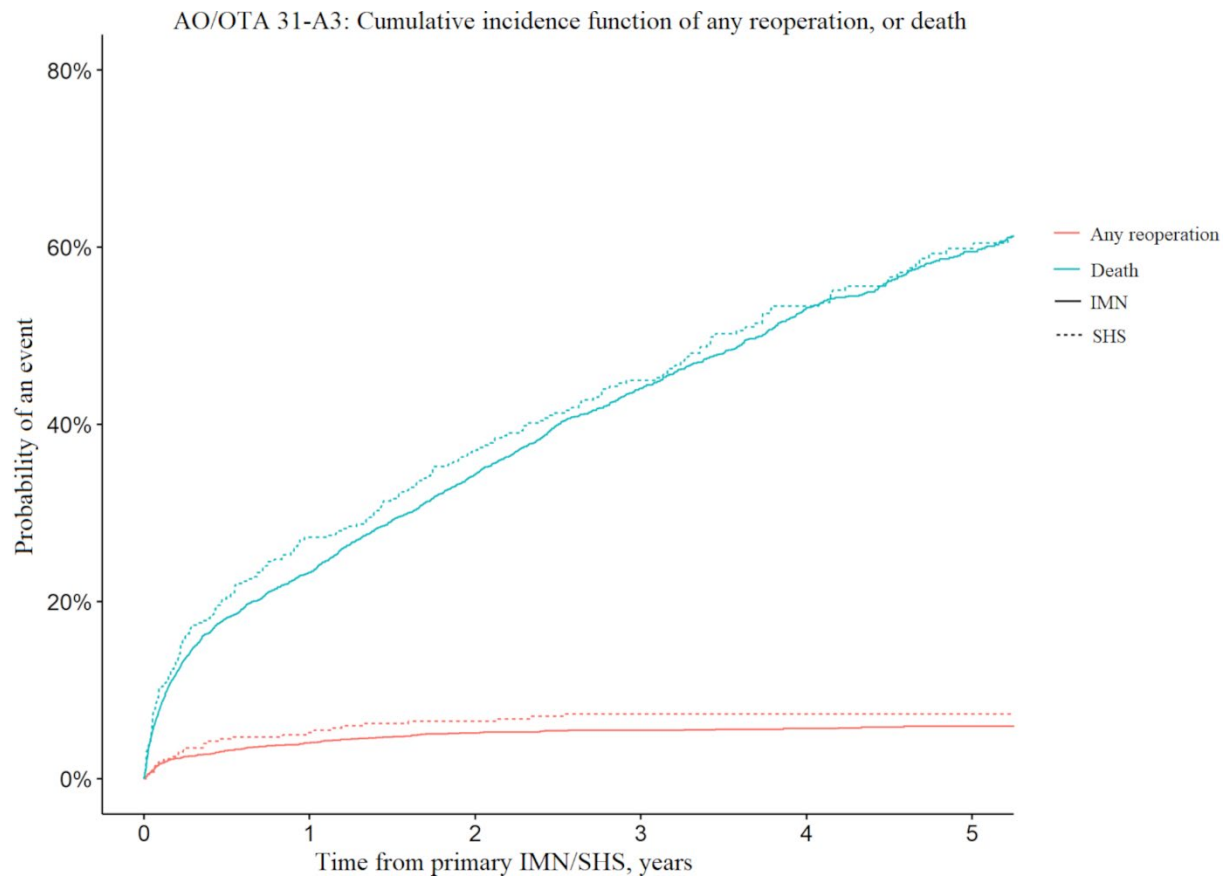
Supplementary Figure 1: Cumulative incidence function of any reoperation in AO/OTA 31-A1.



Supplementary Figure 2: Cumulative incidence function of any reoperation in AO/OTA 31-A2



Supplementary Figure 3: Cumulative incidence function of any reoperation in AO/OTA 31-A3



Supplementary Table 1: Competing risk model in AO/OTA 31-A1, 31-A2 and 31-A3 fractures. Cumulative incidence function (CIF) of conversion arthroplasty with mortality as competing risk, presented with number of individuals (N) at risk and 95% confidence intervals for CIF. IMN=Intramedullary nailing. SHS=Sliding hip screw.

AO/OTA		Time	N at risk	Arthroplasty			Death				
				Cumulative event	CIF	lower	upper	Cumulative event	CIF	lower	upper
31-A1	IMN	0	1727	0	0.00	NA	NA	3	0.17	0.06	0.54
		1	1247	18	1.04	0.66	1.65	462	26.75	24.74	28.92
		2	808	27	1.62	1.11	2.35	631	37.78	35.51	40.21
		3	491	31	1.94	1.37	2.76	751	48.14	45.62	50.81
		4	283	32	2.05	1.45	2.91	820	56.42	53.66	59.32
	SHS	5	136	33	2.24	1.57	3.20	874	66.00	62.91	69.25
		0	3733	1	0.03	0.00	0.19	2	0.05	0.01	0.21
		1	2684	33	0.88	0.63	1.24	1014	27.16	25.77	28.63
		2	1848	47	1.29	0.97	1.71	1441	39.54	37.97	41.17
		3	1177	56	1.59	1.23	2.07	1748	50.37	48.68	52.11
		4	652	57	1.65	1.27	2.13	1927	59.17	57.36	61.04
		5	347	57	1.65	1.27	2.13	2026	66.05	64.10	68.05
31-A2	IMN	0	7026	0	0.00	NA	NA	11	0.16	0.09	0.28
		1	5007	117	1.67	1.39	1.99	1892	26.93	25.91	27.99
		2	3124	161	2.37	2.03	2.76	2603	38.48	37.32	39.67
		3	1737	174	2.65	2.29	3.07	3096	49.57	48.27	50.90
		4	940	175	2.68	2.31	3.11	3368	58.50	57.06	59.97
	SHS	5	412	178	2.84	2.44	3.32	3517	66.23	64.61	67.88
		0	3187	0	0.00	NA	NA	2	0.06	0.02	0.25
		1	2297	41	1.29	0.95	1.74	848	26.61	25.12	28.19
		2	1594	60	1.91	1.49	2.46	1210	38.79	37.11	40.55
		3	997	68	2.23	1.76	2.83	1463	49.47	47.64	51.37
		4	595	70	2.34	1.85	2.95	1629	58.83	56.87	60.86
		5	280	71	2.40	1.90	3.04	1726	66.76	64.64	68.95
31-A3	IMN	0	3527	0	0.00	NA	NA	2	0.06	0.01	0.23
		1	2646	44	1.25	0.93	1.67	833	23.62	22.26	25.06
		2	1802	67	1.96	1.54	2.48	1205	35.20	33.63	36.85
		3	1117	72	2.15	1.71	2.70	1455	45.17	43.42	46.98
		4	600	74	2.28	1.81	2.87	1615	54.46	52.51	56.48
	SHS	5	300	77	2.54	2.00	3.21	1688	61.07	58.90	63.32
		0	404	0	0.00	NA	NA	1	0.25	0.03	1.75
		1	286	6	1.49	0.67	3.29	112	27.72	23.68	32.45
		2	222	11	2.75	1.54	4.93	151	37.82	33.34	42.90
		3	155	14	3.60	2.15	6.03	178	45.66	40.92	50.95
		4	100	14	3.60	2.15	6.03	203	54.80	49.75	60.36
		5	57	14	3.60	2.15	6.03	216	61.26	55.92	67.11

Supplementary Table 2: Any reoperation (secondary outcome) – crude rates, type of reoperation, and reasons for reoperation are presented. First reoperation is represented.

^aMalunion/non-union, implant failure, avascular necrosis, other mechanical complication. ^bNew fracture and avascular necrosis were reported as separate reason on Swedish Arthroplasty Register only.

*p<0.05.

	31-A1		31-A2		31-A3		Total
	IMN	SHS	IMN	SHS	IMN	SHS	
No reoperation, n (%)	1677 (97.1)	3629 (97.2)	6697 (95.3)	3072 (96.4)	3333 (94.5)	375 (92.8)	18783 (95.8)
Any reoperation, n (%)	50 (2.9)	104 (2.8)	329 (4.7)	115 (3.6)	194 (5.5)	29 (7.2)	821 (4.2)
- Arthroplasty	30 (1.7)	57 (1.5)	158 (2.2)	65 (2.0)	56 (1.6)	12 (3.0)	378 (1.9)
- Internal fixation	4 (0.2)	19 (0.5)	63 (0.9)	23 (0.7)	61 (1.7)	11 (2.7)	181 (0.9)
- Implant removal only	9 (0.5)	12 (0.3)	54 (0.8)	15 (0.5)	46 (1.3)	2 (0.5)	138 (0.7)
- Excision arthroplasty		2 (0.1)	9 (0.1)	2 (0.1)	1 (0.0)		14 (0.1)
- Other unspecified reoperation	7 (0.4)	14 (0.4)	45 (0.6)	10 (0.3)	30 (0.9)	4 (1.0)	110 (0.6)
Reason for reoperation, n (%)							
- Healing disturbance ^{a,b}	27 (1.6)	63 (1.7)	205 (2.9)	73 (2.3)	123 (3.5)	22 (5.4)	513 (2.6)
- Infection	4 (0.2)	7 (0.2)	36 (0.5)	9 (0.3)	16 (0.5)	4 (1.0)	76 (0.4)
- Pain	6 (0.3)	6 (0.2)	30 (0.4)	6 (0.2)	18 (0.5)	1 (0.2)	67 (0.3)
- Osteoarthritis	7 (0.4)	10 (0.3)	21 (0.3)	8 (0.3)	8 (0.2)	1 (0.2)	55 (0.3)
- New fracture ^b	3 (0.2)	4 (0.1)	13 (0.2)	8 (0.3)	7 (0.2)		35 (0.2)
- Other unspecified reason	3 (0.2)	14 (0.4)	24 (0.3)	11 (0.3)	22 (0.6)	1 (0.2)	75 (0.4)
Time to reoperation in days, median (range)	214.5 (1-1663)	257 (1-1961)	123 (1-2519)	294 (3-1510)	140.5 (2-2127)	131 (5-927)	159 (1-2519)

Supplementary Table 3: Competing risk model in AO/OTA 31-A1, 31-A2 and 31-A3 fractures.

Cumulative incidence function (CIF) of any reoperation with mortality as competing risk, presented with number of individuals (N) at risk and 95% confidence intervals for CIF.

IMN=Intramedullary nailing. SHS=Sliding hip screw.

AO/OTA		Time	N at risk	Any reoperation			Death				
				Cumulative event	CIF	lower	upper	Cumulative event	CIF	lower	upper
31-A1	IMN	0	1727	1	0.06	0.01	0.41	3	0.17	0.06	0.54
		1	1233	33	1.91	1.36	2.68	461	26.69	24.69	28.86
		2	796	45	2.68	2.01	3.57	626	37.46	35.19	39.88
		3	487	48	2.92	2.21	3.86	746	47.81	45.28	50.47
		4	281	49	3.03	2.29	4.01	815	56.05	53.29	58.95
	SHS	5	135	50	3.21	2.42	4.28	869	65.57	62.49	68.81
		0	3733	1	0.03	0.00	0.19	2	0.05	0.01	0.21
		1	2654	69	1.85	1.46	2.34	1008	27.00	25.62	28.46
		2	1820	89	2.43	1.98	2.98	1431	39.26	37.70	40.89
		3	1159	101	2.84	2.34	3.44	1733	49.90	48.22	51.65
		4	641	102	2.89	2.39	3.51	1909	58.58	56.77	60.44
		5	340	103	2.96	2.44	3.60	2006	65.31	63.37	67.31
31-A2	IMN	0	7026	2	0.03	0.01	0.11	11	0.16	0.09	0.28
		1	4912	240	3.42	3.02	3.87	1864	26.53	25.52	27.58
		2	3035	305	4.45	3.99	4.97	2564	37.92	36.77	39.11
		3	1679	319	4.75	4.27	5.30	3045	48.80	47.50	50.13
		4	905	322	4.85	4.35	5.40	3310	57.54	56.11	59.01
	SHS	5	392	327	5.12	4.58	5.73	3453	65.03	63.41	66.69
		0	3187	0	0.00	NA	NA	2	0.06	0.02	0.25
		1	2268	78	2.45	1.97	3.05	840	26.36	24.87	27.93
		2	1571	103	3.27	2.70	3.95	1195	38.31	36.63	40.06
		3	980	112	3.64	3.03	4.36	1444	48.83	47.00	50.72
		4	585	114	3.74	3.12	4.48	1608	58.09	56.14	60.12
		5	275	115	3.81	3.18	4.57	1703	65.88	63.76	68.08
31-A3	IMN	0	3527	1	0.03	0.00	0.20	2	0.06	0.01	0.23
		1	2561	142	4.03	3.43	4.73	820	23.25	21.90	24.69
		2	1729	179	5.16	4.47	5.95	1177	34.38	32.81	36.02
		3	1068	187	5.47	4.76	6.29	1419	44.06	42.32	45.87
		4	573	190	5.65	4.91	6.49	1575	53.13	51.19	55.15
	SHS	5	285	193	5.90	5.12	6.80	1645	59.47	57.31	61.71
		0	404	0	0.00	NA	NA	1	0.25	0.03	1.75
		1	273	21	5.20	3.43	7.88	110	27.23	23.22	31.93
		2	210	26	6.46	4.46	9.38	148	37.09	32.63	42.17
		3	145	29	7.32	5.15	10.39	175	44.95	40.22	50.24
		4	94	29	7.32	5.15	10.39	198	53.34	48.31	58.89
		5	54	29	7.32	5.15	10.39	211	59.84	54.51	65.70

Supplementary Table 4: (A) Univariate and (B) multivariate Cox regression analysis for any reoperation.

Event n=821 and censored n=18781.

(A) Univariate analysis	B	SE	Wald	df	Sig.	HR	95% CI
Age	-0.042	0.004	118.506	1	<0.001	0.959	0.952-0.966
Female gender	-0.052	0.077	0.457	1	0.499	0.949	0.815-1.105
AO/OTA 31-A1			44.487	2	<0.001		
- 31-A2	0.458	0.094	23.991	1	<0.001	1.581	1.316-1.899
- 31-A3	0.695	0.105	44.040	1	<0.001	2.004	1.632-2.461
IMN as primary treatment	0.347	0.076	20.775	1	<0.001	1.414	1.218-1.641
Specialist			3.511	3	0.319		
- Resident	0.002	0.074	0.001	1	0.973	1.002	0.867-1.159
- Assistant physician	0.056	0.411	0.019	1	0.891	1.058	0.473-2.366
- Unknown	0.324	0.175	3.432	1	0.064	1.383	0.981-1.949

(B) Multivariate analysis	B	SE	Wald	df	Sig.	HR	95% CI
Age	-0.042	0.004	119.887	1	<0.001	0.958	0.951-0.966
AO/OTA 31-A1			27.968	2	<0.001		
- 31-A2	0.434	0.099	19.342	1	<0.001	1.543	1.272-1.871
- 31-A3	0.595	0.115	26.822	1	<0.001	1.813	1.448-2.271
IMN as primary treatment	0.162	0.083	3.770	1	0.052	1.176	0.998-1.385