1   **APPENDIX 2 (as submitted by the authors): Supplementary tables**

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3   **Supplementary Table 1. Life table for the cohort.**

Years	Number at risk	TKR	Censored	Annual Incidence (%)	Cumulative Incidence (%)	Cumulative Incidence 95%CI	
						Lower	Upper
0 to 1	643	0	15	0.0	0.0	-	-
1 to 2	628	2	47	0.3	0.3	0.0	1.3
2 to 3	579	4	54	0.8	1.1	0.5	2.3
3 to 4	521	9	40	1.7	2.8	1.7	4.7
4 to 5	472	10	39	2.2	5.0	3.4	7.3
5 to 6	423	5	59	1.2	6.2	4.4	8.8
6 to 7	359	10	44	2.8	9.0	6.6	12.1
7 to 8	305	12	48	3.9	12.9	9.9	16.7
8 to 9	245	14	27	5.2	18.1	14.4	22.7
9 to 10	204	6	31	2.6	20.7	16.6	25.7
10 to 11	167	5	43	2.8	23.5	19.0	28.9
11 to 12	119	8	20	5.6	29.1	23.6	35.5
12 to 13	91	7	25	6.3	35.4	28.9	42.9
13 to 14	59	7	15	8.8	44.2	36.1	53.2
14 to 15	37	2	22	4.3	48.5	39.3	58.6
15 to 16	13	1	7	5.4	53.9	41.3	67.5
16 to 17	5	1	4	15.4	69.3	43.7	91.2

4   *Abbreviations:* CI = confidence intervals; TKR = total knee replacement

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Supplementary Table 2. Life table divided by radiographic disease severity (i.e. Kellgren & Lawrence grade).

Years	Number at risk	TKR	Censored	Annual Incidence (%)	Cumulative Incidence (%)	Cumulative Incidence 95%CI	
						Lower	Upper
Mild-to-moderate (i.e. KL 2 or below)							
0 to 1	260	0	8	0.0	0.0	-	-
1 to 2	252	0	19	0.0	0.0	-	-
2 to 3	233	1	29	0.5	0.5	0.1	3.2
3 to 4	203	0	20	0.0	0.5	0.1	3.2
4 to 5	183	2	19	1.1	1.6	0.5	5.0
5 to 6	162	0	33	0.0	1.6	0.5	5.0
6 to 7	129	1	19	0.8	2.4	0.9	6.5
7 to 8	109	5	24	5.1	7.5	3.9	14.2
8 to 9	80	3	11	3.7	11.2	6.4	19.3
9 to 10	66	1	14	1.5	12.7	7.4	21.4
10 to 11	51	1	19	2.1	14.8	8.7	24.7
11 to 12	31	2	6	6.1	20.9	12.2	34.4
12 to 13	23	0	8	0.0	20.9	12.2	34.4
13 to 14	15	0	4	0.0	20.9	12.2	34.4
14 to 15	11	0	9	0.0	20.9	12.2	34.4
15 to 16	2	0	1	0.0	20.9	12.2	34.4
16 to 17	1	0	1	0.0	20.9	12.2	34.4
Moderate-to-severe (i.e. KL grade 3 or 4)							
0 to 1	383	0	7	0.0	0.0	-	-
1 to 2	376	2	28	0.6	0.6	0.1	2.2
2 to 3	346	3	25	0.9	1.5	0.6	3.4
3 to 4	318	9	20	2.8	4.3	2.6	7.2
4 to 5	289	8	20	2.8	7.1	4.7	10.6
5 to 6	261	5	26	1.8	8.9	6.2	12.8
6 to 7	230	9	25	3.8	12.7	9.3	17.3
7 to 8	196	7	24	3.3	16.0	12.1	21.1
8 to 9	165	11	16	5.9	21.9	17.1	27.8
9 to 10	138	5	17	3.0	24.9	19.7	31.3
10 to 11	116	4	24	2.9	27.8	22.2	34.6
11 to 12	88	6	14	5.4	33.2	26.7	40.8
12 to 13	68	7	17	7.8	41.0	33.3	49.8
13 to 14	44	7	11	10.8	51.8	42.3	61.9
14 to 15	26	2	13	4.9	56.7	46.1	67.8
15 to 16	11	1	6	5.4	62.1	48.7	75.7
16 to 17	4	1	3	15.2	77.3	51.2	95.3

Abbreviations: CI = confidence intervals; TKR = total knee replacement

Supplementary Table 3. Life table divided by sex.

Years	Number at risk	TKR	Censored	Annual Incidence (%)	Cumulative Incidence (%)	Cumulative Incidence 95%CI	
						Lower	Upper
Male							
0 to 1	498	0	12	0.0	0.0	-	-
1 to 2	486	0	39	0.0	0.0	-	-
2 to 3	447	4	46	0.9	0.9	0.4	2.5
3 to 4	397	5	32	1.3	2.2	1.2	4.3
4 to 5	360	8	24	2.3	4.5	2.8	7.2
5 to 6	328	3	46	0.9	5.4	3.5	8.3
6 to 7	279	7	38	2.6	8.0	5.5	11.5
7 to 8	234	9	34	3.8	11.8	8.6	16.1
8 to 9	191	9	20	4.4	16.2	12.2	21.3
9 to 10	162	2	25	1.1	17.3	13.1	22.6
10 to 11	135	5	35	3.5	20.8	16.0	26.9
11 to 12	95	6	17	5.5	26.3	20.4	33.6
12 to 13	72	6	20	7.2	33.5	26.1	42.2
13 to 14	46	6	12	9.9	43.4	34.1	54.1
14 to 15	28	1	17	2.9	46.3	36.1	57.9
15 to 16	10	0	6	0.0	46.3	36.1	57.9
16 to 17	4	1	3	21.5	67.8	36.6	94.0
Female							
0 to 1	145	0	3	0.0	0.0	-	-
1 to 2	142	2	8	1.4	1.4	0.4	5.7
2 to 3	132	0	8	0.0	1.4	0.4	5.7
3 to 4	124	4	8	3.3	4.7	2.2	10.3
4 to 5	112	2	15	1.9	6.6	3.3	12.7
5 to 6	95	2	13	2.1	8.7	4.7	15.6
6 to 7	80	3	6	3.5	12.2	7.2	20.3
7 to 8	71	3	14	4.1	16.3	10.2	25.7
8 to 9	54	5	7	8.3	24.6	16.4	36.0
9 to 10	42	4	6	7.8	32.4	22.5	45.1
10 to 11	32	0	8	0.0	32.4	22.5	45.1
11 to 12	24	2	3	5.9	38.3	26.9	52.7
12 to 13	19	1	5	3.8	42.1	29.5	57.4
13 to 14	13	1	3	5.0	47.1	32.8	64.1
14 to 15	9	1	5	8.2	55.3	37.0	75.4
15 to 16	3	1	1	17.9	73.2	43.3	95.3
16 to 17	1	0	1	0.0	73.2	43.3	95.3

Abbreviations: CI = confidence intervals; TKR = total knee replacement

Supplementary Table 4. Sensitivity Analysis. Cox regression hazard ratio estimates for independent predictors of conversion from HTO to TKR when including only a single limb from each patient (n=556).

Predictor	Hazard Ratio (95%CIs)
Radiographic severity (Kellgren & Lawrence [KL] grade)	
Mild-to-moderate*	Reference
Moderate-to-severe*	2.47 (1.26 to 4.84)
Pre-operative alignment (Mechanical axis angle [degrees])	1.05 (0.97 to 1.14)
Correction Size (mm)	1.03 (0.93 to 1.14)
KOOS Pain Score (per 10 points) [a]	0.77 (0.68 to 0.89)
Sex	
Male	Reference
Female	1.60 (0.98 to 2.61)
Age (per 10 years)	1.40 (1.04 to 1.88)
Body mass index (per 5 kg/m^2)	1.26 (1.04 to 1.52)
Year of surgery	1.01 (0.92 to 1.11)

* Mild-to-moderate = KL grade 2 or less, moderate-to-severe = KL grade 3 or 4

[a] KOOS = Knee injury and Osteoarthritis Outcome Score – 0 indicates extreme knee symptoms; 100 indicates no knee symptoms.

Abbreviations: CI = confidence intervals

Supplementary Table 5. Post hoc Analysis. Cox regression hazard ratio estimates for independent predictors of conversion from HTO to TKR (n=643) stratified by surgeon.

Predictor	Hazard Ratio (95%CIs)
Radiographic severity (Kellgren & Lawrence [KL] grade)	
Mild-to-moderate*	Reference
Moderate-to-severe*	2.07 (1.19 to 3.62)
Pre-operative alignment (Mechanical axis angle [degrees])	1.05 (0.98 to 1.11)
Correction Size (mm)	1.04 (0.96 to 1.13)
KOOS Pain Score (per 10 points) [a]	0.86 (0.75 to 0.97)
Sex	
Male	Reference
Female	1.66 (1.06 to 2.60)
Age (per 10 years)	1.44 (1.12 to 1.85)
Body mass index (per 5 kg/m^2)	1.34 (1.14 to 1.58)
Year of surgery	1.07 (0.97 to 1.18)

The model was stratified by surgeon and the variance was adjusted for staged bilateral osteotomies using robust sandwich estimators.

* Mild-to-moderate = KL grade 2 or less, moderate-to-severe = KL grade 3 or 4

[a] KOOS = Knee injury and Osteoarthritis Outcome Score – 0 indicates extreme knee symptoms; 100 indicates no knee symptoms.

Abbreviations: CI = confidence intervals

Supplementary Table 6. Post hoc Analysis. Cumulative incidence of conversion from HTO to TKR in patients categorized by size of surgical correction angle.

Postoperative Alignment* (Mechanical Axis Angle)	Number of knees	5-year Cumulative incidence	10-year Cumulative incidence
0° to 3° valgus (i.e. neutral)	319	1.9 (0.8 to 4.6)	13.9 (9.3 to 20.5)
< 0° varus	205	9.2 (5.6 to 15.1)	30.0 (22.1 to 40.0)
> 3° valgus	119	6.3 (2.9 to 13.6)	23.0 (14.0 to 36.4)

* Values are presented as percentages (with 95% confidence intervals)
Correction angle was assessed using the first postoperative full-limb standing radiographs and the mechanical axis angle. We defined correction angle by 3 categories based on previous literature[1,2].
Abbreviations: CI = confidence intervals

Supplementary Table 7. Post hoc Analysis. Cox regression hazard ratio estimates for independent predictors of conversion from HTO to TKR (n=643) that includes correction angle.

Predictor	Hazard Ratio (95%CIs)
Radiographic severity (Kellgren & Lawrence [KL] grade)	
Mild-to-moderate*	Reference
Moderate-to-severe*	2.07 (1.17 to 3.64)
Pre-operative alignment (Mechanical axis angle [degrees])	1.05 (0.99 to 1.11)
Correction angle (degrees)[a]	
0° to 3° valgus (i.e. neutral)	Reference
< 0° varus	1.87 (1.18 to 3.00)
> 3° valgus	1.40 (0.80 to 2.46)
KOOS Pain Score (per 10 points)[b]	0.87 (0.77 to 0.98)
Sex	
Male	Reference
Female	1.68 (1.07 to 2.62)
Age (per 10 years)	1.59 (1.25 to 2.03)
Body mass index (per 5 kg/m^2)	1.30 (1.11 to 1.53)
Year of surgery	1.04 (0.95 to 1.13)

The variance was adjusted for staged bilateral osteotomies using robust sandwich estimators.
The predictor for correction size was substituted for correction angle as the variables are multicollinear.
* Mild-to-moderate = KL grade 2 or less, moderate-to-severe = KL grade 3 or 4
[a] Correction angle was assessed using the first postoperative full-limb standing radiographs and the mechanical axis angle. We defined correction angle by 3 categories based on previous literature[1,2].
[b] KOOS = Knee injury and Osteoarthritis Outcome Score – 0 indicates extreme knee symptoms; 100 indicates no knee symptoms.
Abbreviations: CI = confidence intervals

References

1.	Fowler PJ, Tan JL, Brown GA. Medial Opening Wedge High Tibial Osteotomy: How I Do It. Operative Techniques in Sports Medicine. 2012;20(1):87-92.

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