

Cemented TKA is still a great option

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Disclosure

- Editorial Board, Journal of Arthroplasty



In the 2023 American Joint Replacement Registry report, 20% of primary TKAs in the United States were done with noncemented implants.

Mosher, JOA 2024

The Global Cementless Total Knee Arthroplasty (TKA) Market is forecast to grow by \$2408.49 mn during 2022-2027, accelerating at a CAGR of 22.15% during the forecast period

ReportLinker

Updated January 11, 2023 • 3 min read

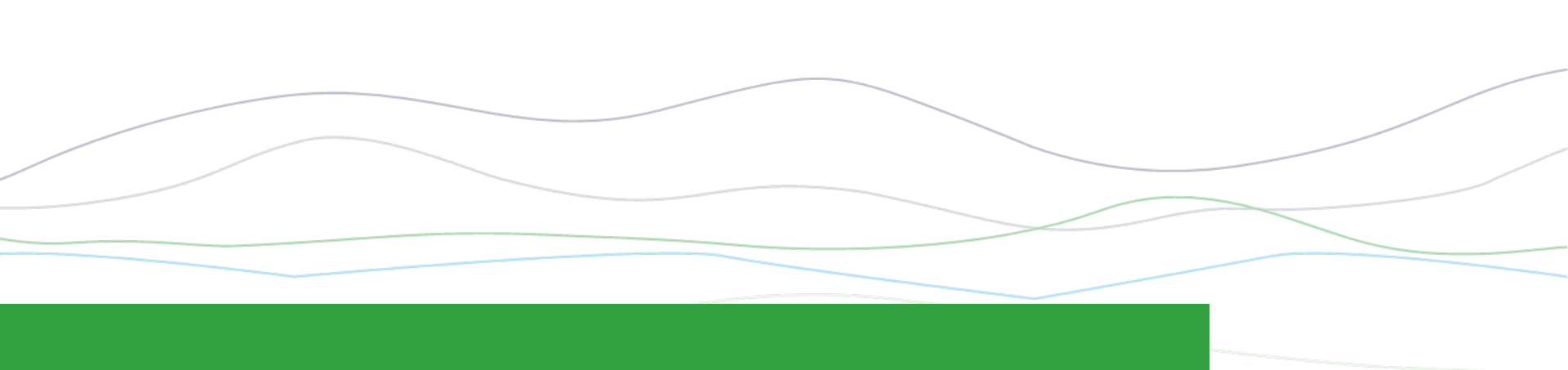


World Variability



Wilczyński, Material 2024

5 reasons I still do not do my first cementless knee



Cemented has better survivorship



Contents lists available at [ScienceDirect](#)

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org



Primary Arthroplasty

Despite Improved Survivorship of Uncemented Fixation in Total Knee Arthroplasty for Osteoarthritis, Cemented Fixation Remains the Gold Standard: An Analysis of a National Joint Registry



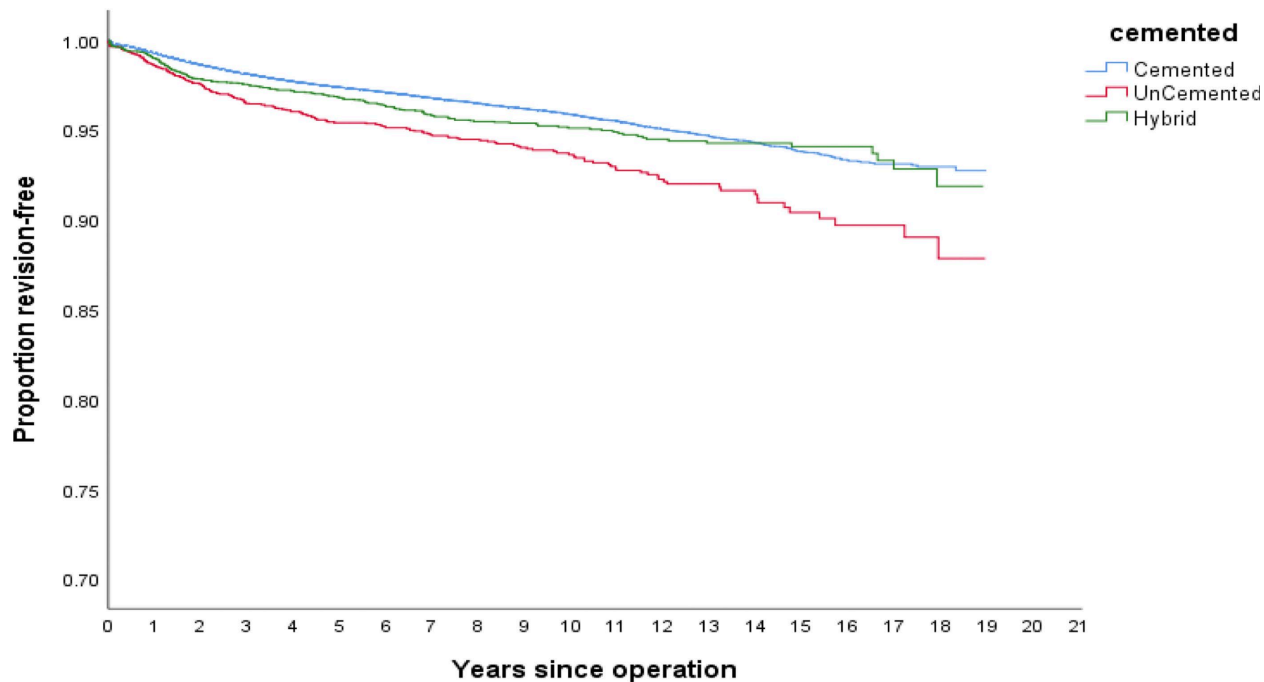
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Christopher M. Frampton, PhD ^c, Gary J. Hooper, MD, FRACS ^d

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Revision rates (per 100 component years)

0.47 for cemented

0.74 uncemented

0.52 hybrid

Ten-year survival rates

97% cemented

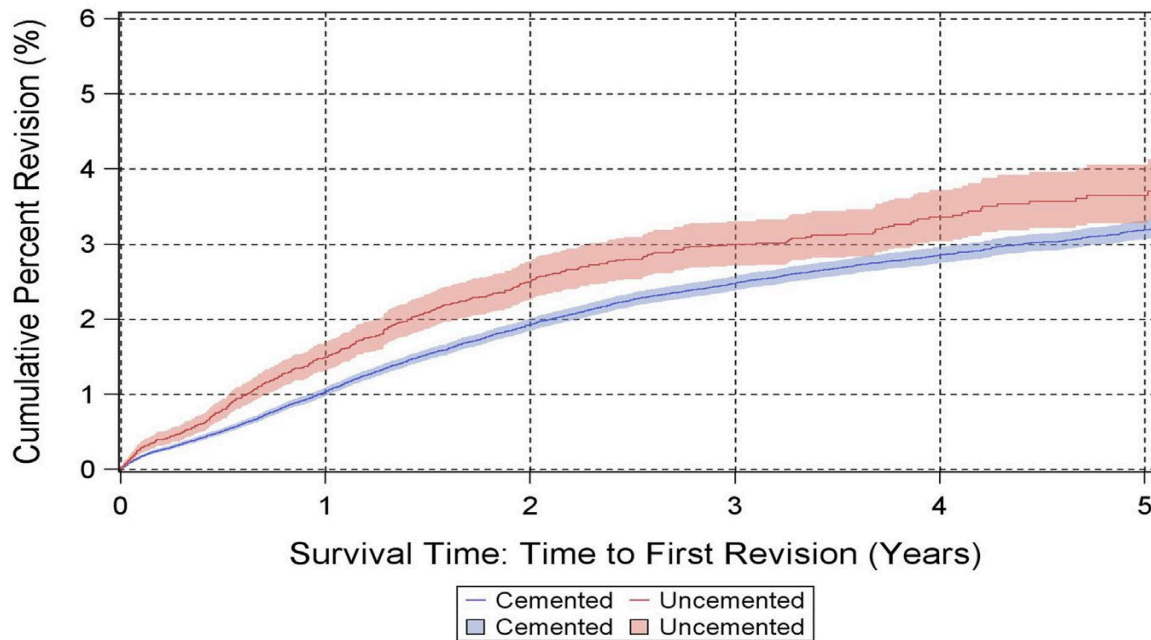
94.5% uncemented

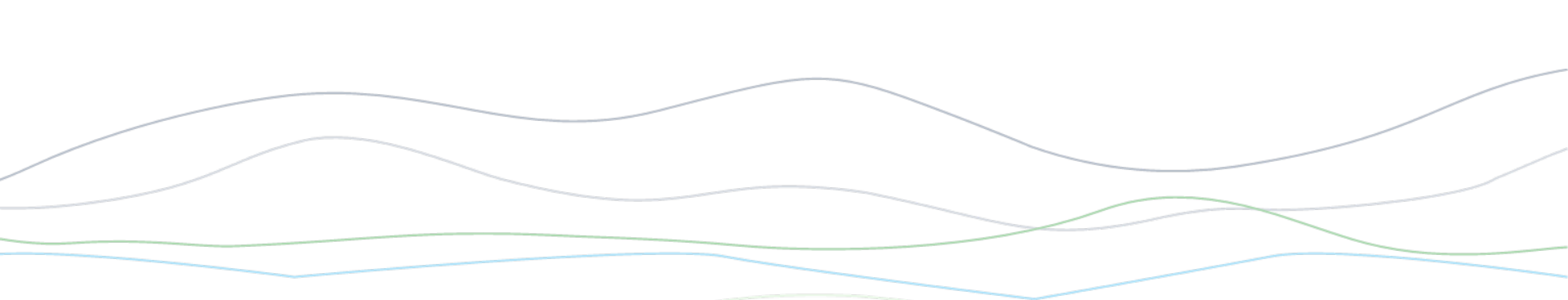
95.8% hybrid

Michigan State Registry. Paull, JOA 2025

2017 to 2022 Cemented: 129,315 vs. Uncemented: 18,523

revision rate of 3.65 and 3.19%, respectively ($P < 0.0001$)





The age factor might not be as
powerful as its theory

In the elderly, the difference is clear

Favoring cemented

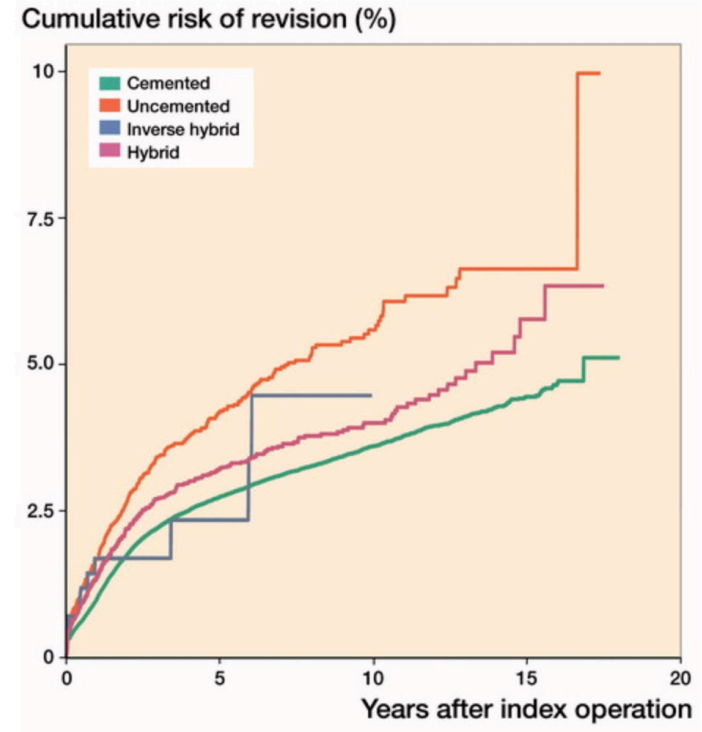
OPEN ACCESS

90

Acta Orthopaedica 2021; 92 (1): 90–95

Association between fixation type and revision risk in total knee arthroplasty patients aged 65 years and older: a cohort study of 265,877 patients from the Nordic Arthroplasty Register Association 2000–2016

Tero IRMOLA¹, Ville PONKILAINEN¹, Keijo T MÄKELÄ^{2,3}, Otto ROBERTSSON⁴, Annette W-DAHL⁴, Ove FURNES^{5,6}, Anne M FENSTAD⁵, Alma B PEDERSEN⁷, Henrik M SCHRØDER⁸, Antti ESKELINEN¹, and Mika J NIEMELÄINEN¹



In the working-age patients, also, the difference is clear

Favoring cemented

OPEN ACCESS

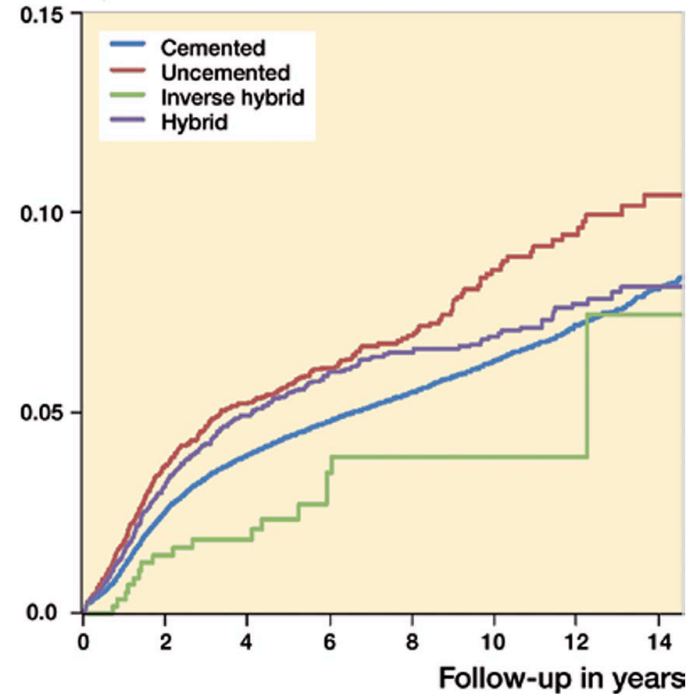
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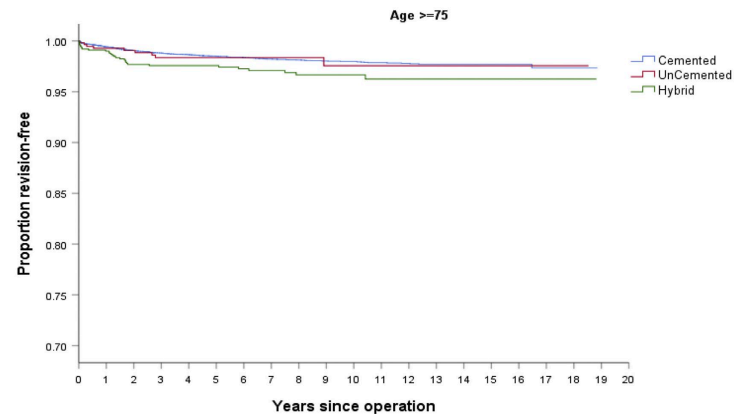
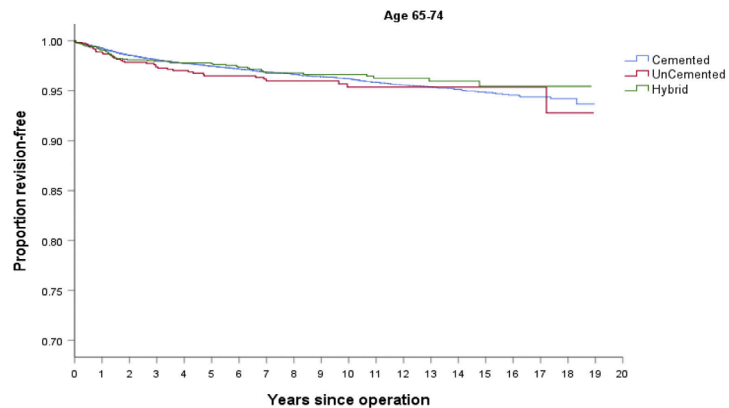
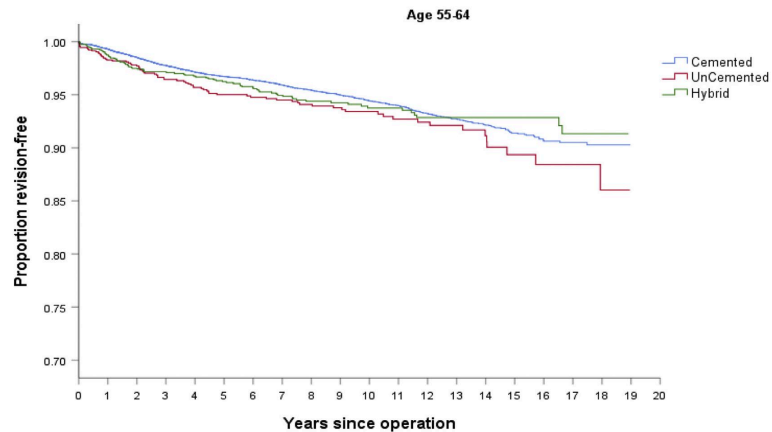
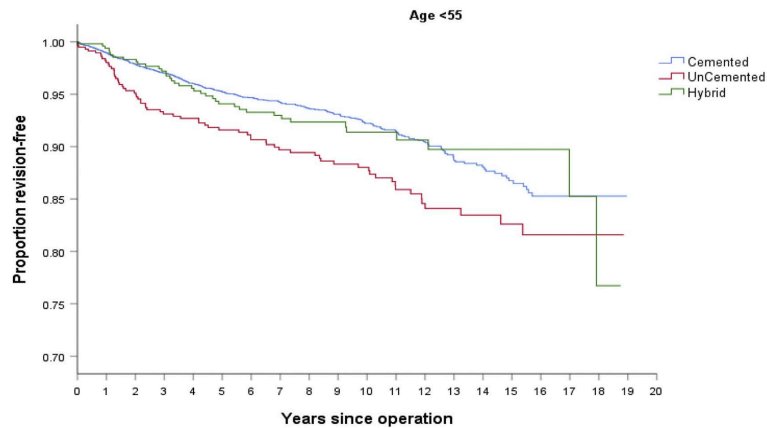
Acta Orthopaedica 2020; 91 (2): 184–190

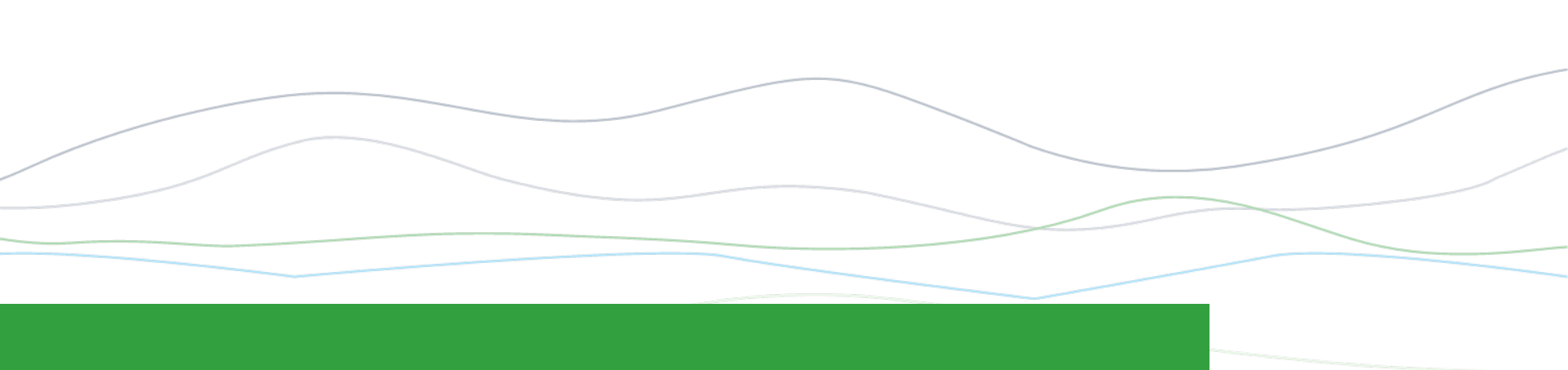
The effect of fixation type on the survivorship of contemporary total knee arthroplasty in patients younger than 65 years of age: a register-based study of 115,177 knees in the Nordic Arthroplasty Register Association (NARA) 2000–2016

Mika J NIEMELÄINEN¹, Keijo T MÄKELÄ^{2,3}, Otto ROBERTSSON⁴, Annette W-DAHL⁴, Ove FURNES^{5,6}, Anne M FENSTAD⁵, Alma B PEDERSEN⁷, Henrik M SCHRØDER⁸, Aleksi REITO¹, and Antti ESKELINEN^{1,2}

Cumulative revision rate







The young male paradox

The young male is the best candidate (?)



Cemented: 129,315
vs. Uncemented: 18,523

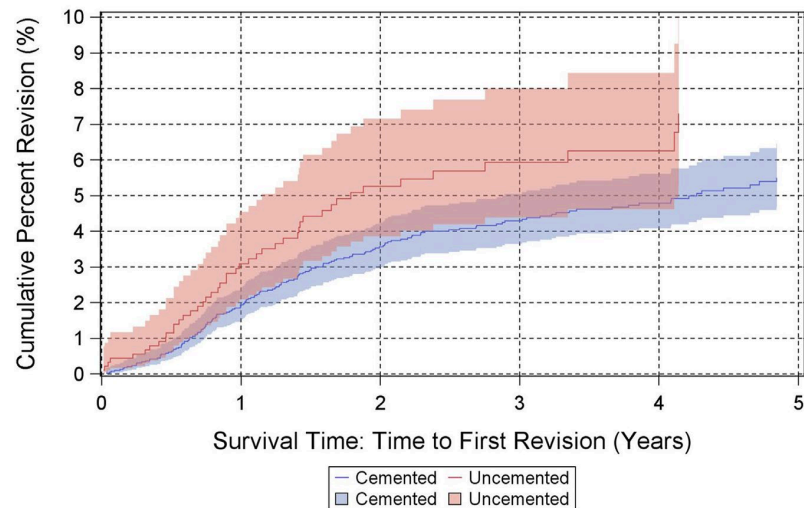


Figure 3. CPR for uncemented and cemented TKA in men under 55 years of age.

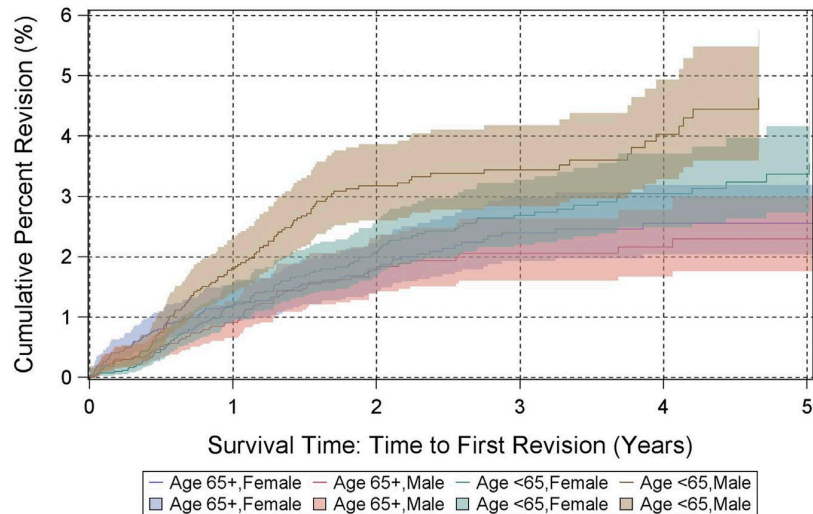


Figure 4. CPR in uncemented total knees stratified by age 65 and sex.

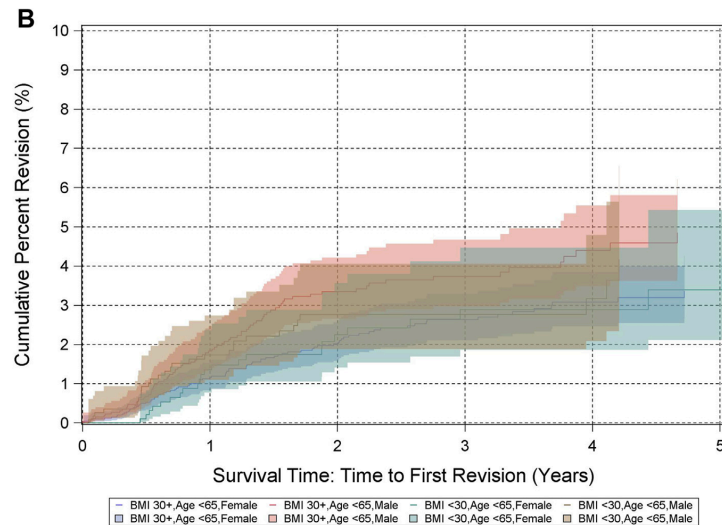
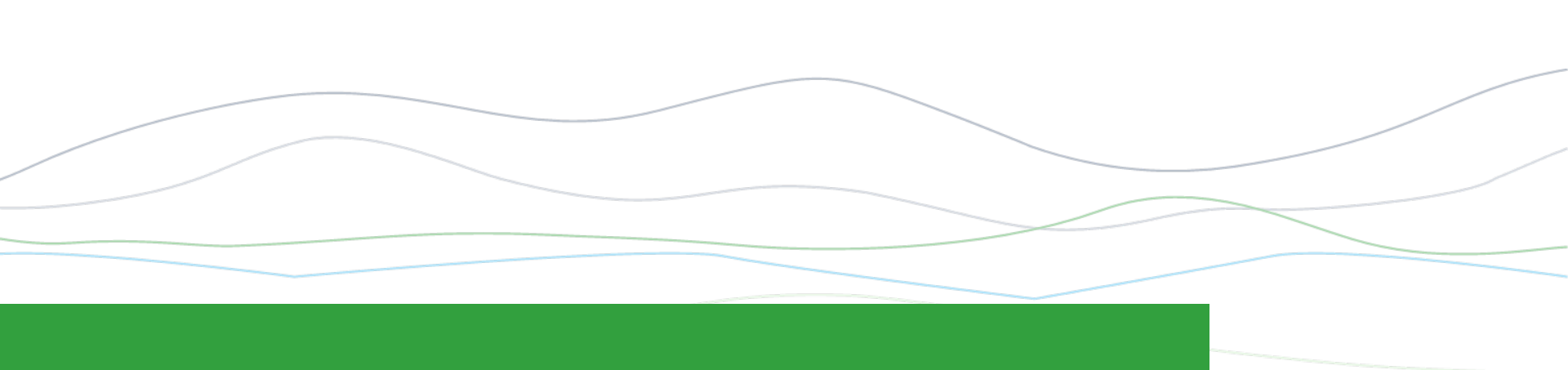


Figure 5. CPR curves for uncemented knees, including patient body mass index, sex, and age. Age had the greatest effect on CPR.

Equal rates of aseptic loosening

Revisions for Revision, Overall and Separated by Subtype of Fixation.

Overall (Cemented and Uncemented)				Uncemented				Cemented			
Rank	Revision Reason	Number of Revisions	Percent	Rank	Revision Reason	Number of Revisions	Percent	Rank	Revision Reason	Number of Revisions	Percent
1	Dislocation or instability	824	27.81	1	Joint infection	106	27.04	1	Dislocation or instability	726	28.24
2	Joint infection	779	26.29	2	Dislocation or instability	98	25.00	2	Joint infection	673	26.18
3	Aseptic loosening	545	18.39	3	Aseptic loosening	72	18.37	3	Aseptic loosening	473	18.40
4	Arthrofibrosis	302	10.19	4	Arthrofibrosis	47	11.99	4	Arthrofibrosis	255	9.92
5	Implant failure	109	3.68	5	Implant failure	15	3.83	5	Implant failure	94	3.66
6	Pain	97	3.27	6	Periprosthetic fracture - Tibia	13	3.32	6	Pain	87	3.38
7	Malalignment	81	2.73	7	Malalignment	12	3.06	7	Periprosthetic fracture - Femur	69	2.68
8	Periprosthetic fracture - Femur	76	2.56	8	Pain	10	2.55	8	Malalignment	69	2.68
9	Poly liner wear	40	1.35	9	Periprosthetic fracture - Femur	7	1.79	9	Poly liner wear	39	1.52
10	Peri-prosthetic fracture - Tibia	28	0.94	10	Metal reaction or metallosis	3	0.77	10	Patellofemoral joint	23	0.89
11	Patello-femoral joint	26	0.88	11	Extensor mechanism failure	3	0.77	11	Extensor mechanism failure	22	0.86
12	Extensor mechanism failure	25	0.84	12	Patellofemoral joint	3	0.77	12	Metal reaction or metallosis	15	0.58
13	Metal reaction or metallosis	18	0.61	13	Osteolysis	2	0.51	13	Peri-prosthetic fracture - Tibia	15	0.58
14	Osteolysis	12	0.40	14	Poly liner wear	1	0.26	14	Osteolysis	10	0.39
15	Other	1	0.03					15	Other	1	0.04



Costs (Markup)

2024 U.S. Knee Implant Price Comparison **Market Share 2023 CRN**

Curvolabs.com

Top 2 Cementless Knee Constructs (Construct 23)



Top 6 Uncoated Femur/Uncoated Tibia Constructs (Construct 24)



Triathlon	SYK
Femur	5517-F-401
Tibia	5536-B-400
Insert	5531-G-409-E
Patella	5552-L-320
2023 ASP	\$4,172

17%

Triathlon PS femur, tibia, X3 insert and patella	SYK
Femur	5510-F-402
Tibia	5521-B-400
Insert	5531-G-409-E
Patella	5551-G-320-E
2023 ASP	\$3,564

Attune	DPY
Femur	150401107
Tibia	150621007
Insert	152020605
Patella	151810035
2023 ASP	\$4,287

12%

Attune PS Fixed Bearing	DPY
Femur	1504-10-207
Tibia	1506-70-004
Insert	1516-40-606
Patella	1518-20-038
2023 ASP	\$3,815

Persona	ZBH
Femur	42-5022-064-02
Tibia	42-5300-079-02
Insert	42-5221-008-10
Patella	00-5878-065-32
2022 ASP	\$4,495

19%

Persona	ZBH
Femur	42-5026-066-01
Tibia	42-5320-071-02
Insert	42-5121-004-10
Patella	42-5400-000-32
Stem	42-5570-001-14
2022 ASP	\$3,757

Research Article

Cost-Neutral Thresholds With Cementless Fixation in Total Knee Arthroplasty: A 20-Year Markov Analysis

Michael Booth, MD 
Hayden Box, MD
Hany Bedair, MD 

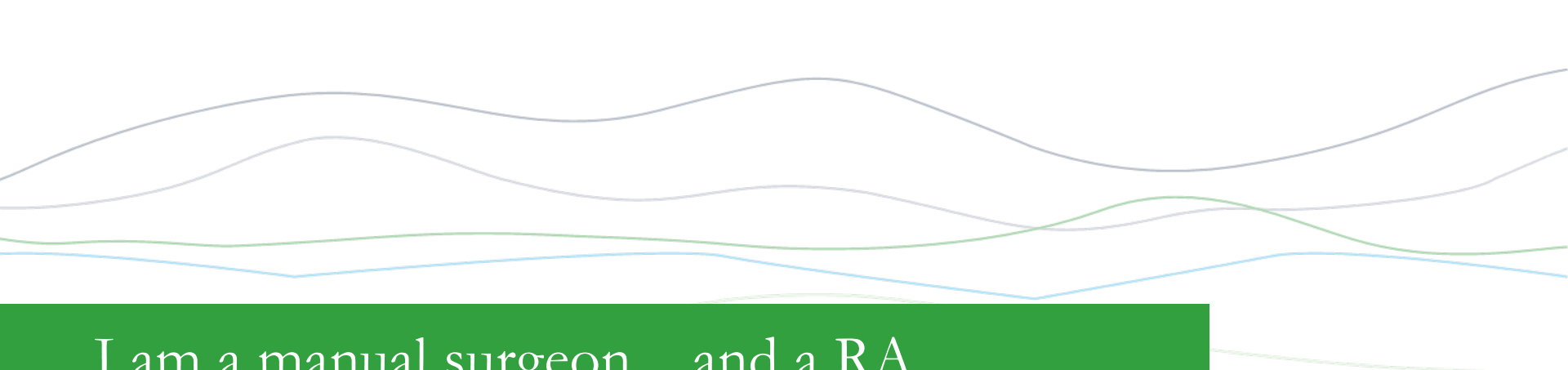
ABSTRACT

- The 20-year cost of noncemented TKA (\$20,829) was slightly higher than cemented TKA (\$20,573).
- % of Failure and OR time saved were the most influential factors in the model

Table 2. Variables Demonstrating a 20-Year Cost-Neutral Threshold

Description	Model Baseline	Cost-Neutral Threshold	Low	High
Noncemented all-cause failure hazard ratio	1.00	0.99	0.80 \$1,676 savings	1.2 <i>\$1768 loss</i>
Noncemented implant mark-up (%)	20	19	0 \$904 savings	100 <i>\$3,760 loss</i>
Noncemented time savings (min)	12	13	0 <i>\$583 loss</i>	24 \$641 savings
OR cost per minute (\$)	51	54	20 <i>\$560 loss</i>	100 \$401 savings

Net 20-year cost savings per case using a noncemented implant is denoted (bold) versus net loss (italic).



I am a manual surgeon...and a RA
cementless apparently performs functionally
better than a manual cementless



Special Issue: Technological Advances in Arthroplasty. Edited by Stefano Bini, Peter L. Schilling, and

Patient-Reported Outcomes in Robotic-Assisted vs Manual Cementless Total Knee Arthroplasty

Michael J. Stoltz, MD^a, Nolan S. Smith, MD^a, Sarag Abhari, MD^a, John Whitaker, MD^a, James F. Baker, MD^b, Langan S. Smith, BS^b, Rohat Bhimani, MD^a, Madhusudhan R. Yakkanti, MD^c, Arthur L. Malkani, MD^{a,*}

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312 manual cementless
versus
393 RA cementless

Same Surgeon

Min 2 y FU

Table 3
Postoperative patient metrics.

Metric	Manual TKA	RA-TKA	T test/Fisher exact test (P)
Degrees active extension	0.22 SD = 1.09 Range: 0-10	0.23 SD = 1.33 Range: 0-15	.903
Degrees active flexion	117.51 SD = 8.80 Range: 40-130	120.36 SD = 6.96 Range: 85-140	<.001
KS function score	80.60 SD = 19.35 Range: 5-100	86.87 SD = 15.60 Range: 30-100	<.001
KS knee score	85.77 SD = 13.75 Range: 32-100	92.96 SD = 8.88 Range: 38-100	<.001
FJS	69.57 SD = 29.93 Range: 0-100	70.78 SD = 28.01 Range: 0-100	.624
KOOS JR	81.53 SD = 18.25 Range: 28-100	86.42 SD = 14.48 Range: 15.94-100	<.001
WOMAC	84.63 SD = 17.7 Range: 13-100	90.63 SD = 13.82 Range: 20-100	<.001
Satisfaction (Likert 1-5)	4.55 SD = 0.86 Range: 1-5	4.70 SD = 0.69 Range: 1-5	.01
% of patients either satisfied or very satisfied at most recent follow-up	88.26% (248/281)	95.01% (362/381)	.001

RA-TKA, robotic-assisted-total knee arthroplasty; SD, standard deviation; TKA, total knee arthroplasty; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.



Cemented TKA is still a great alternative in the hands of many, but more importantly, in the knees of the majority

Definitively I am going to do some cementless soon