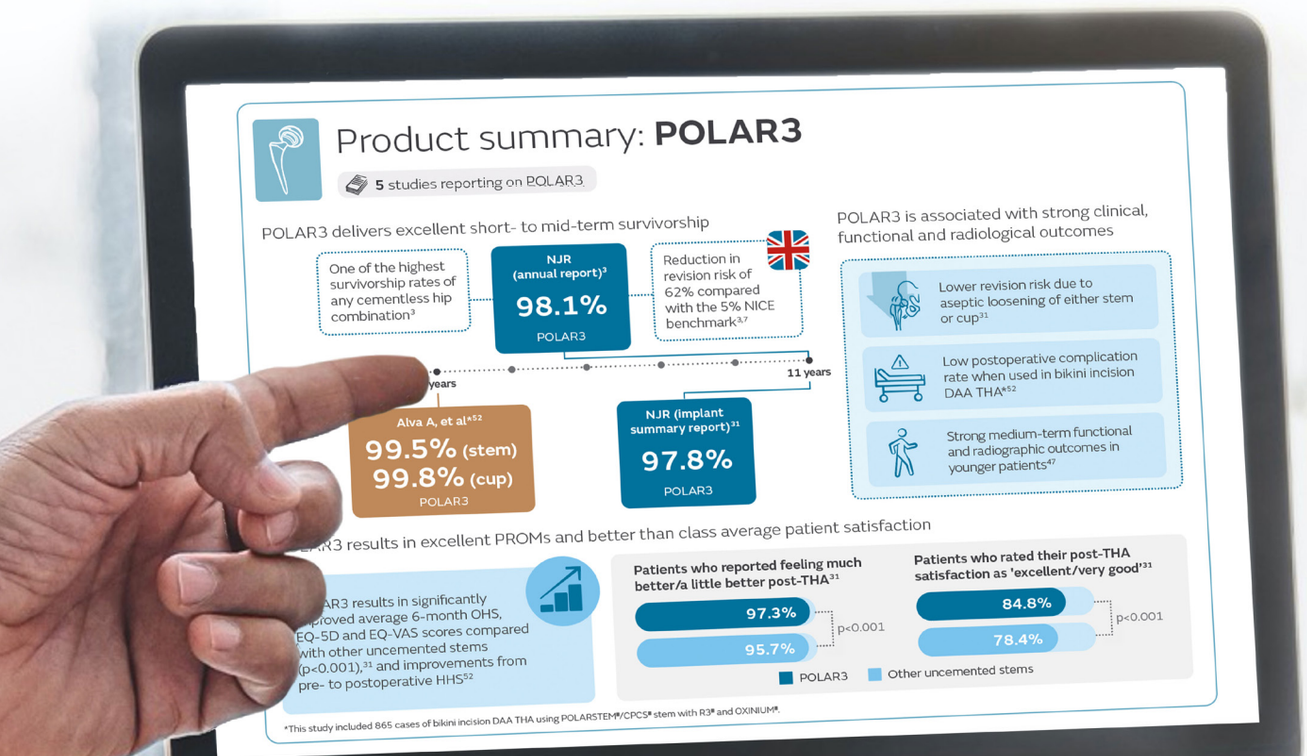


+ Evidence in focus

Interactive compendium of clinical evidence

POLAR3
Total Hip Solution

February 2024

View the evidence →

Smith+Nephew

THA — the “operation of the century”?

The risk and impact of revision — is there room for improvement?

Importance of implant choice

Key evidence

NJR implant summary report POLAR3	**NJR implant summary report** POLARSTEM◊	**NJR implant summary report** R3◊	**AOANJRR annual report** OXINIUM◊/ XLPE
NJR annual report POLARSTEM/R3	**Cypres A, et al. 2019** POLARSTEM/ POLARCUP◊	**Yeroushalmi D, et al. 2021** R3	**Davis ET, et al. 2020** OXINIUM/XLPE

Product summaries

POLARSTEM

R3

OXINIUM/XLPE

POLAR3

All evidence

22 clinical publications and registry reports

103,880 THAs

comprising ≥1 POLAR3 components (POLARSTEM, OXINIUM/XLPE, R3 cup)

Interactivity has been included throughout the compendium to aid navigation

Menu will bring you back to this menu page

All studies will take you to a bibliography of all clinical evidence

Banners at the bottom of each page will take you to previous or subsequent pages, as indicated

Key evidence is represented in **blue** and supporting evidence in **brown**

THA — the "operation of the century"?

Due to recent technical and surgical advancements, THA is now one of the most cost-effective and consistently successful surgeries performed in orthopaedics[1,2]

Important recent advances include:[1]

- Less invasive surgical procedures
- Improved tissue preservation
- Improved wear resistance and biocompatibility of biomaterials
- Improved knowledge and restoration of hip anatomy and function
- Reduced blood loss and surgical complications
- Improved pre-operative management and post-operative pain control

THA provides reliable outcomes for patients with osteoarthritis, and excellent long-term postoperative clinical outcomes:[2]

- **Reduced pain**[2]
- **Restored function**[2]
- **Improved QoL**[2]

10 years

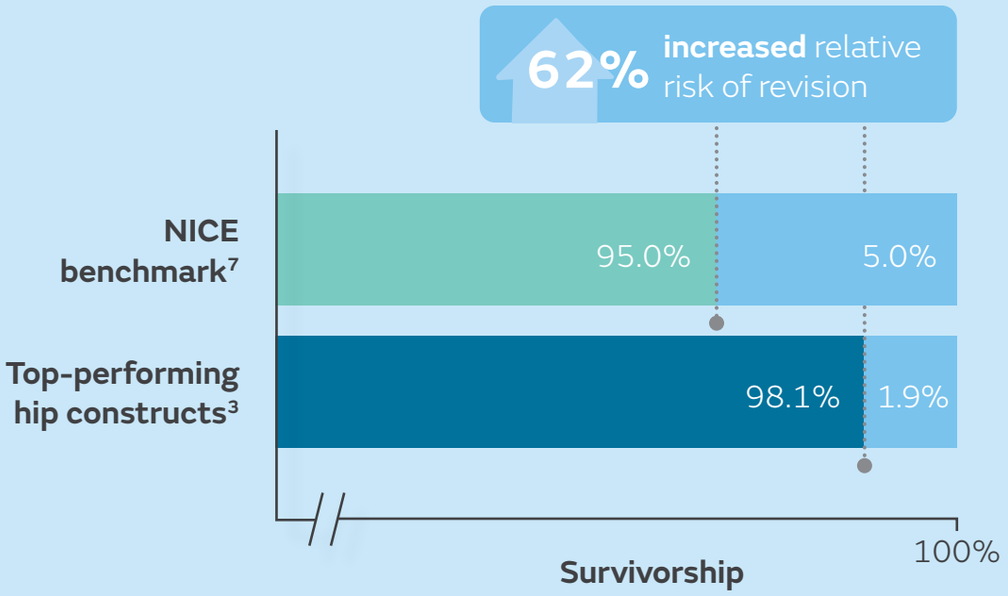
National registries report excellent clinical outcomes, with 10-year survivorship rates of ~95% for uncemented THA

- **95.6%** (NJR)[3]
- **95.7%** (AOANJRR)[4]
- **95.4%** (LROI)[5]

Despite these positive outcomes, wide variety in the performance of different types of hip constructs remains and implant choices can result in considerable reductions in revision risk[3,6]

UK NICE guidelines recommend that prostheses for THA in patients with end-stage arthritis should have revision rates (or projected rates) of 5% or less at 10 years[7]

However, the current NICE benchmark of 5% represents a 62% higher 10-year revision risk compared with top performing hip constructs on the market, which have revision rates as low as 1.9%[3,6,7]



The risk and impact of revision →

The risk and impact of revision — is there room for improvement?

Risk factors for revision | Financial impact and patient satisfaction

Several factors influence primary THA revision risk. Limitations of hip constructs combine with patient- and surgeon-related factors to contribute to overall risk[3,4,8–13]

Aseptic loosening
(#1 reason for revision reported in the NJR)[3]

The proportion of revisions attributed to aseptic loosening ranges from 20.8% in the AOANJRR to 24.8% in the NJR[3,4]

Higher revision rates due to loosening are associated with smaller cementless stems and certain variants of stem design[9,10]

Dislocation
(#2 reason for revision reported in the NJR)[3]

The proportion of revisions attributed to dislocation ranges from 16.8% to 21.7% across registries[3–5,11]

Implant positioning and different bearing materials can also contribute to overall revision risk[8,14–22]

Implant positioning

Acetabular positioning can influence overall implant survival, joint stability, muscle function, range of motion, wear and functional outcomes[14]

Choice of bearing material
CoC
4x risk of implant fracture (vs MoXLPE)[8,15]
Up to 30% incidence of implant noise[8,16]
6x earlier time to revision due to dislocation relative to Metal on polyethylene (MoPE)[17]
CoXLPE
Fracture risk may remain with fourth generation ceramics[18]
Up to 33% risk of phase transformation[19,20]
MoXLPE
67% higher volumetric wear (vs ceramicised metal)[21]
3.2% symptomatic mechanically assisted crevice corrosion (MACC) present[22]

The risk and impact of revision — is there room for improvement?

Risk factors for revision | **Financial impact and patient satisfaction**

Revision THA has considerable budgetary impacts for hospitals and can negatively affect care provision as a result[23]

Compared to primary THA, revision THA is associated with increases in:

- Operating time[23]
- Length of hospital stay (1.5x that of primary THA)[23,24]
- Blood loss[23]
- Re-revision risk (3x first revision risk)[3,4]

This leads to increased treatment costs:

- Revision THA is associated with 1.4x the cost of primary THA[25]

Increased costs associated with revision THA may create budgetary pressures for hospital administrations and challenges in providing:

- Access to care[26]
- High quality care[26]

Evidence suggests that there is room for improvement in patient satisfaction following THA; lower satisfaction ratings are associated with a negative impact on patients, surgeons and providers[8,27–30]

1 in **10** patients are not satisfied with their primary THA[27]

This group of dissatisfied patients includes a subset who ultimately do not undergo revision[8,28]

Low levels of patient satisfaction can have a range of negative effects:

- **Patients**: Patients with poor function at 6 months are at higher risk of developing complications by 5 years[29]
- **Surgeons**: Increased litigation risk for surgeons versus patients with very good satisfaction ratings[30] — ↑ 19%
- **Providers**: On average, 1 dissatisfied patient tells 11 people about their experience[30]

Importance of implant choice

Improved survival rates are associated with choice of hip replacement, in addition to factors such as the skill of the surgeon and the setup of the hospital.[1] To achieve optimal survival results, the use of implants with evidence of good long-term survival should be encouraged[6]

POLAR3 is uniquely differentiated from other constructs. POLARSTEM◊/R3◊ delivers the highest survivorship of any cementless hip combination,[3] and with OXINIUM◊/XLPE, it delivers superior PROMs and higher than class average patient satisfaction[31]

POLAR3 (POLARSTEM, OXINIUM/XLPE, R3 cup)

Survivorship

POLARSTEM/R3 delivers high survivorship compared with other cementless hip combinations[3]

NJR 10 years

POLARSTEM/R3 demonstrated survivorship of **98.1%** at 10 years[3]

This corresponds to a **62%** lower revision risk relative to the 5% NICE benchmark[3,7]

POLAR3 results in significantly lower incidences of aseptic cup (67%; p<0.05)[31] and stem loosening (64%; p<0.05)[31]

OXINIUM/XLPE delivers the highest survivorship of all bearing combinations in the UK, reducing concerns around revision risk with other bearing options[15]

NJR 10 years

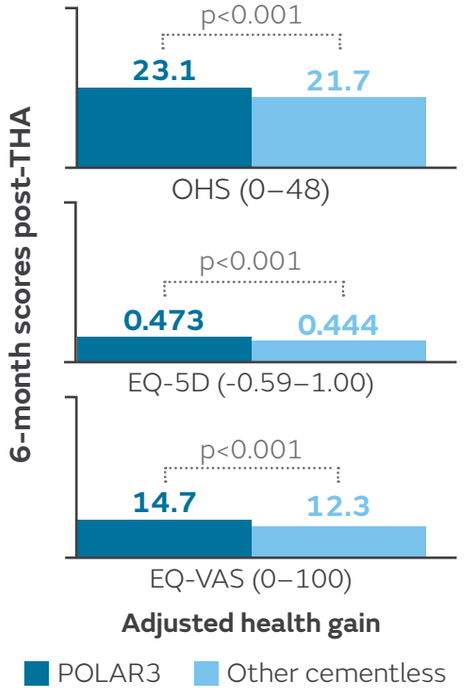
OXINIUM/XLPE demonstrated survivorship of **98.04%** at 10 years[15]

This corresponds to a **60%** lower revision risk relative to the 5% NICE benchmark[7,15]

OXINIUM/XLPE is also associated with a reduced risk of long-term complications, such as implant fracture, MACC and wear potential[21, 32–37]

PROMs and patient satisfaction

POLAR3 is associated with significantly greater improvements in PROMs and higher than class average patient satisfaction when compared with other cementless combinations[31]



RI.HIP NAVIGATION

Hip navigation technology in THA improves the accuracy of acetabular component positioning, resulting in reduced risk of revision compared with conventional THA[38,39]

Lowers revision risk by **55%** compared with conventional THA[39]

RI.HIP NAVIGATION does not require a CT scan, limiting disruption of the standard patient pathway

National Joint Registry for England, Wales and Northern Ireland: POLARSTEM Cementless (Oxinium/XLPE/R3 cup) implant summary report. October 20, 2023[31]

Overview

Registry data*
Implant summary report

25,619 THAs with POLARSTEM◊
588,183 THAs with other uncemented stems

Assessed at:
11 years — **Survivorship**
6 months — **PROMs/Satisfaction**

Results

11 years

At 11 years, POLAR3 demonstrated survivorship of **97.8%**

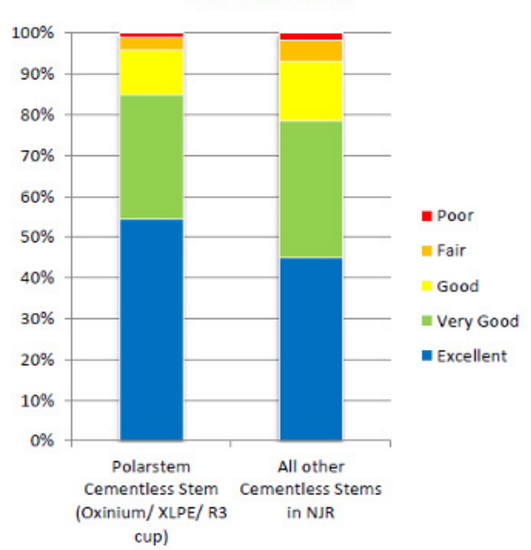
Compared with the average for all other uncemented stems, POLAR3:

Was associated with significantly **lower revision risk** (38%; p<0.001)†

Achieved significantly better average patient 6-month **OHS, EQ-5D** and **EQ-VAS** scores (p<0.001)

Demonstrated that patients are **significantly more likely to be satisfied with their THA** at 6 months post-THA (p<0.001)

Satisfaction‡



n=4,913 n=146,768

* NJR data recorded between 2007–2023.
† Unadjusted analysis. All results reported exclude metal-on-metal bearings.
‡ Answer to 6-months general health question: How would you describe the results of your operation?

Conclusion

POLAR3 showed excellent 11-year survivorship and a significantly lower risk of revision compared to the average for other uncemented stems. At 6 months, patients reported higher satisfaction, increased hip functionality, and improved quality of life.

Summary

National Joint Registry for England, Wales and Northern Ireland: POLARSTEM Cementless implant summary report. November 8, 2023[40]

Overview

Registry data
Implant summary report

32,499 THAs with POLARSTEM◊
591,482 THAs with other uncemented stems

Assessed at:
13 years — **Survivorship**
6 months — **PROMs/Satisfaction**

Results

Compared with the average for all other uncemented stems, POLARSTEM:

13 years

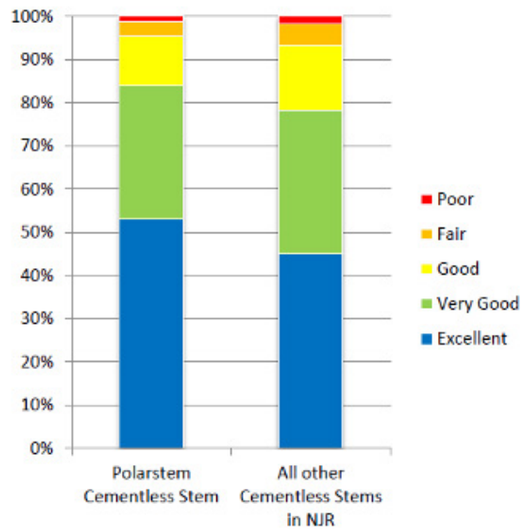
At 13 years, POLARSTEM demonstrated survivorship of **95.9%**

Was associated with significantly **lower revision risk** (38%; p<0.001)*

Achieved significantly better average patient 6-month **OHS, EQ-5D** and **EQ-VAS** scores (p<0.001)

Demonstrated that patients are **significantly more likely to be satisfied with their THA** at 6 months post-THA (p<0.001)

Satisfaction†



*Unadjusted analysis. All results reported exclude metal-on-metal bearings.
†Answer to 6-months general health question: How would you describe the results of your operation?

Conclusion

POLARSTEM showed excellent 13-year survivorship and a significantly lower risk of revision compared to the average for other uncemented stems. At 6 months, patients reported higher satisfaction, increased hip functionality, and improved quality of life.

National Joint Registry for England, Wales and Northern Ireland: R3 Cementless cup implant summary report. November 8, 2023[41]

Overview

Registry data
Implant summary report

51,567 THAs with R3◊
994,607 THAs with other uncemented stems

Assessed at:
14 years — **Survivorship**
6 months — **PROMs/Satisfaction**

Results

14 years

At 14 years, R3 demonstrated survivorship of **97.1%**

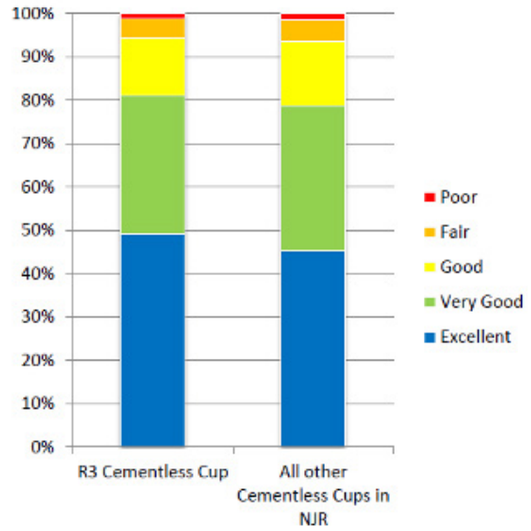
Compared with the average for all other uncemented stems, R3:

Was associated with significantly **lower revision risk** (27%; p<0.001)*

Achieved significantly better average patient 6-month **OHS, EQ-5D** and **EQ-VAS** scores (p<0.001)

Demonstrated that patients are **significantly more likely to be satisfied with their THA** at 6 months post-THA (p<0.001)

Satisfaction†



n=12,297 n=218,550

*Unadjusted analysis. All results reported exclude metal-on-metal bearings.
†Answer to 6-months general health question: How would you describe the results of your operation?

Conclusion

R3 showed excellent 14-year survivorship and a significantly lower risk of revision compared to the average for other uncemented cups. At 6 months, patients reported higher satisfaction, increased hip functionality, and improved quality of life.

Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) Hip, Knee & Shoulder Arthroplasty: 2023 Annual Report[4]

Available at: https://aoanjrr.sahmri.com/annual-reports-2023. Accessed October 30, 2023.

Overview

Registry data
Annual report

34,564 THAs with OXINIUM◊/XLPE

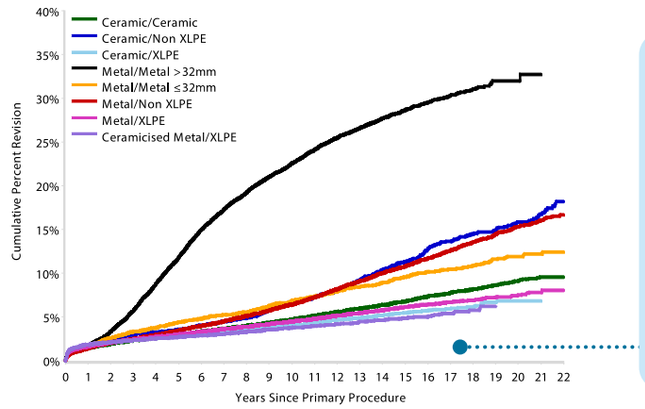
513,239 THAs with other bearing combinations

Assessed at: 15 years **Survivorship/ Revision risk**

Results

Survivorship | Revision risk

Figure HT32 Cumulative Percent Revision of Primary Total Conventional Hip Replacement by Bearing Surface (Primary Diagnosis OA)



At 15 years, OXINIUM/XLPE had the lowest cumulative revision rate of all bearing combinations analysed (4.9%)

Number at Risk	0 Yr	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs
Ceramic/Ceramic	103169	97040	86119	73169	36002	12218	1098
Ceramic/Non XLPE	9351	8401	6922	5591	3411	2044	543
Ceramic/XLPE	124435	104581	72045	45553	12319	2542	95
Metal/Metal >32mm	14422	14061	13215	11979	9280	2855	52
Metal/Metal ≤32mm	5143	5021	4840	4654	3902	2381	382
Metal/Non XLPE	35581	34223	31856	29125	20703	11024	1875
Metal/XLPE	186339	170870	143203	114213	48606	12591	457
Ceramicised Metal/XLPE	31411	27529	21695	16689	6590	1682	0

Note: Only bearing surfaces with >5,000 procedures have been listed

HR adjusted for age and gender

Ceramic/Ceramic vs Metal/XLPE: Entire Period: HR=1.00 (0.96, 1.04), p=0.978

Ceramic/Non XLPE vs Metal/XLPE: 0 - 3Mth: HR=1.01 (0.83, 1.24), p=0.900; 3Mth - 2Yr: HR=1.41 (1.17, 1.69), p<0.001; 2Yr+: HR=1.97 (1.78, 2.17), p<0.001

Ceramic/XLPE vs Metal/XLPE: 0 - 2Wk: HR=1.08 (0.96, 1.23), p=0.192; 2Wk - 1Mth: HR=1.04 (0.94, 1.15), p=0.470; 1Mth - 1.5Yr: HR=1.02 (0.96, 1.09), p=0.539; 1.5Yr+: HR=0.79 (0.74, 0.84), p<0.001

Metal/Metal ≤32mm vs Metal/XLPE: Entire Period: HR=1.40 (1.27, 1.54), p<0.001

Metal/Non XLPE vs Metal/XLPE: 0 - 1Mth: HR=0.74 (0.63, 0.87), p<0.001; 1Mth - 3Mth: HR=0.86 (0.72, 1.04), p=0.114; 3Mth - 1.5Yr: HR=1.31 (1.17, 1.47), p<0.001; 1.5Yr - 6.5Yr: HR=1.51 (1.40, 1.64), p<0.001; 6.5Yr - 17.5: HR=2.27 (2.13, 2.41), p<0.001; 17.5+: HR=2.42 (1.86, 3.14), p<0.001

Metal/Metal >32mm vs Metal/XLPE: 0 - 2Wk: HR=1.29 (0.97, 1.71), p=0.080; 2Wk - 3Mth: HR=0.64 (0.51, 0.80), p<0.001; 3Mth - 9Mth: HR=1.14 (0.89, 1.46), p=0.297; 9Mth - 1.5Yr: HR=2.71 (2.29, 3.21), p<0.001; 1.5Yr - 2Yr: HR=4.21 (3.49, 5.06), p<0.001; 2Yr - 3Yr: HR=6.59 (5.83, 7.44), p<0.001; 3Yr - 6Yr: HR=10.36 (9.65, 11.11), p<0.001; 6Yr - 9.5Yr: HR=6.98 (6.44, 7.58), p<0.001; 9.5Yr - 10.5Yr: HR=6.03 (5.10, 7.13), 10.5Yr+: HR=3.55 (3.21, 3.92), p<0.001

Ceramicised Metal/XLPE vs Metal/XLPE: 0 - 3Mth: HR=1.23 (1.11, 1.36), p<0.001; 3Mth+: HR=0.71 (0.65, 0.77), p<0.001

Comparing the rates of revision for these bearings, Ceramicised Metal/XLPE* has the lowest rate of revision at 15 years. As in previous years, the Registry urges caution in the interpretation of this result. This bearing is a single company product, used with a small number of femoral stem and acetabular component combinations. This may have a confounding effect on the outcome, making it unclear if the lower rate of revision is an effect of the bearing surface or reflects the limited combinations of femoral and acetabular prostheses. Tables and graphs have been reproduced in exact and complete form. *The term 'Ceramicised Metal/XLPE' is equivalent to 'OXINIUM/XLPE', and the term 'Non XLPE' is equivalent to 'CPE' reported on other slides.

Conclusion

OXINIUM/XLPE was associated with excellent 15-year survivorship.

Summary

AOANJRR annual report

Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) Hip, Knee & Shoulder Arthroplasty: 2023 Annual Report[4]

Available at: https://aoanjrr.sahmri.com/annual-reports-2023. Accessed October 30, 2023.

Overview

Registry data
Annual report

34,564 THAs with OXINIUM◊/XLPE

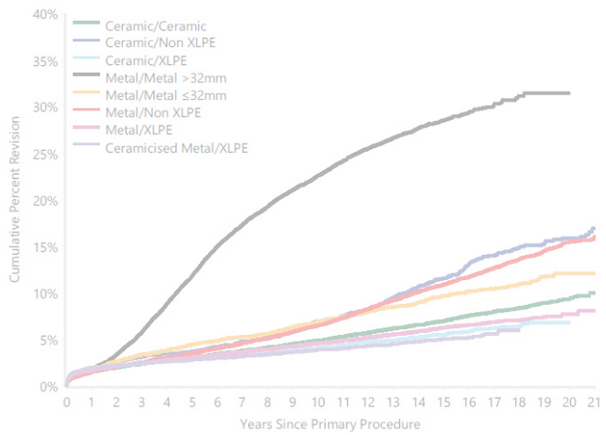
513,239 THAs with other bearing combinations

Assessed at: 15 years **Survivorship/ Revision risk**

Results

Survivorship | **Revision risk**

Figure HT40 Cumulative Percent Revision of Primary Total Conventional Hip Replacement by Bearing Surface (Primary Diagnosis OA)



From 1 year, OXINIUM/XLPE demonstrates a significantly lower risk of revision compared to Metal/XLPE by 38% (p<0.001)

Number at Risk	0 Yr	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs
Ceramic/Ceramic	107126	101283	90732	78607	41948	14629	2623
Ceramic/Non XLPE	9962	9108	7463	6050	3541	2150	784
Ceramic/XLPE	143653	122064	86968	56755	15458	3377	286
Metal/Metal >32mm	14424	14063	13216	11981	9306	4165	100
Metal/Metal ≤32mm	5143	5021	4840	4654	3954	2651	787
Metal/Non XLPE	35807	34413	32041	29306	20949	11722	3369
Metal/XLPE	196515	181105	153647	124529	56134	15691	1385
Ceramicised Metal/XLPE	34564	30720	24139	18672	8012	2230	0

Note: Only bearing surfaces with >5,000 procedures have been listed

Comparing the rates of revision for these bearings, Ceramicised Metal/XLPE* has the lowest rate of revision at 15 years. As in previous years, the Registry urges caution in the interpretation of this result. This bearing is a single company product, used with a small number of femoral stem and acetabular component combinations. This may have a confounding effect on the outcome, making it unclear if the lower rate of revision is an effect of the bearing surface or reflects the limited combinations of femoral and acetabular prostheses. Tables and graphs have been reproduced in exact and complete form. *The term 'Ceramicised Metal/XLPE' is equivalent to 'OXINIUM/XLPE', and the term 'Non XLPE' is equivalent to 'CPE' reported on other slides.

HR – adjusted for age and gender

Ceramic/Ceramic vs Metal/XLPE
- Entire Period: HR=0.99 (0.96, 1.03), p=0.770

Ceramic/Non XLPE vs Metal/XLPE
- 0 - 2Yr: HR=1.16 (1.01, 1.32), p=0.029
- 2Yr - 3.5Yr: HR=1.48 (1.15, 1.91), p=0.002
- 3.5Yr - 5Yr: HR=0.85 (0.58, 1.24), p=0.388
- 5Yr - 8Yr: HR=1.50 (1.18, 1.89), p<0.001
- 8Yr+: HR=2.67 (2.37, 3.01), p<0.001

Ceramic/XLPE vs Metal/XLPE
- 0 - 2Yr: HR=1.01 (0.97, 1.06), p=0.562
- 2Yr+: HR=0.77 (0.72, 0.82), p<0.001

Metal/Metal >32mm vs Metal/XLPE
- 0 - 2Wk: HR=1.27 (0.96, 1.68), p=0.092
- 2Wk - 1Mth: HR=0.46 (0.31, 0.67), p<0.001
- 1Mth - 9Mth: HR=0.96 (0.79, 1.15), p=0.636
- 9Mth - 1.5Yr: HR=2.81 (2.38, 3.33), p<0.001
- 1.5Yr - 2Yr: HR=4.40 (3.66, 5.29), p<0.001
- 2Yr - 3Yr: HR=6.46 (5.72, 7.29), p<0.001
- 3Yr - 8Yr: HR=9.45 (8.90, 10.02), p<0.001
- 8Yr - 10Yr: HR=5.92 (5.28, 6.63), p<0.001
- 10Yr - 12Yr: HR=4.86 (4.29, 5.51), p<0.001
- 12Yr+: HR=3.35 (2.97, 3.77), p<0.001

Metal/Metal ≤32mm vs Metal/XLPE
- Entire Period: HR=1.42 (1.30, 1.56), p<0.001

Metal/Non XLPE vs Metal/XLPE
- 0 - 1Mth: HR=0.73 (0.62, 0.85), p<0.001
- 1Mth - 6Mth: HR=0.89 (0.77, 1.03), p=0.120
- 6Mth - 3.5Yr: HR=1.41 (1.30, 1.54), p<0.001
- 3.5Yr - 5Yr: HR=1.57 (1.36, 1.80), p<0.001
- 5Yr - 7Yr: HR=1.73 (1.53, 1.96), p<0.001
- 7Yr - 10Yr: HR=2.13 (1.93, 2.37), p<0.001
- 10Yr+: HR=2.56 (2.38, 2.76), p<0.001

Ceramicised Metal/XLPE vs Metal/XLPE
- 0 - 6Mth: HR=1.16 (1.06, 1.27), p=0.001
- 6Mth - 1Yr: HR=1.04 (0.85, 1.28), p=0.694
- 1Yr+: HR=0.62 (0.56, 0.69), p<0.001

Conclusion

OXINIUM/XLPE was associated with the lowest risk of revision of all bearing combinations analysed.

Summary

AOANJRR annual report

National Joint Registry for England, Wales and Northern Ireland: 20th Annual Report[3]

Available at: https://reports.njrcentre.org.uk. Accessed December 8, 2023.

Overview

Registry data*
Annual report

27,529 THAs with POLARSTEM◊/R3◊

536,411 THAs with all uncemented stem/cup combinations

Assessed at: 10 years **Survivorship/ Revision risk**

Results

10 years

1.93%

POLARSTEM with R3 was associated with a 1.93% revision rate at 10 years, one of the lowest among all uncemented hip prostheses

This corresponds to a 57% reduction in revision risk compared with the class average revision rate for the NJR

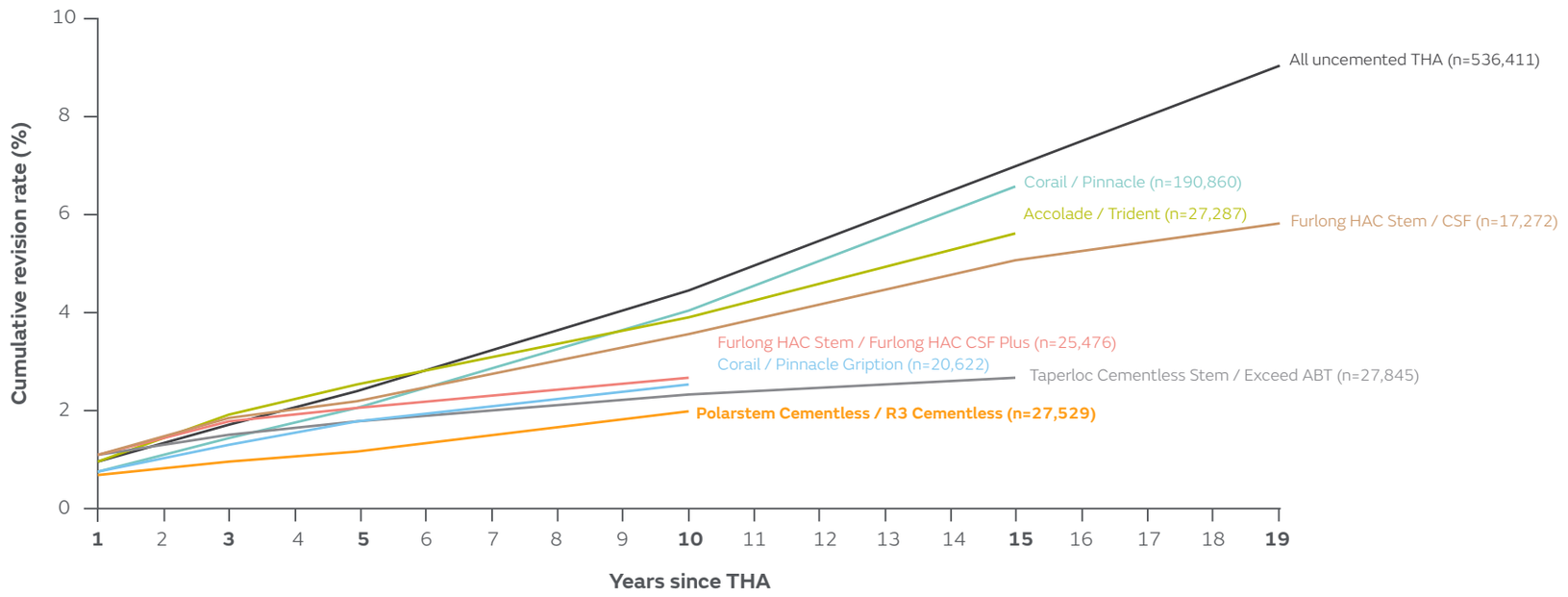


Figure. Cumulative revision of THA prostheses with at least 10 years follow-up and ≥10,000 procedures and >250 implants at risk

*NJR data recorded between 2003–2023.

Conclusion

POLARSTEM with R3 demonstrates one of the highest survivorship rates of all uncemented hip constructs at 10 years, with a 1.93% revision rate.

Summary

NJR annual report

Long-term outcomes of a dual-mobility cup and cementless triple-taper femoral stem combination in total hip replacement: a multicenter retrospective analysis[42]

Cypres A, Fiquet A, Girardin P, et al. *J Orthop Surg Res.* 2019;14:376.

Overview

Clinical study
Multicentre, retrospective analysis

244 THAs with POLARSTEM◊ and POLARCUP◊

Assessed at: 10 years **Survivorship/ PROMs**

Results

Survivorship

10 years

At a mean follow-up of 11.9 years, POLARSTEM had a cumulative 10-year all-cause survivorship of

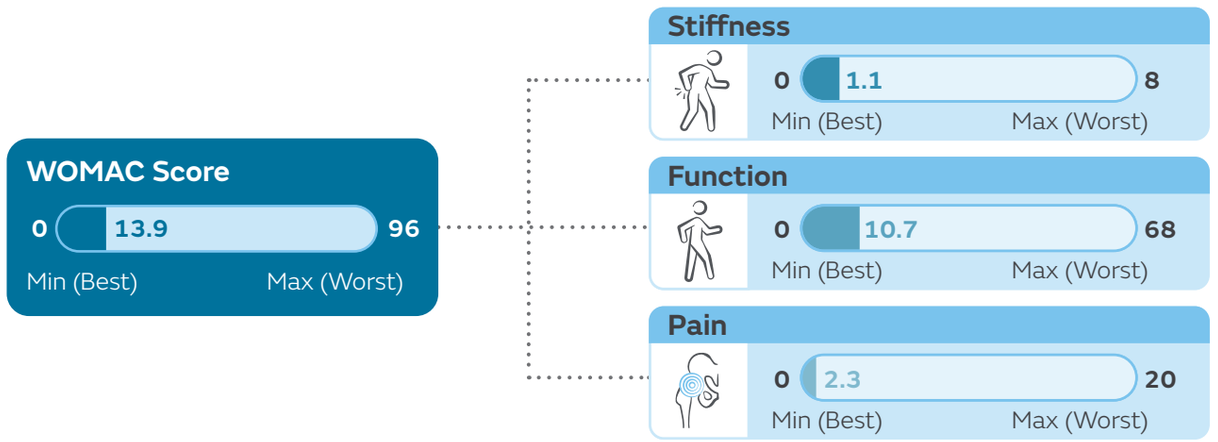
99.1%

Radiographic analysis

Radiographic analysis revealed no cases of stem subsidence (0%) or bone hypertrophy (0%), one case of bone atrophy (0.4%) and three cases of osteolysis around the stem (1.2%)

PROMs

At 10 years' follow-up, patients also reported WOMAC scores in the satisfactory range



Conclusion

POLARSTEM was associated with excellent 10-year survivorship along with strong radiographic outcomes, and patients that received this implant reported satisfactory WOMAC scores at 10 years of follow-up.

Summary

Published paper

Excellent mid-term outcomes with a hemispheric titanium porous-coated acetabular component for total hip arthroplasty: 7–10 year follow-up[43]

Yeroushalmi D, Singh V, Maher N, Gabor JA, Zuckerman JD, Schwarzkopf R. *Hip Int.* 2021 Aug 19. doi: 10.1177/11207000211040181.

Overview

Clinical study
Single centre, retrospective analysis

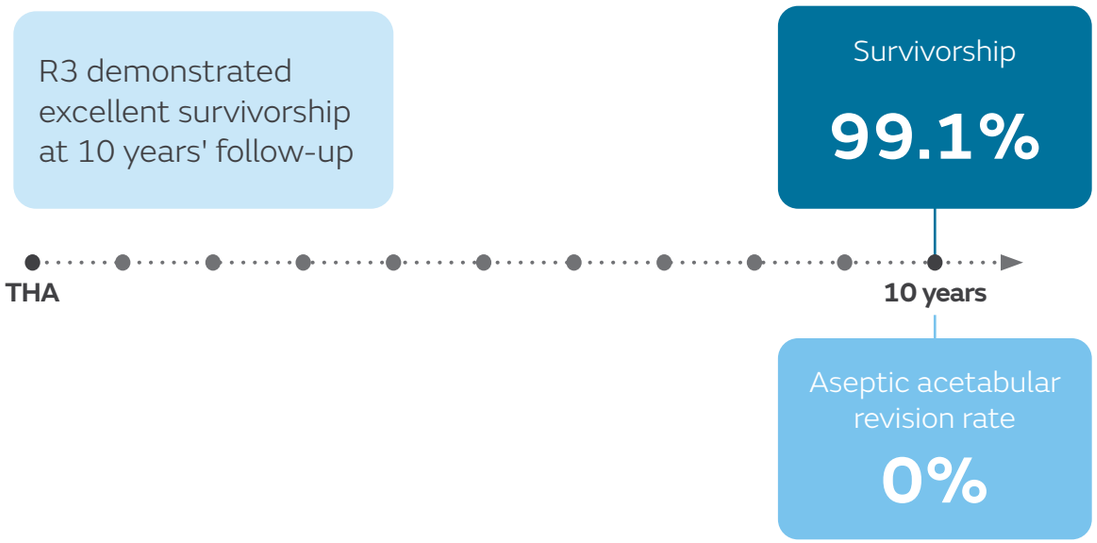
118 THAs (114 primary; 4 revision)
with R3◊

Assessed at: 10 years **Kaplan-Meier survivorship**

Results

Survivorship

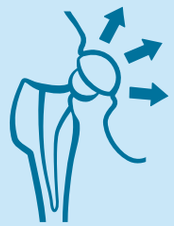
R3 demonstrated excellent survivorship at 10 years' follow-up



Safety

At latest follow-up (mean: 8.19 years), R3 was also associated with no radiographic and limited clinical complications, including:

No cases of osteolysis (0%)



No cases of cup migration (0%)

Low rate of postoperative complications (2.5%)

Conclusion

R3 was associated with excellent mid-term survivorship and clinical outcomes, with no radiologically observed cup migration or osteolysis and very low postoperative complication rates.

Summary

Published paper

Effect of bearing surface on survival of cementless and hybrid total hip arthroplasty[15]

Davis ET, Pagkalos J, Kopjar B. *JBJS OA.* 2020:5:e0075.

Overview

Registry analysis*

9,237 THAs with Ceramicised Metal/XLPE†

411,102 THAs with other bearing combinations

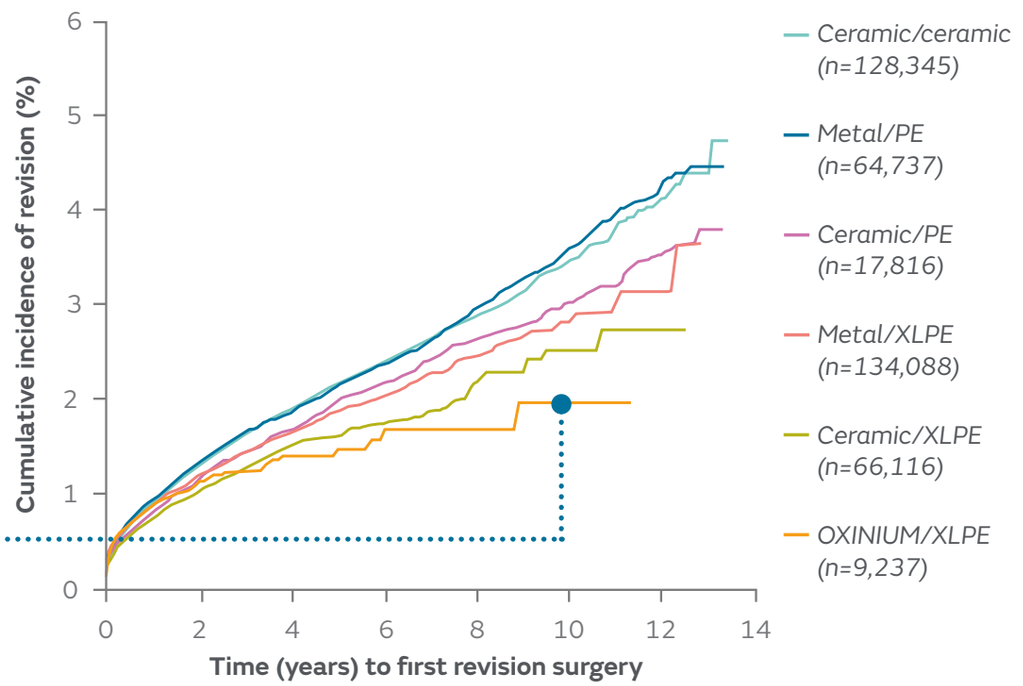
Assessed at: 10 years **Survivorship/ Revision risk**

Results

OXINIUM◊/XLPE demonstrated a revision risk of 1.96% at 10 years in the full patient population, the lowest of all bearing combinations

1.96%

OXINIUM/XLPE also demonstrated the lowest risk of revision of all bearing combinations in patients aged <55 years (1.80%)



* NJR data recorded between 2004–2016.
†The term 'Ceramicised Metal/XLPE' is equivalent to 'OXINIUM/XLPE' reported on other slides.

Conclusion

OXINIUM/XLPE was associated with the lowest revision risk at 10 years (1.96%) of all bearing combinations analysed.

Summary

Published paper


Mid-term clinical results of the cementless R3 cup and Polarstem total hip arthroplasty[44]

Assaf A, Manara JR, Teoh KH, Evans AR. *Eur J Orthop Surg Traumatol.* 2019;29:827–833.

Overview

Clinical data
Single-centre study

114 THAs
with POLARSTEM◊/R3◊

Assessed at: 7 years

Results

At 7 years' follow-up, POLARSTEM/R3 was associated with:

A cumulative all-cause survivorship of 97.69%	
A mean OHS of 38 (range: 8–48, with 8 being the worst and 48 the best)	
No radiolucency around the femoral stem, and no evidence of osteolysis of R3 cups	

Conclusion

POLARSTEM with R3 demonstrated excellent mid-term outcomes after 7 years, with high cumulative survivorship, as well as good radiographic and patient-reported functional outcomes.

Summary
Published paper

← Previous study
Next study →

The effect of bearing type on the outcome of total hip arthroplasty[45]

Peters RM, Van Steenbergen LN, Stevens M, Rijk PC, Bulstra SK, Zijlstra WP. *Acta Orthop.* 2018:89;163–169.

Overview

Dutch registry analysis*

11,785 THAs
with OXINIUM◊/XLPE or OXINIUM/PE bearings

Assessed at: 5 years, 9 years

Results

When compared with MoPE, MoXLPE, CoPE, CoXLPE, and CoC, OXINIUM/(XL)PE† resulted in:

The highest all-cause survivorship at 5 (97.5%) and 9 years (96.5%)

When compared with Metal/PE bearings, OXINIUM/(XL)PE* was associated with:

A 19% lower risk of revision ($p<0.05$)

* Registry data recorded between 2007–2016.
† Due to small group sizes, OXINIUM on standard PE or XLPE were analysed together, with results for OXINIUM/(XL)PE representing grouped data for OXINIUM bearings on XLPE or PE.

Conclusion

OXINIUM/(XL)PE demonstrated the highest 5- and 9-year survivorship when compared with several other bearing types, and a significantly lower revision risk when compared with Metal/PE bearings.

Summary
Published paper

← Previous study
Next study →

Can the choice of cementless implants and bearings during total hip arthroplasty have an impact on the overall costs within a bundled payment model?[46]

Duncan S, Patel A, Delhougne G, Patrick C. *J Hip Surg*. 2020;4:66–76.

Overview

Health economic data
Retrospective US database analysis

818 THAs with POLARSTEM◊/R3◊ and OXINIUM◊ bearing;
2,454 THAs with other cementless hip systems and ceramic bearings

Analysis included THAs performed between: 2014 → 2018

Results

When compared with non-OXINIUM bearings, THA with OXINIUM bearings was associated with:

Significantly lower mean LOS (1.61 vs 2.06 days, respectively; p<0.0001) and 30-day readmission rate (1.88 vs 3.31%; p=0.0399)	
A small increase (4%) in mean hospital costs ($15,611 vs $15,002; p=0.0039)	
A significantly greater likelihood for patients to be discharged to home/home health care (OR: 1.36; 95% CI: 1.07, 1.72; p=0.0112), and a lower likelihood of patients being discharged to an SNF (OR: 0.82; 95% CI: 0.63, 1.06; p=0.1235)	
A significantly lower likelihood of patients requiring a blood transfusion (OR: 0.16; 95% CI: 0.09, 0.29; p<0.0001)	

Conclusion

THA with POLARSTEM/R3 and OXINIUM bearings was associated with improved short-term clinical outcomes relative to other cementless hip systems with ceramic bearings. Reduced LOS and lower rates of discharge to SNF may result in cost savings overall in bundled payment systems despite a small increase in total hospital costs.

Published paper

Functional and radiological outcome of uncemented total hip arthroplasty in young adults — 5 year follow-up[47]

Wade R, Shah KA. *J Orthop.* 2019;18:237–239.

Overview

Clinical data
Single-centre study

56 THAs
with POLARSTEM◊/R3◊/ OXINIUM◊/XLPE*

Assessed at: 5 years

Results

At 5 years' follow-up, in patients <40 years, POLAR3 was associated with:

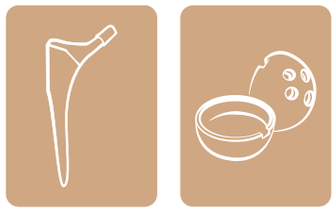
Improved mean HHS versus preoperative scores (92 vs 36, respectively), with a high proportion of patients able to carry out 'strenuous' or 'moderate' manual labour (80%)
No major postoperative complications
No femoral or acetabular component loosening, and neutral femoral stem alignment in the majority (82%) of hips

*Most common arthritis aetiology: avascular hip necrosis (57%). Other aetiologies included post-traumatic arthritis (21%), ankylosing spondylitis (16%) and rheumatoid arthritis (7%).

Conclusion

THA with POLAR3 delivers strong medium-term functional and radiological outcomes in younger patients, and low complication rates.

Published paper



A comparative study between uncemented and hybrid total hip arthroplasty in octogenarians[48]

Ahmad A, Mirza Y, Evans AR, Teoh KH. *J. Arthroplasty.* 2018;33:3719–3723.

Overview

Clinical data
Single-centre study of octogenarians (mean age: 86.2 years)

143 THAs (**76** with POLARSTEM◊/R3◊; **67** with hybrid [Exeter* cemented stem/Trilogy Cup†])

Assessed at: 10 years **Revision risk/PROMs**

Results

Compared with hybrid THA, THA with POLARSTEM/R3 was associated with:

Significantly lower intraoperative complication (p=0.017) and transfusion (p=0.002) rates	↓
No significant difference in average hospital stay (11 vs 12 days; p=0.27)	
Similar revision rates (two revisions in each cohort)	
A similar degree of improvement in mean OHS from preoperative scores to final follow-up (22 to 40 vs 24 to 38, respectively)	

*Exeter cemented stem is a trademark of Stryker. †Trilogy Cup is a trademark of Zimmer.

Conclusion

POLARSTEM with R3 delivers safety comparable to hybrid THA for elderly patients, with lower complication and transfusion rates, and similar revision rates.

Summary

Published paper

Acetabular liner dissociation: a comparative study of two contemporary uncemented acetabular components[49]

Gwynne-Jones DP, Memon A. *Arthroplast Today.* 2020;6:354–359.

Overview

Clinical data
Single-centre, retrospective, comparative study

961 THAs
(**426** with R3◊/XLPE;
535 with Pinnacle*/Marathon)

Assessed at: 7 years

Results

At 7 years' follow-up, when compared with the Pinnacle acetabular component, R3 demonstrated:

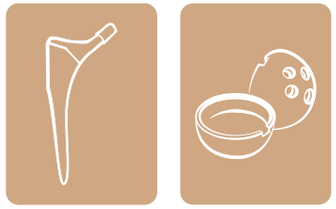
Significantly higher all-cause survivorship (99.0 vs 96.1%; p=0.022)	
A significantly lower liner dissociation rate (0 vs 1.12%; p=0.038)	

*Pinnacle is a trademark of Depuy Synthes.

Conclusion

R3 was associated with higher 7-year survivorship and lower rates of revision and liner dissociation, when compared with the Pinnacle acetabular component.

Published paper



R3 cup does not have a high failure rate in conventional bearings: a minimum of 5-year follow-up[50]

Teoh KH, Whitham RDJ, Golding DM, Wong JF, Lee PYF, Evans AR. *J Arthroplasty.* 2018;33:460–463.

Overview

Clinical data
Single-centre, retrospective analysis

293 THAs
(**283** with POLARSTEM◊/R3◊; **10** with hybrid)

Assessed at: 5 years

Results

At 5 years' follow-up, R3 was associated with:

A survivorship of 98.9%	
An improvement in mean OHS versus preoperative scores (40 vs 23, respectively)	
Excellent Agora Radiographic Assessment scores in all patients and no evidence of osteolysis of R3 cups	

Conclusion

R3 was associated with excellent clinical and radiographic outcomes at 5 years postoperatively, including high survivorship.

Summary
Published paper

← Previous study
Next study →

Retrospective analysis of oxidized zirconium bearing surface in hip replacement 90-day episode claims[51]

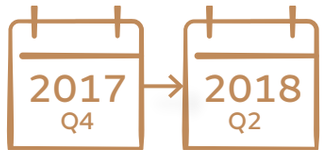
Patrick C, Delhougne G, Patel AR. Poster presented at: International Society for Pharmacoeconomics and Outcomes Research (ISPOR); May 18–22, 2019; New Orleans, Los Angeles, USA.

Overview

Clinical and health economic data
Retrospective US database analysis

818 THAs with POLARSTEM◊/R3◊ and OXINIUM◊ bearing;
2,454 THAs with other cementless hip systems and non-OXINIUM bearings

Analysis included THAs performed over three consecutive quarters



Results

When compared with non-OXINIUM bearings, THA with OXINIUM bearings was associated with:

A lower revision rate in the first 90-days post-surgery (0.9 vs 1.4%; p=0.110)	
Significantly lower costs per 90-day episode of care ($18,364 vs $18,966; p=0.003)	
Lower rates of 30- and 90-day all-cause readmissions (21.3 and 12.7% relative reductions, respectively; p>0.05)	
A significant 15.9% relative reduction in rate of discharge to SNFs (p=0.002)	

Conclusion

When compared with non-OXINIUM bearings, THA with OXINIUM bearings was associated with a lower average cost per 90-day episode of care that was attributed to reductions in the use of SNFs and hospital readmission.

Summary

← Previous study

Next study →

Minimizing complications in bikini incision direct anterior approach total hip arthroplasty: a single surgeon series of 865 cases[52]

Alva A, Nizam I, Gogos S. *J Exp Orthop.* 2021;8:1.

Overview

Clinical data
Single surgeon case series

865 cases of bikini incision DAA THA using POLARSTEM◊/CPCS stem with R3◊ and OXINIUM◊

Assessed at: 6 years

Results

At final follow-up (mean: 3.9 years), when used in bikini incision DAA THA, POLARSTEM/CPCS stems with R3 and OXINIUM were associated with:

A survivorship of 99.84% and 99.53% for the cup and stem components, respectively
Low complication rates, ranging from 0 to 6.4% dependent on specific complication
Improvements in mean HHS and WOMAC score from preoperative to postoperative measurements (HHS: 53 to 92.5; WOMAC score: 49 to 3.5)

Conclusion

POLARSTEM with R3 and OXINIUM can be safely used to perform bikini incision DAA THA, demonstrating high survivorship at a mean follow-up of 3.9 years, low rates of intraoperative and postoperative complications and improvements in PROMs.

Summary
Published paper

← Previous study
Next study →

Excellent midterm survival and functional outcomes of a fully hydroxyapatite-coated cementless stem: first results of a prospective multicenter study[53]

Willburger RE, Heukamp M, Lindenlauv TE, Peterlein CD, Schuttler KF. *Arthroplast Today.* 2020;6:201–205.

Overview

Clinical data
Prospective, multicentre, observational study

225 THAs with POLARSTEM◊

Assessed at: 5 years

Results

At 5 years' follow-up, POLARSTEM was associated with:

Excellent survivorship of 99.6%
A low rate of intraoperative complications (1.3%)
Significant improvements in mean HHS and WOMAC score from baseline to postoperative measurements (HHS: 48.5 to 88.0, p<0.01; WOMAC score: 58.6 to 9.3; p<0.01)

Conclusion

POLARSTEM was associated with excellent clinical outcomes, including high medium-term survivorship, low rates of intraoperative complications, and significant improvements in PROMs.

Published paper

Midterm results of a contemporary, porous-coated acetabular system in patients undergoing primary total hip replacement for degenerative hip disease: a prospective, multicenter study[54]

Wilson AI, Turgeon TR, Gascoyne RW, Della Valle CJ, McCalden RW. *J Arthroplasty.* 2020;35:1862–1867.

Overview

Clinical data
Prospective, multicentre, study

155 THAs using R3◊ with different liners (**132** XLPE; **21** ceramic; **2** metal)

Assessed at: 5 years

Results

At 5 years' follow-up, R3 was associated with:

A survivorship of 97.1%, with no significant difference in survival between polyethylene and ceramic liners used (p=0.55)
Significant improvements in mean HHS and WOMAC score from preoperative to postoperative measurements (HHS: 51.4 to 94.5, p<0.001; WOMAC score: 40.9 to 89.1; p<0.001)

Conclusion

R3 was associated with excellent clinical outcomes and improvements in patient report outcomes, when used with both XLPE and ceramic liners.

Published paper

2-year radiostereometric analysis evaluation of a short, proximally coated, triple-taper blade femoral stem versus a quadrangular-taper stem with reinforced proximal body: a randomized controlled trial[56]

Fontalis A, Kayani B, Vanhegan I, et al. *J Arthroplasty.* 2023;38(7S):S152–S161.

Overview

Clinical data
Prospective, single-centre UK RCT

29 THAs with POLAR3◊;
27 with TriFit TS femoral stem/ Trinity acetabular shell*

Assessed at: 2 years

Results

At 2 years' follow-up, when compared with the TriFit TS femoral stem and Trinity acetabular shell component, POLAR3 demonstrated:

Improvements in PROMs and EQ-5D results compared to preoperative scores
Significantly less total migration at 6 months (p=0.018), 1 year (p=0.007) and 2 years (p=0.030)

*TriFit TS and Trinity are trademark of Corin.

Conclusion

In a UK RCT, RSA analysis showed improved total migration results for POLAR3 compared to the TriFit TS femoral stem/Trinity acetabular shell. These results suggest the stems are likely to achieve long-term stability and clinical longevity.

Published paper

Comparison of canal fill and radiolucent line formation between two fully coated, hydroxyapatite tapered stems: a 2-year follow-up after total hip arthroplasty[57]

Shichman I, Lawrence KW, Berzolla E, et al. *Orthop Trauma Surg.* 2023;143:6945–6954.

Overview

Clinical data
Retrospective, multicentre, observational study

132 THAs with POLARSTEM◊;
101 THAs with CORAIL*

Assessed at: 2 years

Results

At 2 years' follow-up, when compared with the CORAIL femoral stem, POLARSTEM demonstrated:

Significantly greater average femoral stem canal fill in the middle third of the stem (p=0.002)
Comparable low rates of subsidence and low rates of radiolucent line formation

*CORAIL is a trademark of DePuy Synthes.

Conclusion

POLARSTEM demonstrated improved femoral canal fill in the middle third of the stem as well as comparable short-term survivorship when compared to the CORAIL femoral stem in this independent study.

Published paper

Fully hydroxyapatite-coated compaction broached and triple-tapered stem may reduce the risk of stress shielding after primary total hip arthroplasty[58]

Kuroda, Y, Hashimoto, S, Hayashi, S, et al. *Arch Orthop Trauma Surg*. 2022;142:4087–4093.

Overview

Clinical data
Retrospective cohort study

38 THAs with POLARSTEM◊;
31 THAs with HA-coated ANTHOLOGY◊; **31 THAs** with non-HA-coated ANTHOLOGY

Assessed at: 2 years

Results

At 2 years' follow-up, when compared to ANTHOLOGY tapered-wedge stems, POLARSTEM demonstrated

Significantly lower incidence of stress shielding (p=0.007)	
Significantly higher BMD around femoral calcar (Zone 7; p=0.009)	

Conclusion

In this independent study, POLARSTEM maintained BMD around the femoral calcar at 2 years post-operatively and its use could reduce the risk of stress shielding when compared with tapered-wedge stems.

Published paper

Product summary: **POLARSTEM◊**

9 studies reporting on POLARSTEM

POLARSTEM delivers excellent short- to mid-term survivorship

Willburger RE, et al[53]
99.6%
POLARSTEM

Assaf A, et al[44]
97.69%
POLARSTEM /R3◊

Cypres A, et al[42]
99.1%
POLARSTEM/ POLARCUP◊

0 years // 5 years — 7 years — 10 years — 13 years

NJR (annual report)[3]
98.1%
POLARSTEM/R3

NJR (implant summary report)[40]
95.9%
POLARSTEM

ODEP 10A*
POLARSTEM uncemented stem[55]

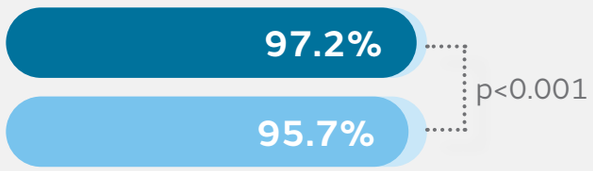
POLARSTEM demonstrates excellent clinical outcomes

- Low rates of intraoperative complications[42,48,53]
- Strong radiographic outcomes[42]
- Low blood transfusion rates[48]

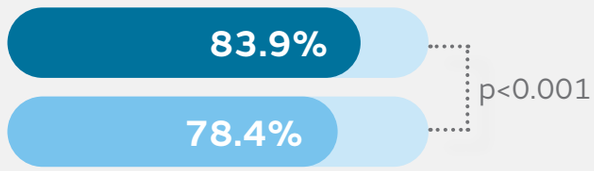
POLARSTEM results in improved PROMs and patient satisfaction

POLARSTEM results in significantly improved average 6-month OHS, EQ-5D and EQ-VAS scores compared with other uncemented stems (p<0.001),[40] and improvements from pre- to postoperative HHS and WOMAC scores[42,53]

Patients who reported feeling much better/a little better post-THA[40]



Patients who rated their post-THA satisfaction as 'excellent/very good'[40]

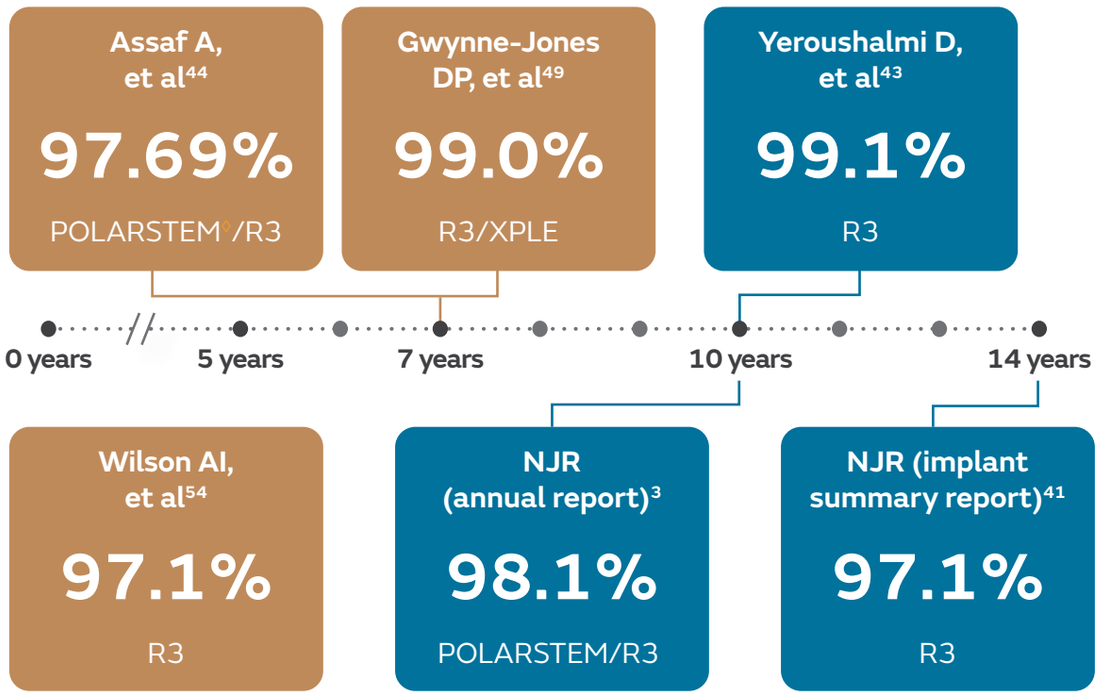


POLARSTEM Other uncemented stems

Product summary: **R3◊**

8 studies reporting on R3

R3 delivers excellent short- to mid-term survivorship



ODEP 13A*
R3
uncemented cup[55]

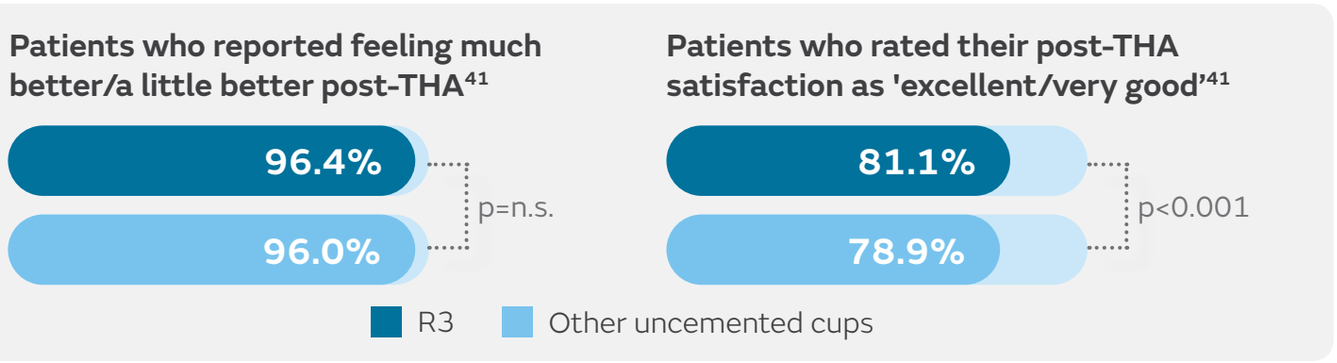
1.4% lower cumulative 14-year revision rate compared with all other uncemented cups[41]

R3 demonstrates excellent clinical outcomes

- Low rate of intraoperative complications[48]
- Low rate of postoperative complications[43]
- Strong radiographic outcomes[50]
- Low liner dissociation rate when compared with Pinnacle[49]

R3 results in improved PROMs and patient satisfaction

R3 results in significantly improved average 6-month OHS, EQ-5D and EQ-VAS scores compared with other uncemented cups (p<0.001),[41] and improvements from pre- to postoperative HHS and WOMAC scores[47,54]

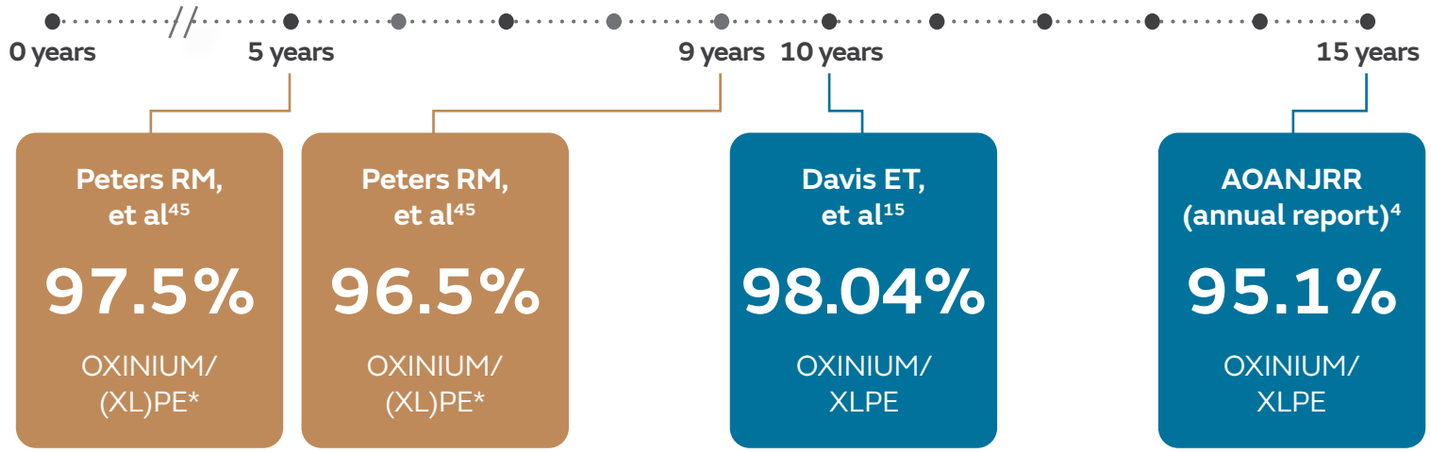


Product summary: **OXINIUM◊/XLPE**

6 studies reporting on OXINIUM/XPLE

OXINIUM/XLPE demonstrates superior mid- to long-term survivorship compared with other bearing combinations

Highest survivorship of all bearing combinations analysed across multiple registries (AOANJRR; NJR; LROI)[4,15,45]



OXINIUM/XLPE is associated with:

- A **38%** lower revision risk from 1 year compared with Metal/XLPE[4]
- A **19%** lower revision risk compared with Metal/PE[45]
- A **60%** lower risk of revision relative to the 5% NICE benchmark (1.96%) at 10 years[7,15]

OXINIUM/XLPE results in superior clinical and health economic outcomes compared with non-OXINIUM bearings

- Lower mean hospital LOS[46,51]
- Reduced 30-day readmission rate[46,51]
- Greater number of patients discharged to home health care[46,51]
- Lower likelihood of blood transfusion[46]

OXINIUM/XLPE is associated with a significant **$602** reduction in 90-day episode of care costs when compared with non-OXINIUM bearings (p=0.003)[51]

*OXINIUM/(XL)PE includes grouped data for OXINIUM bearings on XLPE or PE.

Product summary: **POLAR3**

5 studies reporting on POLAR3

POLAR3 delivers excellent short- to mid-term survivorship

One of the highest survivorship rates of any cementless hip combination[3]

NJR (annual report)[3]

98.1%

POLARSTEM/R3◊

Reduction in revision risk of 62% at 10 years, compared with the 5% NICE benchmark[3,7]

0 years // 6 years 11 years

Alva A, et al*[52]

99.5% (stem)

99.8% (cup)

POLAR3

NJR (implant summary report)[31]

97.8%

POLAR3

POLAR3 is associated with strong clinical, functional and radiological outcomes

Lower revision risk due to aseptic loosening of either stem or cup[31]

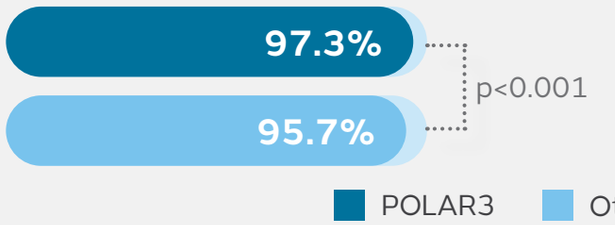
Low postoperative complication rate when used in bikini incision DAA THA*[52]

Strong medium-term functional and radiographic outcomes in younger patients[47]

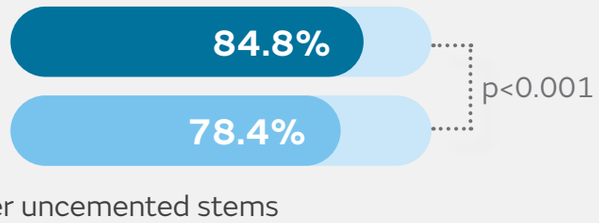
POLAR3 results in excellent PROMs and better than class average patient satisfaction

POLAR3 results in significantly improved average 6-month OHS, EQ-5D and EQ-VAS scores compared with other uncemented stems (p<0.001),[31] and improvements from pre- to postoperative HHS[52]

Patients who reported feeling much better/a little better post-THA[31]



Patients who rated their post-THA satisfaction as 'excellent/very good'[31]



*This study included 865 cases of bikini incision DAA THA using POLARSTEM◊/CPCS◊ stem with R3 and OXINIUM◊.

All clinical evidence

Select the icon to see the evidence overview.
References in bold and blue represent key evidence.

	Author	Study summary	POLARSTEM◊	R3◊	OXINIUM◊/XLPE	POLAR3
	Ahmad A, et al. 2018	A comparative study between uncemented and hybrid total hip arthroplasty in octogenarians	✓	✓		
	Alva A, et al. 2018	Minimising complications in bikini incision direct anterior approach total hip arthroplasty: a single surgeon series of 865 cases				✓
	Assaf A, et al. 2019	Mid-term clinical results of the cementless R3 cup and Polarstem total hip arthroplasty	✓	✓		
	AOANJRR annual report 2023	**Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR). Hip, Knee & Shoulder Arthroplasty: 2022 Annual Report**			✓	
	Cypres A, et al. 2019	**Long-term outcomes of a dual-mobility cup and cementless triple-taper femoral stem combination in total hip replacement: a multicenter retrospective analysis**	✓			
	Davis ET, et al. 2020	**Bearing surface and survival of cementless and hybrid total hip arthroplasty in the National Joint Registry of England, Wales, Northern Ireland and the Isle of Man**			✓	
	Duncan S, et al. 2020	Can the choice of cementless implants and bearings during total hip arthroplasty have an impact on the overall costs within a bundled payment model?				✓

All clinical evidence

Select the icon to see the evidence overview.
References in bold and blue represent key evidence.

	Author	Study summary	POLARSTEM◊	R3◊	OXINIUM◊/XLPE	POLAR3
	Fontalis A, et al. 2023	2-year radiostereometric analysis evaluation of a short, proximally coated, triple-taper blade femoral stem versus a quadrangular-taper stem with reinforced proximal body: a randomized controlled trial				✓
	Gwynne-Jones D and Memon A. 2020	Acetabular liner dissociation: A comparative study of two contemporary uncemented acetabular components	✓	✓		
	Kuroda Y, et al. 2022	Fully hydroxyapatite-coated compaction broached and triple-tapered stem may reduce the risk of stress shielding after primary total hip arthroplasty	✓			
	NJR implant summary report 2023	**National Joint Registry for England, Wales and Northern Ireland: POLARSTEM Cementless (Oxinium/XLPE/R3 cup) implant summary report. 20 October 2023**	✓	✓	✓	
	NJR implant summary report 2023	**National Joint Registry for England, Wales and Northern Ireland: POLARSTEM Cementless implant summary report. 8 November 2023**	✓			
	NJR implant summary report 2023	**National Joint Registry for England, Wales and Northern Ireland: R3 Cementless cup implant summary report. 8 November 2023**		✓		

All clinical evidence

Select the icon to see the evidence overview.
References in bold and blue represent key evidence.

Author	Study summary	POLARSTEM◊	R3◊	OXINIUM◊/XLPE	POLAR3
Patrick C, et al. 2019	Retrospective analysis of oxidized zirconium bearing surface in hip replacement 90-day episode claims			✓	
Peters RM, et al. 2018	The effect of bearing type on the outcome of total hip arthroplasty			✓	
Shichman I, et al. 2023	Comparison of canal fill and radiolucent line formation between two fully coated, hydroxyapatite tapered stems: a 2-year follow-up after total hip arthroplasty	✓			
Teoh KH, et al. 2018	R3 cup does not have a high failure rate in conventional bearings: a minimum of 5-year follow-up	✓	✓		
Wade R and Shah KA. 2019	Functional and radiological outcome of uncemented total hip arthroplasty in young adults - 5 year follow-up				✓
Willburger RE, et al. 2020	Excellent midterm survival and functional outcomes of a fully hydroxyapatite-coated cementless stem: first results of a prospective multicenter study	✓			
Wilson AI, et al. 2020	Midterm results of a contemporary, porous-coated acetabular system in patients undergoing primary total hip replacement for degenerative hip disease: a prospective, multicenter study		✓		
Yeroushalmi D, et al. 2021	**Excellent mid-term outcomes with a hemispheric titanium porous-coated acetabular component for total hip arthroplasty: 7–10 year follow-up**		✓		

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Abbreviations and terminology

Abbreviations

ABT	Advanced bearing technology
AOANJRR	Australian Orthopaedic Association National Joint Replacement Registry
CI	Confidence interval
CMoXLPE	Ceramicised metal on XLPE
CoC	Ceramic on ceramic
CoXLPE	Ceramic on highly crosslinked polyethylene
CoPE	Ceramic on polyethylene
CPCS	Collarless polished cemented stem
CT	Computerised tomography
DAA	Direct anterior approach
EQ-5D	EuroQol-5 Dimensions
HAC	Hydroxyapatite coating
HHS	Harris Hip Score
HR	Hazard ratio
ISR	Implant summary report*
LOS	Length of stay
LROI	Landelijke Registratie Orthopedische Implantaten (Dutch Arthroplasty Register)
MACC	Mechanically assisted crevice corrosion
MoHXLPE	Metal on highly crosslinked polyethylene
MoPE	Metal on polyethylene
MoXLPE	Metal on crosslinked polyethylene
NICE	National Institute for Health and Care Excellence
NJR	National Joint Registry†
OA	Osteoarthritis

*ISRs are produced by the National Joint Registry of England, Wales and Northern Ireland and summarises usage and outcomes associated with the specific combinations of products. These analyses are based on data collected by the NJR and PROMs data collected by NHS Digital. Disclaimer relating to the use of ISRs: The data used for this analysis was obtained from the NJR Supplier Feedback System. The Healthcare Quality Improvement Partnership ('HQIP') and/or the National Joint Registry ('NJR') take no responsibility for the accuracy, currency, reliability and correctness of any data used or referred to in this report, nor for the accuracy, currency, reliability and correctness of links or references to other information sources and disclaims all warranties in relation to such data, links and references to the maximum extent permitted by legislation.

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‡XLPE is classified as ultra-high molecular weight polyethylene that has been irradiated by high dose (>50kGy) gamma or electron beam radiation.

Abbreviations and terminology (cont.) →

Abbreviations and terminology

Abbreviations

ODEP	Orthopaedic Data Evaluation Panel
OHS	Oxford Hip Score
OR	Odds ratio
PE	Polyethylene
PROM	Patient reported outcome measure
QoL	Quality of life
RI	Real intelligence
SNF	Skilled nursing facility
THA	Total hip arthroplasty
VAS	Visual analogue scale
WOMAC	Western Ontario and McMaster Universities Osteoarthritis Index

Terminology variations

Ceramic/Ceramic	Ceramic on ceramic
Ceramic/PE	Ceramic on polyethylene
Ceramic/XLPE	Ceramic on polyethylene
CMoXLPE or OXINIUM◊/XLPE	Ceramicised metal on XLPE
CPE	Conventional polyethylene
Metal/PE	Metal on polyethylene
Metal/XLPE	Metal on XLPE

For detailed product information, including indications for use, contraindications, precautions and warnings, please consult the product's applicable Instructions for Use (IFU) prior to use.

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