Smith+Nephew

Comparison of survivorship for OXINIUM®/XLPE with other bearing combinations in primary THA: review of international registry data

Key points

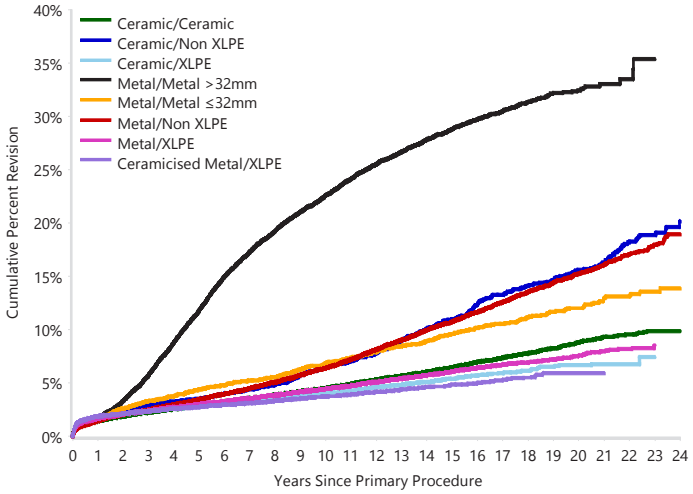
4 registries demonstrated OXINIUM/XLPE has the **lowest revision risk** of all modern bearing combinations[1–4]

≥ 94.1% mid- to long-term **survivorship**[1–4]

3 registries showed OXINIUM/XLPE delivers higher survivorship than ceramic/XLPE [1,3,4]

OXINIUM/XLPE has the highest survivorship of all bearing combinations at 20 years[1]

Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR)



20 years 94.1% survivorship

Bearing Surface	N Revised	N Total	1 Yr	3 Yrs	5 Yrs	10 Yrs	15 Yrs	20 Yrs
Ceramic/Ceramic	5437	114611	1.4 (1.4, 1.5)	2.3 (2.2, 2.4)	2.9 (2.8, 3.0)	4.5 (4.4, 4.7)	6.5 (6.3, 6.7)	8.8 (8.5, 9.2)
Ceramic/Non XLPE	799	11499	1.8 (1.5, 2.0)	3.0 (2.7, 3.3)	3.5 (3.2, 3.9)	6.6 (6.0, 7.2)	11.0 (10.1, 11.9)	15.6 (14.4, 16.9)
Ceramic/XLPE	5456	191223	1.7 (1.6, 1.7)	2.4 (2.3, 2.5)	2.8 (2.8, 2.9)	4.0 (3.9, 4.1)	5.4 (5.2, 5.7)	6.7 (6.2, 7.2)
Ceramic/Metal	31	299	1.7 (0.7, 4.0)	3.7 (2.1, 6.6)	4.4 (2.6, 7.4)	8.3 (5.7, 12.2)	11.4 (8.1, 15.9)	
Metal/Metal >32mm	3931	14424	1.7 (1.5, 1.9)	5.7 (5.3, 6.1)	11.8 (11.3, 12.3)	22.6 (21.9, 23.3)	28.8 (28.0, 29.6)	32.5 (31.5, 33.4)
Metal/Metal ≤32mm	520	5143	1.6 (1.3, 2.0)	3.3 (2.9, 3.8)	4.4 (3.9, 5.0)	6.8 (6.2, 7.6)	9.6 (8.8, 10.5)	12.0 (11.0, 13.1)
Metal/Non XLPE	3348	36447	1.4 (1.3, 1.6)	2.5 (2.3, 2.7)	3.5 (3.3, 3.7)	6.4 (6.1, 6.7)	10.8 (10.4, 11.2)	15.3 (14.7, 15.8)
Metal/XLPE	8572	217882	1.7 (1.6, 1.7)	2.4 (2.3, 2.5)	3.0 (2.9, 3.1)	4.5 (4.4, 4.6)	6.1 (5.9, 6.2)	7.6 (7.3, 7.9)
Ceramicised Metal/Non XLPE	61	316	1.6 (0.7, 3.8)	3.6 (2.0, 6.4)	3.9 (2.2, 6.8)	12.2 (8.7, 16.9)	21.2 (16.3, 27.2)	31.2 (24.5, 39.3)
Ceramicised Metal/XLPE	1301	41361	1.9 (1.7, 2.0)	2.4 (2.2, 2.5)	2.8 (2.6, 2.9)	3.7 (3.5, 4.0)	4.8 (4.5, 5.2)	5.9 (5.3, 6.5)
TOTAL	**29456**	**633205**						

Note: Excludes 292 procedures with an unknown bearing surface, 1 procedure with a ceramicised metal/ceramic bearing surface, and 8 procedures with a metal/ceramic bearing surface.

Figure HT45 Cumulative Percent Revision of Primary Total Conventional Hip Replacement by Bearing Surface (Primary Diagnosis OA)

HR - adjusted for age and gender

Ceramic/Ceramic vs Ceramic/XLPE
- 0 - 2Wk: HR=0.96 (95% CI 0.84, 1.09), p=0.525
- 2Wk - 3Mth: HR=0.74 (95% CI 0.68, 0.80), p<0.001
- 3Mth - 9Mth: HR=0.90 (95% CI 0.80, 1.01), p=0.063
- 9Mth - 2.5Yr: HR=1.16 (95% CI 1.07, 1.26), p<0.001
- 2.5Yr+: HR=1.35 (95% CI 1.27, 1.42), p<0.001

Ceramic/Non XLPE vs Ceramic/XLPE
- 0 - 3Mth: HR=0.94 (95% CI 0.79, 1.13), p=0.518
- 3Mth - 8Yr: HR=1.57 (95% CI 1.40, 1.76), p<0.001
- 8Yr+: HR=3.59 (95% CI 3.19, 4.04), p<0.001

Metal/Metal ≤32mm vs Ceramic/XLPE
- 0 - 2Wk: HR=1.17 (95% CI 0.72, 1.89), p=0.532
- 2Wk - 6Mth: HR=0.66 (95% CI 0.48, 0.91), p=0.010
- 6Mth+: HR=2.07 (95% CI 1.87, 2.28), p<0.001

Metal/Non XLPE vs Ceramic/XLPE
- 0 - 3Mth: HR=0.75 (95% CI 0.67, 0.85), p<0.001
- 3Mth - 6Mth: HR=0.99 (95% CI 0.78, 1.26), p=0.954
- 6Mth - 1.5Yr: HR=1.65 (95% CI 1.45, 1.88), p<0.001
- 1.5Yr - 3Yr: HR=1.54 (95% CI 1.34, 1.76), p<0.001
- 3Yr - 8Yr: HR=2.20 (95% CI 2.02, 2.40), p<0.001
- 8Yr+: HR=3.40 (95% CI 3.16, 3.66), p<0.001

Metal/XLPE vs Ceramic/XLPE
- 0 - 2Wk: HR=0.95 (95% CI 0.85, 1.07), p=0.394
- 2Wk - 1Mth: HR=1.13 (95% CI 1.04, 1.23), p=0.005
- 1Mth - 3Mth: HR=0.99 (95% CI 0.91, 1.07), p=0.737
- 3Mth - 3Yr: HR=1.12 (95% CI 1.06, 1.18), p<0.001
- 3Yr+: HR=1.24 (95% CI 1.17, 1.31), p<0.001

Ceramicised Metal/XLPE vs Ceramic/XLPE
- 0 - 3Mth: HR=1.16 (95% CI 1.05, 1.27), p=0.002
- 3Mth+: HR=0.83 (95% CI 0.77, 0.90), p<0.001

Metal/Metal >32mm vs Ceramic/XLPE
- 0 - 2Wk: HR=1.24 (95% CI 0.94, 1.65), p=0.132
- 2Wk - 1Mth: HR=0.45 (95% CI 0.31, 0.65), p<0.001
- 1Mth - 3Mth: HR=0.69 (95% CI 0.52, 0.92), p=0.010
- 3Mth - 9Mth: HR=1.20 (95% CI 0.94, 1.54), p=0.144
- 9Mth - 1.5Yr: HR=3.13 (95% CI 2.65, 3.71), p<0.001
- 1.5Yr - 2Yr: HR=4.95 (95% CI 4.11, 5.96), p<0.001
- 2Yr - 11Yr: HR=10.48 (95% CI 9.90, 11.09), p<0.001
- 11Yr+: HR=4.66 (95% CI 4.24, 5.13), p<0.001

17% From 3 months, OXINIUM/XLPE has the **lowest risk of revision** of all bearing combinations vs ceramic/XLPE (p<0.001)

Comparing the rates of revision for these bearings, Ceramicised Metal/XLPE* has the lowest rate of revision at 20 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'.

OXINIUM◊/XLPE demonstrates the joint highest survivorship of all bearing combinations at 15 years[2]

National Joint Registry (NJR) of England, Wales, Northern Ireland, the Isle of Man and the States of Guernsey†

- Analysis of 1,026,481 primary THAs, including 21,263 patients with OXINIUM/XLPE over 15 years follow-up (bearing usage from 2003 to 2019)

35% ↓
Lowest risk of revision of all bearing combinations (p<0.001)

at 15 years **1.3%**
Cumulative rates of revision (all cause) for OXINIUM/XLPE were the **joint lowest** of all bearings

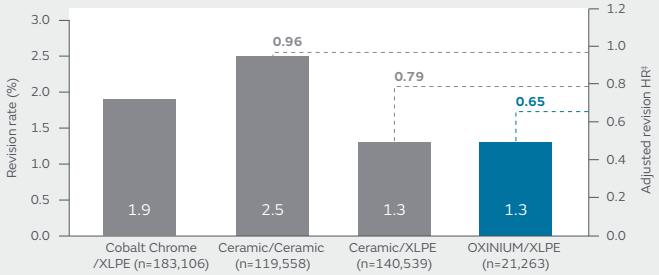


Figure. Cumulative incidence of revision for any reason and adjusted hazard ratios (HRs)

‡*HRs were adjusted for year of primary surgery, patient gender, age, BMI, ASA physical status grade, implant fixation, shell component materials, stem component materials, and head size at 10 years compared to the reference group (Cobalt Chrome/XLPE primary THA).*

OXINIUM/XLPE has the highest 5-year and 9-year survivorship of all bearing combinations[3]

Dutch Arthroplasty Register (LROI)

- Analysis of 209,912 primary THAs with a maximum 10 years' follow-up (bearing usage from 2007 to 2016)

Cumulative rates of revision (all cause) for OXINIUM/(XL)PE were the lowest of all bearings

at 5 years **2.5%**

at 9 years **3.5%**

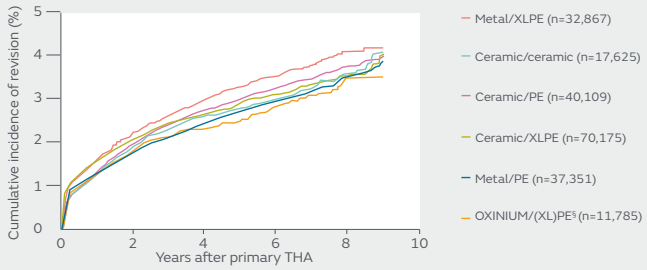


Figure. Cumulative incidence of revision according to bearing type of THA

§Due to small group sizes, OXINIUM on standard polyethylene (PE) or highly-cross-linked polyethylene (XLPE) were analysed together.

OXINIUM/XLPE has the highest 10-year survivorship of all bearing combinations[4]

Italian Register of Orthopaedic Prosthetic Implants (RIPO)

- Analysis of 20,963 uncemented THAs from 68 orthopaedic units, performed between 2000 and 2015 with 10 years' follow-up

59% ↓
Lower risk of revision compared to Metal/XLPE at 10 years

54% ↓
Lower risk of revision compared to Ceramic/ceramic at 10 years

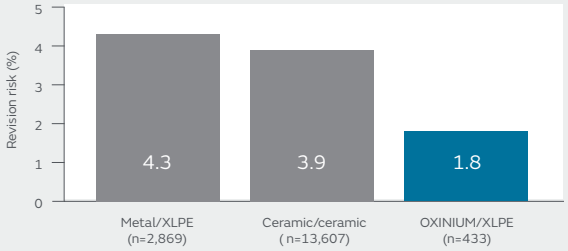


Figure. Revision risk by bearing type at 10 years

Insufficient patient numbers at 10 years to estimate failure risk for Ceramic/XLPE. Failure risk of 3.1% calculated at 5 years.

Conclusions

OXINIUM with XLPE has been shown to consistently deliver superior mid- to long-term survivorship and the lowest revision risk compared to all other modern bearing combinations in four arthroplasty registries.

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References: 1. Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) Hip, Knee & Shoulder Arthroplasty: 2025 Annual Report Adelaide; AOA, 2025:1-727. Available at: https://aoanjrr.sahmri.com/annual-reports-2025. Accessed October 2, 2025. **2.** Whitehouse MR, Patel R, French JMR, et al. The association of bearing surface materials with the risk of revision following primary total hip replacement: a cohort analysis of 1,026,481 hip replacements from the National Joint Registry. *PLoS Med.* 2024;21(11):e1004478. **3.** Peters RM, Van Steenbergen LN, Stevens M, Rijk PC, Bulstra SK, Zijlstra WP. The effect of bearing type on the outcome of total hip arthroplasty. *Acta Orthop.* 2018:89(2);163–169. **4.** Atrey A, Ancarani C, Fitch D, Bordini B. Impact of bearing couple on long-term component survivorship for primary cementless total hip replacement in a large arthroplasty registry. Poster presented at: Canadian Orthopedic Association; June 20–23, 2018; Victoria, British Columbia, Canada.

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