

Good long-term results with CoC in young patients

Third-generation alumina CoC bearings show good long-term clinical and radiographic results. **Lau et al.** retrospectively examined 126 primary THA in 108 patients with a mean age at implantation of 39.6 years. After an average follow-up of 12.1 years, the mean Oxford Hip Score was 39.8. Kaplan-Meier survivorship calculated at 10 years with revision for any cause as endpoint was 94.6%. There were no cases of osteolysis, detectable wear or squeaking.

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Ceramic with superior outcome in young patients

Latest generation ceramic-on-ceramic bearings (CoC) show encouraging mid-term results in young and highly active patients. **Lee et al.** conducted a prospective study on 252 patients (286 THA) with a mean age of 49.7 years. The primary diagnosis for most of them was osteonecrosis of the femoral head. With this indication, outcome normally is significantly poorer than with osteoarthritis. Clinical outcome scores (HHS, WOMAC, UCLA activity) improved significantly after surgery. The Kaplan-Meier survival rate, with revision for any reason as endpoint, was 99.4% at 6 years. The authors consider the mid-term survivorship of fourth-generation ceramic-on-ceramic bearings encouraging. Along with choosing the best implant solution they emphasize the importance of insert positioning.

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Superior results with ceramic in New Zealand

After adjustment for confounding factors, ceramic-on-ceramic bearings show superior results in the New Zealand registry when compared with other THA bearings. The data also confirm that the fracture rates of fourth-generation ceramics are lower than those of the third generation. **Sharplin et al.** analyzed 106,139 primary and 4,960 revision hip arthroplasties performed from January 1, 1999 to December 31, 2015. The authors name ceramic-on-crosslinked polyethylene (CoXPE) as the most promising option for young and active patients.

CoXPE bearings had the lowest revision rate, but when adjusted by age, gender, approach, fixation and surgical volumes, CoC resulted to be superior, followed by CoXPE. Acetabular loosening was the most common reason for revision (22.2%), followed by femoral loosening (16.7%). The lowest revision rate for femoral loosening was associated with CoC. Hard-on-hard bearings had a lower revision rate for dislocation than hard-on-soft combinations. Revision for infection was most common with metal-on-polyethylene (MoXPE) and least common with CoC.

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Dutch registry shows ceramic bearings on top

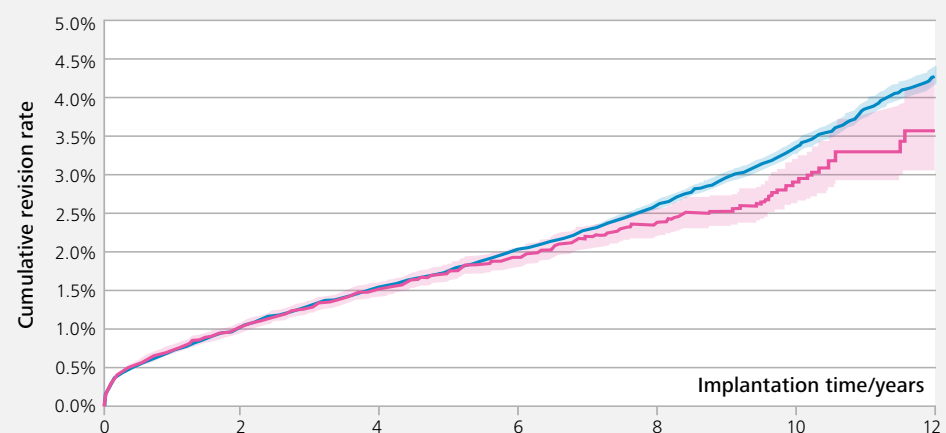
Bearings with ceramic components, both in hard-on-hard and hard-on-soft combinations show significantly better survival rates than those with metal components. The revision risk is lower by 13% to 19%. When large bearings are used, ceramic-on-ceramic offers the best survivorship. **Peters et al.** drew these conclusions from data of 209,912, primary THA recorded in the Dutch Arthroplasty Register (LROI) in 2007-2016 excluding metal-on-metal bearings.

The latest report from the Dutch Arthroplasty Register (LROI) confirmed a significantly lower risk of revision for bearings with ceramic and ceramicized-metal components than the standard MoP bearings after adjustment for confounding factors. When large-diameter bearings were used, CoC achieved the lowest revision rate among all bearings. For small femoral heads (22-28mm), statistically significant lower revision rates were found for CoP and CoXPE when compared with MoP. Revision rates in patients under 60 years were lower for ceramic bearings than for MoP.

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NJR 2017: CoP with BIOLOX®delta better than MoP

Cox Proportional Hazards Model for revision risk ratio of BIOLOX®delta-on-polyethylene / metal-on-polyethylene



Adjustment	Hazard ratio (95% CI)	p-value
Unadjusted	0.97 (0.92-1.03)	0.295
Adjusted	0.78 (0.73-0.83)	<0.001

metal-on-polyethylene
95% confidence interval
BIOLOX®delta-on-polyethylene
95% confidence interval

Adjustment includes patient gender, age group and stem/cup fixation

Source: The data used for this analysis was obtained from the NJR Supplier Feedback System. Summary Report HP_Ceramtec_Delta on Poly vs Metal on Poly. 09/01/2018. 14:59; © 2018 Northgate Public Services (UK) Limited; Data on file.