

Predicted number of preventable complications and surgical revisions in THA conditional on the use of BIOLOX®*delta*-on-Polyethylene (DoP) compared to Metal-on-Polyethylene (MoP)

The table shows the incidence of revision for various complications with metal femoral heads on polyethylene liners (MoP) per 10,000 primary Total Hip Arthroplasties (THA) observed in the National Joint Registry (NJR) of England, Wales, Northern Ireland, the Isle of Man and Guernsey. Using NJR data, expected and observed differences, and a multivariate regression model (controlling for age, gender, American Society of Anaesthesiologists (ASA) physical status classification, year of implantation, stem and cup fixation, and head size) it was estimated how many complications and revisions could have been prevented if all patients with MoP had received BIOLOX®*delta* femoral heads on polyethylene liners (DoP).

Note the estimates come from a statistical model not allowing for causal inference.

CAUSE OF REVISION*	Incidence of revision per 10,000 primary THAs with MoP bearings	Estimated incidence of revision per 10,000 primary THAs given a DoP had been used rather than MoP
Infection	55	42
<i>Periprosthetic Fracture</i>		
- Stem	65	53
- Socket	6	5
Dislocation	73	64
<i>Aseptic Loosening</i>		
- Stem	39	26
- Socket	52	28
Unexplained Pain	22	17
TOTAL ACROSS ALL COMPLICATIONS	302	231

*Multiple complications may lead to revision.

What does this mean in summary?

In summary, the data from NJR appear to show that 71 per 10,000 revisions for major complications may be prevented by opting for BIOLOX®*delta*-on-Polyethylene rather than Metal-on-Polyethylene bearing surfaces in primary Total Hip Arthroplasty. Estimates were controlled for key independent demographic and therapeutic confounding variables.

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This snapshot illustrates incidences of revision (per 10,000 primary procedures*) for common complications in Total Hip Arthroplasty with Metal-on-Polyethylene (MoP) bearings, and the predicted risk** reduction by BIOLOX®*delta*-on-Polyethylene (DoP) bearings as derived from National Joint Registry of England, Wales, Northern Ireland, the Isle of Man and Guernsey dataset. All differences shown here were statistically significant under common assumptions (*i.e.*, incompatible with chance alone, as 95% confidence intervals did not include the null value)***.

*The column “Incidence of revision per 10,000 primary THAs with MoP bearings” represents the revision rate of all Metal on Polyethylene for the specified reason for revision at 10 years, calculated by Kaplan Meier analysis, *i.e.*, 100 revised is equivalent to a 1% revision rate for the specified reason at 10 years post operation.

**Note that this estimate is based on an assumption of proportional hazards.

***Note that there may be unmeasured confounding factors involved in implant selection that affect the outcome, which could bias the estimates of the Hazard Ratio, and the figures derived from this.

Disclaimer

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