The National Joint Registry for England, Wales, Northern Ireland and the Isle of Man (NJR) presented its 14th Annual Report at the British Orthopedic Association Congress in Liverpool. The report includes the examination of joint replacement cases submitted to the NJR in over 13 years. In this period, 890,681 hip replacements have been recorded for the survival analysis. Primary THA with its excellent results is confirmed to be one of the best-performing surgeries.

According to the NJR, bearing and fixation are crucial parameters for the survival of the implant. The percentage of Ceramic-on-Polyethylene bearings has been increasing steadily since 2010. The trend in bearing selection possibly follows the recommendations of the previous annual reports. Ceramic-on-Polyethylene shows the best survival rates with a cumulative-percentage probability of revision of 3.8% at 13 years when all-cemented fixation is used (4.3% for the entire cemented group). The cementless-fixation revision rate is approximately twice as high as that of the entire cemented group (8.7%). Ceramic-on-Polyethylene shows within the cementless group the best survival figures with a revision rate calculated at 4.5%. However, Ceramic-on-Ceramic bearings provide even better Kaplan-Meier estimates, calculated at 3.3% at 13 years, when hybrid fixation is used (5.1% for the entire hybrid group).

Despite the very good outcome of the ceramic material, Metal-on-Polyethylene is still the most commonly used bearing couple (30.4% of all primaries) across cemented (87.1%), cementless and hybrid fixations. However, Ceramic-on-Polyethylene is close behind (29%). Hard-on-hard bearings are today almost exclusively led by Ceramic-on-Ceramic. The excellent results of Ceramic-on-Ceramic bearings in hybrid fixation do not impact the current surgical practice since hard-on-soft bearings are preferred.

The data used for this analysis was obtained from the NJR 14th Annual Report 2017. All analyses of NJR data were undertaken by CeramTec GmbH. 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.
Figure 2: Distribution of fixation and bearing types.

Head size (bearing diameter) is also a determining factor for revision outcome, and this year’s report results are particularly interesting. Whilst head sizes of 36 mm and above seem to be associated with increasingly higher failure rates when a hard-on-soft bearing is used, ceramic-on-ceramic bearings have lower failure rates with larger diameters. Ceramic-on-ceramic bearings with cementless fixation show the best survival rate when the head size of 40 mm is used.

Figure 3: Cumulative-percentage probability of revision at 13 years after primary hip replacement for all cases, by fixation and bearing surface.

This year’s report also casts a look on subsequent revisions (re-revisions). Ceramic-on-ceramic bearings with cementless fixation show the lowest cumulative probability of re-revision when they are used in the primary procedure.