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CORR Insights®: Short-term Risk of Revision THA in the Medicare Population Has Not Improved With Time

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Where Are We Now?

During the last decade, THA design has evolved with a greater focus dedicated to failure rates and revision risks. Some improvements (large femoral heads, for example) appear to have lowered

the risk of dislocation [1, 3]. Similarly, the introduction of highly crosslinked polyethylene has considerably decreased wear and osteolysis. On the other hand, the proliferation of hard-on-hard bearings (metal-on-metal or ceramic-on-ceramic) has resulted in new kinds of problems, some of which result in revisions; these include pseudotumors, adverse reactions to metal debris, squeaking, and ceramic insert fracture. It appears that new concepts introduce new risks. Taking this a step further, the development of new prophylactic strategies for reducing blood loss and less-invasive surgical approaches for potentially faster recovery may look promising, but we should be mindful that they could cause new kinds of complications. Other considerations (patient comorbidities, surgeon experience, provider and hospital volume, and patient gender) must also be taken into

account, as they might influence the risk of particular complications. For instance, research suggests that patients treated in hospitals that perform large numbers of THAs each year (more than 400 cases) are less likely to experience short-term complication compared to patients treated at low-volume centers [2].

Although we seem aware of some of the factors that influence the risk of revision surgery, it remains unclear whether THA revision rates have, in fact, improved. Analysis of the risk of THA revision in large populations (such as the Medicare population in this study by Bozic and colleagues) helps us answer that question, and points to some of the causes for the observed differences. In their paper, the authors report a decrease in mid-term (5- and 7-year) THA revision risk during the past 14 years, but they found that the short-term risk has not changed. It seems clear is that mid- and long-term reduction of revision correlates with improvements of THA implants. For example, crosslinked polyethylene leads to declines in wear and osteolysis. However, the main indications for short-term revision

This CORR Insights® is a commentary on the article "Short-term Risk of Revision THA in the Medicare Population Has Not Improved With Time" by Bozic and colleagues available at: DOI: [10.1007/s11999-015-4520-6](https://doi.org/10.1007/s11999-015-4520-6).

The author certifies that he, or any member of his immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

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This *CORR Insights®* comment refers to the article available at DOI: [10.1007/s11999-015-4520-6](https://doi.org/10.1007/s11999-015-4520-6).

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(dislocation, periprosthetic fracture and infection) have not improved.

Where Do We Need To Go?

That finding points to an important direction for future research—a shift in focus away from implant design and towards patient-care elements during the hospital stay and shortly thereafter, potentially reducing the likelihood of early revision after THA. We need to ask questions such as: What is the ideal postoperative THA protocol? Is it necessary to separate preoperative diagnoses according to clinical outcomes after THA implantation? What is the minimal hospital volume that will allow an acceptable level of patient safety? If we set such volume standards, how might this adversely affect access for patients in more remote geographical areas and for less-well-off patients who may not have the means to travel to large referral centers? How do we define better prophylactic antibiotic strategies for each patient? What are the ideal head and cup diameters that allow the best balance in the tradeoff between dislocation and wear properties? How can

we increase our understanding of gait biomechanics after THA? These are huge challenges.

How Do We Get There?

In order to answer the questions above, we will need to use national registries, insurance databanks, large databases with many patient subgroups such as the Nationwide Inpatient Sample or National Surgical Quality Improvement Program, different implant and bearing designs, as well as different postoperative protocols. Long-term randomized comparative trial data are needed to ascertain dislocation revision rates according to head diameter (less or more than 36 mm). To reduce short-term revisions, large femoral heads must be analyzed to ensure that the concept does not cause new complications (groin pain or abnormal gait patterns, for example). Dual-mobility cups should also be studied to identify the most correct indications for their use. Femoral diaphyseal periprosthetic fracture reduction appears to depend on the development of less bone-aggressive implants as hip-resurfacing represents the ultimate goal. Adjuvant

medical treatments to inhibit the effect of periprosthetic osteoporosis could be a new research direction. The risk of infection warrants protocols tailored to individual patients. Cohort analysis of these protocols should be undertaken to assess the efficacy of test infection-prevention strategies [4].

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