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CORR Insights®: Do Rerevision Rates Differ After First-time Revision of Primary THA With a Cemented and Cementless Femoral Component?

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Where Are We Now?

The lack of consensus regarding the best method of component fixation in primary total hip replacement reflects the complexity of the issue. In addition to method of fixation, multiple factors such as implant characteristics, surgical technique, patient demography and comorbidities affect the outcomes in terms of implant survival, pattern of prosthesis-related complications, and functional outcomes. Although some registry data suggest superior implant survival for cemented fixation [4, 5], other registry data show similar revision rates regardless of method of fixation at primary surgery [7]. Nevertheless, there is an increasing use of cementless fixation in primary total hip replacement worldwide even though support for this approach is not unanimous [4, 5, 8].

Since the pattern of implant failure and structural damage differ depending on primary method of fixation, implant survival after revision surgery could potentially differ for cemented and cementless components. While previous research [3, 6] has focused on different revision techniques, to our knowledge, the role of primary fixation in revision outcomes has not been investigated. Using data on first time revision cases from the Danish Hip Arthroplasty Register [1], the current study by Gromov and colleagues aimed to investigate the association between method of femoral component fixation in the primary total hip replacement and the risk of subsequent rerevision.

Gromov and colleagues found that in patients younger than 70 years of age, cementless fixation at the time of index arthroplasty was associated with an increased likelihood of repeat revision surgery, even after controlling for potential confounding variables,

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including age, gender, details on first revision, and hospital volume. The primary fixation method influences why, when, and how revision surgery is performed. It could also be argued that the reason for, the time to, and the characteristics of first time revision should not be adjusted for in the model. By including this information, the influence of fixation method is likely to be underestimated.

Where Do We Need To Go?

Although this study provides novel knowledge on the role of primary femoral fixation at index surgery in the outcomes of revision surgery, it does not contribute to the understanding of whom to recommend for either method. The relative benefits of cemented and cementless implant fixation need to be defined at subgroup or even at the individual-patient level. In order to do so, larger series, improved methodology, longer followup durations, along with an expanded set of determinants (such as activity level, bone quality, and diagnosis at joint) are required.

How Do We Get There?

Given the high number of revisions needed in order to perform robust analyses on the influence of fixation method at index operation on the risk of repeated revision surgery, evaluating these relationships is likely only going to be possible in observational register settings. Being the first of its kind, this study could serve as a model for further research based on arthroplasty populations covered by other registries. Such studies could additionally be expanded in register collaborations, such as the Nordic Arthroplasty Register Association [2], where pooled data from several registers could be analyzed.

Attempts to define the best method of implant fixation for all patients likely will be impossible. It seems likely that fixation choice will need to balance a number of important factors, such as age, activity level, and bone quality. The way forward is to create algorithms providing individualized information on risks and benefits to guide the surgeon and the patient in the decision of implant fixation.

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