

Dislocation after Elective Total Hip Arthroplasty: A Study of the National Cumulative Dislocation Rate Using a Linked Database, Based on a National Arthroplasty Register

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INTRODUCTION:

Dislocation after elective total hip arthroplasty (THA) is a well-known complication and a common reason for revision surgery. While registers report on revisions for dislocation, a true dislocation rate following THA is difficult to ascertain. In this study, we explored the dislocation rate, the association between bearing size and type, approach and dislocation, recurrent dislocation, and revision. Specifically, the research project wanted to study the following research questions: a) What is the cumulative dislocation rate after elective THA in Sweden at different time points following surgery? b) How does the dislocation rate differ when stratified for approach or bearing size and type and adjusted for relevant patient- and surgical-related factors? c) Is there a difference in patient and surgical characteristics between the patients that do get revised and those who don't after dislocation following elective THA?

METHODS:

We designed a longitudinal cohort study linking a well-established national arthroplasty register with the national patient register, including patients with a unilateral elective THA from 1999 to 2014. The total dislocation rate, proportion of patients having reoccurring dislocations, revision rate, and revision rate for instability were recorded. With the aim to describe cumulative dislocation rates, we sought for any potential diagnostic and procedural codes from the linked database indicating occurrence of this complication. Patients were followed up until revision, death, second hip arthroplasty for any reason, or until the end of the study period. Kaplan-Meier survival analyses and Cox multivariable regression models were fitted to calculate hazard ratios (HR) for the complete cohort and following stratification for approach and bearing size and type.

RESULTS:

A total of 145,062 patients with elective unilateral THA and complete data were available for analysis (flowchart). The median follow up was 4.2 years.

The dislocation rate was 2.0% after 1-year (fig1), while the revision rate due to dislocation was 0.3% in the same period. Patients with a posterior approach group (PA) are more likely to experience a dislocation (fig2). At 1-year, the dislocation rate was smaller in the dual mobility group (DMC-THA) than in the conventional THA with a head size of 32mm (cTHA=32) (0.2 versus 1.6%) (fig3).

Using a Cox regression of time to first dislocation stratified by approach c-THA<32 shows an increased HR for dislocation for both approaches (1.40 (1.25-1.58) and 1.49 (1.25-1.77) respectively)(table1). In the PA group there is a reduced HR when using a c-THA>32 and DMC-THA (0.62 (0.48-0.80) and 0.22 (0.11-0.42) respectively) (table1).

The number of patients suffering a second dislocation is 23.9% (22.6-25.1) at 30-days, raising to 52.7% (51.2-54.1) at 1-year. In total, 11.6% and 24.1% of patients with a confirmed dislocation were revised within 1-year and 10-years respectively (fig4). Patients who have suffered a dislocation are more likely to undergo revision within one year if they are younger, male, do not have primary OA, have had their primary surgery using a lateral approach, have gotten any other fixation than a fully cemented implant, a larger head size, have a higher level of preexisting comorbidity, previously diagnosed neurological disorder, and/or previously recorded spinal problems.

DISCUSSION AND CONCLUSION:

The dislocation rate after elective THA was expectedly considerably higher than the revision rate for this reason. Revision for dislocation clearly underestimates the dislocation burden after elective THA. As dislocation has implications for the patient as well as the healthcare system, surgical choices can reduce the risk of dislocation. When using a posterior approach, a bigger bearing size (=36mm) and DMC-THA might be better choices. When using a lateral approach it might be better to avoid smaller bearing size (<32mm). Among patients with dislocation, those revised within 1 year differed considerably

