

Do Joint Registries Report True Rates of Hip Dislocation?

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Published online: 27 March 2012
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Abstract

Background Despite advances in primary THA, dislocation remains a common complication. In New Zealand (NZ), dislocations are reported to the National Joint Registry (NJR) only when prosthetic components are revised in the treatment of a dislocation. Closed reductions of dislocated hips are not recorded by the NJR.

Questions/purposes We compared the true dislocation rate for patients receiving primary THA in the Wellington region with the rate reported by the NZ NJR for the same group of patients.

Methods The NZ NJR identified 570 patients undergoing primary THA from January 1, 2008, to December 31, 2009, with addresses in the Wellington region. The mean age was 67.5 years (range, 27–96 years). The minimum followup was 2 years (mean, 3 years; range, 2–4 years).

Results Six patients required revision of at least one component for dislocation. There was 100% agreement between the hospital database and the NJR. Using the NJR

criteria of revision of any component as an end point, the dislocation rate in the Wellington region after primary THA was 1.05%. The hospital database identified a further eight patients who presented with a dislocation of their primary THA and underwent a closed reduction. These patients were not recorded by the NJR. The true rate of all dislocations, which includes closed reductions, was 2.46%. **Conclusions** This article documents the discrepancy between the NZ NJR reported rate of revision for dislocation and the true rate of dislocation in primary THA. We recommend documentation of all dislocations by NJR in their database to allow more accurate comparisons between centers and research outcomes.

Level of Evidence Level IV, clinical research study. See Guidelines for Authors for a complete description of levels of evidence.

Introduction

Primary THA is one of the most successful orthopaedic procedures for improving pain and restoring mobility. Dislocation remains a common and clinically important complication with a reported incidence varying widely from 0.3% to 15% [1, 2, 12, 15]. The functional and financial consequences are often underestimated [3, 16] and dislocation is associated with a higher incidence of mortality compared with a nondislocating cohort [5].

National joint registries (NJR) have been introduced in many countries to provide valuable audit information to improve orthopaedic practice and monitor survival of various implants. The New Zealand (NZ) joint registry [11] has been active since 1999 and all orthopaedic surgeons working in NZ are required to provide data for the registry

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Each author certifies that his institution approved the human protocol for this investigation and that all investigations were conducted in conformity with the ethical principles of research.

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with a nationwide compliance rate of 98%. The NZ registry only records dislocations that have required revision of component(s). Closed reduction in the emergency room or operating room is classified as nonoperative treatment and not recorded on the NZ NJR.

The aim of this study is to document the difference between the NZ NJR reported rate of revision of primary THA and the true dislocation rate for the same group of patients.

Materials and Methods

From the NZ NJR we obtained details of all patients who received a primary THA performed in the Wellington region over a 2-year period, from January 1, 2008, to December 31, 2009. This allowed a minimum 2-year followup to determine the need for revision surgery. A total of 866 primary THAs were performed during this period either in a Wellington public hospital or the three nearby private institutions. We excluded 296 patients with postal addresses outside the ambulance service's catchment area for our hospital. The remaining 570 patients who underwent primary THA from 12 surgeons were included in the study. There were 264 males and 306 females with a mean age of 67.5 years (range, 27–96 years). The minimum followup was 2 years (mean, 3.0 years; range, 2–4 years). As of December 31, 2011, 28 patients had died, including one patient who had required revision of her acetabular component for dislocation.

For these 570 patients, we obtained a list of all those who required revision of one or more components for dislocation from the NZ NJR. From the Wellington hospital database we obtained a list of all patients admitted with a diagnosis of dislocation of a primary THA between January 1, 2007, and December 31, 2011. This allowed identification of patients from the original study group who had a closed reduction for dislocation but did not have an operation and therefore did not appear in the NJR database as a dislocation. We termed this the true rate of dislocation. We compared the dislocation rate reported by the NJR with the true rate of dislocation for the same group of 570 patients.

Results

Of the original 570 patients in the study group, six patients required revision of one or more components for dislocation, giving a revision rate for dislocation in the Wellington region of 1.05%. This is similar to the national revision rate for dislocation reported from the NZ NJR of 0.982%. All six cases had their revision procedure performed at Wellington Hospital and so appeared in both the hospital database and the NZ NJR database. There were no cases of open reduction without exchange of THA components. Of these six revisions, three occurred in males, and the mean age was 70 years (range, 58–81 years). The mean time to revision was 243 days (range, 20–687 days). All femoral heads implanted during this period were 28 mm in diameter.

Analysis of the hospital database revealed a further eight patients from the group admitted to our hospital with a diagnosis of dislocation of their primary THA. All of these patients underwent a closed reduction of their THA either in the emergency room under sedation or in the operating room under a general anesthetic. Of these eight patients, six had dislocated once, one twice, and one three times. These patients were not recorded by the NZ NJR. The true rate of all dislocations for patients undergoing a primary THA in the Wellington region was 2.46%. We found no difference between the posterior and lateral approaches, most likely as a result of the low number who dislocated (Table 1).

Discussion

All NJRs, including that of NZ, report the rate of revision of THA components for dislocation. These rates do not include patients undergoing THA who require a closed reduction but no operation for the dislocation. Dislocation after THA remains the leading cause of hip revision in the NZ NJR, accounting for one-third of all revisions [11]. The NZ NJR reports a national revision rate for dislocation of 0.982%, which is very similar to the registry rate in the Wellington region of 1.05%. We may be able to extrapolate these data to obtain a true NZ national dislocation rate of 2.46%, which is comparable with other series. A large study of 10,500 primary THAs by Woo and Morrey [17]

Table 1. Dislocation rate for primary THA comparing the National Joint Registry (NJR) and the hospital database

Approach	Number of THAs performed	Number revised for dislocation (NJR)	Percent dislocation (NJR)	Total number of dislocations (hospital database)	Percent dislocations (hospital database)
Lateral	196	2	1.02	4	2.04
Posterior	362	4	1.10	10	2.76
Anterior	12	0	0	0	0
Total	570	6	1.05	14	2.46

reported a dislocation rate of 3.2% and many subsequent workers have published rates between 2% and 4% [7, 8]. Closed reductions of dislocated hips are not recorded by the NJR. We therefore compared the true dislocation rate for patients receiving primary THA in the Wellington region with the rate reported by the NZ NJR for the same group of patients.

Readers should be aware of the limitations of our study. First, the true rate of dislocation may be underreported because we could not identify any patient who may have had a primary THA in Wellington but a dislocation requiring closed reduction outside of our region. The NZ NJR has a 98% compliance rate [11], giving us confidence that any hips requiring revision for dislocation at another institution would have been reported to the NJR. None were identified, suggesting that, where possible, patients undergoing a THA in NZ who have a complication are transported to the institution where the procedure was performed. Second, the minimum followup was 2 years and because the cumulative risk increases with time, longer followup would increase the rate of dislocation. However, more than $\frac{3}{4}$ of all dislocations reportedly occur within the first year postoperatively [10], and most of these occur within the first 6 weeks [9, 13]. Thus, we do not anticipate the overall dislocation rate would be substantially different. A longer minimum followup would almost certainly increase the dislocation rate but most likely reduce the discrepancy between registry and true dislocation rates, because late hip dislocations may be the result of factors such as wear and loosening, which are more likely to require open revision [14]. The longer followup of the Swedish and Norwegian NJRs, with an associated higher incidence of revision for dislocation, confirms this (Table 2). Third, indications for deciding whether a patient should undergo a closed reduction or an open revision for a dislocated THA were not standardized for this study. Treating surgeons at our institution tended to offer a revision to the patient if they had experienced three or more dislocations, but any deviation from this guideline would have an effect on the discrepancy between the registry and the true dislocation rate.

Table 2. Revision for dislocation of primary THA reported by National Joint Registries

Registry	Year started	Total number of registered primary THAs	Number revised for dislocation	Percent revision rate for dislocation
Swedish [4]	1979	315,055	4579	1.4533
Norwegian [6]	1987	145,695	2506	1.7200
New Zealand [11]	1999	71,057	698	0.9823
Australian [2]	2000	211,114	1883	0.8919

A potential problem with hospital databases is that closed reductions of THA occurring in the emergency room are not recorded. It is policy at our hospital to keep all patients for 6 hours after reduction of a dislocated THA in a short-stay unit to ensure no anesthetic consequences even if only sedation is used. All patients entering the short-stay unit are admitted, requiring them to be entered into the hospital database. This policy not only allows our hospital to receive remuneration from its national funding authority, but allows identification through admission data of all patients presenting at our institution with a diagnosis of a dislocated THA.

We propose that NJRs should in some way attempt to identify the true dislocation rate for THA. The authors are currently investigating the possibility of adding several dislocation questions to the NZ NJR THA questionnaire sent to patients undergoing THA. The NZ NJR is unique among registries because, from its inception in 1999, it has recorded patient-related outcome measures (PROM). Twenty percent of randomly selected patients who undergo a THA in NZ are mailed an Oxford Hip Score at 6 months, and the same patients receive a further questionnaire at 5 years. In 2010, 1472 patients received questionnaires with a response rate of 70%, meaning PROMs from 1030 patients with primary THAs were available for analysis. Stationary and mailing costs, approximately NZ \$30,000.00/year for all registered joints, is already budgeted into the NZ NJR, so no additional costs, other than data analysis, are anticipated. We propose that each patient be asked a question as to whether they have required transport either by ambulance or some other means to a hospital for a dislocated artificial joint. The date of this episode will be requested as well as if there were any further episodes.

We conclude that joint replacement registries report a rate of revision for dislocation, which is 43% (six of 14) of the true dislocation rate. It would seem prudent that all dislocations be recorded in a NJR, including those that were reduced without the changing of components. This would allow more transparent and open reporting of dislocations, a better informed patient, and easier comparison between centers and research outcomes.

Acknowledgments We thank the surgeons of the Wellington region for allowing us access to their NJR data (anonymous), the IT staff at Wellington Hospital, and the staff of the NZ NJR in Christchurch, specifically Toni Hobbs and Professor Alastair Rothwell.

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