

11241 - The Challenge of Multiple Revision Hip Arthroplasty: A Pilot Study

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Background

Incidence of revision total hip arthroplasty (THA) is increasing worldwide, with re-revision surgery therefore also a growing phenomenon. Yet due to the relative short follow up in comparison to primary and revision hip arthroplasty, less is known about cohorts of patients who have had multiple revision surgeries.

The rationale behind this research was to undertake a pilot study in advance of a comprehensive retrospective study to evaluate outcomes of multiple revision hip surgeries performed at our large tertiary referral joint reconstruction unit.

Questions/Purposes

- What are the indications for multiple revision hip arthroplasties?
- Do these indications change as the number of revision procedures increases?
- How long do multiply revised implants tend to last before they need further revision?
- Do the times to revision change as the number of revision procedures increases?

Patients and Methods

Retrospective data collection from hospital notes of a sample of patients who had revision hip surgery at our centre between January 2003 and December 2013. Only patients who had a history of multiple (2 or more) revisions were included, a revision being defined as a completed single or two-stage revision.

Results

A sample of 52 patients were identified as having had multiple hip revisions, but only 42 had a complete data set. The oldest primary total hip arthroplasty was from 1971 and the most recent was implanted in November 2007. The oldest revision hip was performed in 1983 and the most recent revision surgery was performed in November 2013.

29 of 42 patients (69.0%) had two completed hip revisions, 9 had three revisions (21.4%), 3 had four revisions (7.14%) and 1 (2.38%) patient required 7 single-stage revisions.

First revision surgery was performed for aseptic loosening in 33 cases (78.6%). First revisions for infection accounted for 3 cases (7.14%) and for dislocations in 2 cases (4.76%). Primary revisions were also required for polyethylene wear, ceramic head fracture, acetabular fracture and a misplaced acetabular component (1 case each, 2.38%). Mean time to first revision was 9.06 years post-primary THA (0.04-35.4 years).

Second revision surgery was for aseptic loosening in 22 cases (52.4%), infection in 6 cases (14.3%) and for dislocations and for pain in 2 cases each (4.76% each). Other causes for second revision included component issues such as implant impingement and failure of an acetabular ring reconstruction (1 case each, 2.38%) and 1 case was revised due to an acetabular fracture (2.38%). Mean time from first to second revision for all causes was 7.51 years (0.06-19.3 years).

Third revisions were for infection in 5 out of 13 instances (38.5%), aseptic loosening in 4 cases (30.8%) and dislocations in 3 cases (23.1%). Mean time to third revision was 6.33 years (0.56-21.0 years). Fourth revisions were caused by aseptic loosening in 2 cases (66.7%) and infection in 1 instance (33.3%). Mean time from third to fourth revision was 4.10 years (1.87-7.48 years). Finally there was one patient who required seven single-stage revision surgeries in total, some in close succession, for combinations of loosening and dislocation.

Discussion and Conclusions

First revisions were mainly caused by aseptic loosening, with infection responsible for a smaller proportion of cases. Second revisions were also mainly for aseptic loosening, however the number of revisions for infection doubled when compared with first revisions. For patients who required a third revision, once again this infected case burden more than doubled when compared to second revision indications. This highlights the concern that with each re-revision, the risk of infective complications is higher.

Mean time from primary THA to first revision was 9.06 years and mean time from first to second revision was 7.51 years. Subsequent revisions, which were required in just under a third of this sample, occurred after a shorter duration, with a mean 6.33 years from second to third revision. With each revision, average duration to the next surgery if required was shorter.

These results highlight some of the challenges faced in managing the progressively complex and vulnerable multiply revised hip, namely increasing infection risk and the need for earlier revision with each re-revision surgery.

We acknowledge the fact that this is a pilot study and therefore a full review of all patients who have had multiple revision hip surgeries at our centre is planned.