

Outcome Of Revision Surgery For Infected Total Knee Arthroplasty: Do Surgical Strategies Matter?

Orthopaedics / Knee & Lower Leg / Joint Replacement - Secondary

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Background

Periprosthetic joint infection (PJI) after knee arthroplasty surgery remains a serious complication and the incidence varies from 0.5% to 3% one year after primary surgery. Yet, there is no international consensus on the surgical treatment of PJI after primary knee arthroplasty surgery.

Objectives

The purpose of this study was to assess the survival rates, risk of re-revision, and mortality rate for the different surgical strategies (1- or 2-stage implant revision, and irrigation and debridement (IAD) with implant retention) used to treat PJI.

Study Design & Methods

The study was based on data from the Norwegian Arthroplasty Register (NAR). Nearly 62000 primary total knee arthroplasties without patella component were reported to the NAR in the period 1994 to 2016. Of these 1.1% (n=653) were revised due to PJI and were included in this study. Kaplan-Meier (KM) and Cox regression analyses were performed to assess the survival rate of this surgery and the risk of further revisions with adjustment for gender, primary diagnoses, and age at revision surgery. We also studied the mortality rates at 90 days and 1 year after revision for PJI.

Results

Of the 653 revisions done for infection. IAD procedures were performed in 329 knees, 1-stage revision in 81 knees, and 2-stage revision in 243 knees. During the follow-up period, 19% of the IAD cases, 12% of the 1-stage revision cases, and 12% of the 2-stage revision cases were re-revised due to PJI. With any causes of re-revision as the end-point the 5 year KM survival of the index revision procedure was 76% after IAD, 82% after 1-stage revision, and 84% after 2-stage revision. Similarly, the 5-year KM survival with a re-revision for infection as the end-point was 79% after IAD, 88% after 1-stage revision, and 87% after 2-stage revision. There was no statistically significant differences in risk of re-revision

between 1- and 2-stage revision for any causes (RR=1.4; 95% CI: 0.9-2.6) nor did we find any difference for deep infection (RR=1.1; 95% CI: 0.5-2.3) as end-point. In an age stratified analysis, however, the risk of re-revision for any causes was 3 times increased after 1-stage revision in patients over 70 years compared to 2-stage revision patients (RR=3.0, 95% CI:1.1-8.3,) but the risk was similar for deep infection as the end-point. Age had no statistically significant effect on the risk of re-revision for cases revised with the IAD procedure. The 90-days and 1-year mortality rate after revision for PJI was 2.1% and 3.6% after IAD, 1.2% and 1.2% after 1-stage revision, and 0.4% and 1.6% after 2-stage revision respectively. There were no statistically significant differences in mortality rate according to revision procedure.

Conclusions

IAD had good results compared to earlier published studies. Despite 1-stage revisions had a 3 times higher risk for re-revision compared to 2-stage revisions in older patients (> 70 years), the overall outcomes after 1-stage and 2-stage revision were similar.