

A review of registry research

Introduction

As always for this section, we have chosen some articles we felt to be of general interest that were based on joint replacement registries. In this issue, we look to further unpick evidence surrounding the use of revision joint replacement networks, as well as review a Nordic article interested in the outcomes of hip replacement in patients aged over 90 years. Finally, we discuss an interesting article looking at the impact of including patients in patient-reported outcome measure (PROM) results who do not initially respond to questionnaires.

Impact and effects of revision knee networks

In recent years, there has been a move towards establishing revision arthroplasty networks driven in part by the Getting It Right First Time (GIRFT) initiative.¹ The aim to centralize less frequent and more complex surgeries to create high-volume centres is based on a growing body of evidence that higher-volume centres are associated with lower rates of perioperative adverse events and re-revision surgery.^{2,3} However, a recent study by van Rensch et al⁴ failed to observe this association within the Dutch Orthopaedic Arthroplasty Register (LROI). The authors evaluated the association between hospital revision knee arthroplasty (rKA) volume and overall second revision rate by analyzing 8,072 cases of first rKA recorded on the LROI. These operations were performed between 2010 and 2020 across 88 hospitals, with a median follow-up of 3.7 years (0 to 13.7). A total of 1,460 second revisions (18.1%) were recorded at the final follow-up. Revisions were divided into intermediate (unicompartmental knee arthroplasty (UKA) to total knee arthroplasty (TKA), patellofemoral arthroplasty (PFA) to TKA, solitary tibial or femoral component revision with or without insert exchange and/or patella component) and major (revision

of a TKA where tibial, femoral, and/or patellar components are revised to a total condylar, hinged, or tumour prosthesis). Minor revisions as defined by the authors (insert exchange, patellar component placement, and/or revision of patellar component) were excluded. Three volume categories were defined: < 12, 13 to 24, and > 25 rKAs performed annually. This study found no statistically significant difference in the incidence of second rKA between the three volume categories after adjusting for potential confounders. The lack of correlation between case volume and survival of revision total knee arthroplasty (rTKA) in the Netherlands may prove surprising considering that many previous studies have observed an association. In 2021, Yapp et al⁵ utilized data from the Scottish Arthroplasty Project and observed that increasing hospital case volume appeared to be “independently associated” with a lower risk of re-revision. Similarly, in 2020, Halder et al² observed that hospital volume was associated with one-year revision among 23,644 aseptic rTKAs recorded in the German national health-care insurance database, with a higher risk for re-revision seen in hospitals performing fewer than 25 rTKAs annually.

In the study we present here, van Rensch et al⁴ looked at hospital volume as opposed to surgeon volume. High hospital volume is important to ensure that appropriate perioperative pathways are developed and that theatre staff are familiar with the procedure; however, in the case of surgeon volume, individual surgeon skill development may be more important.⁶ Furthermore, revision is only one outcome measure; the LROI has been collecting data on PROMs since 2014, and it would be useful to evaluate for any difference in PROMs between volume categories which may support centralisation.

The development of a revision hub does not necessarily have to involve centralization,

and increasing surgeon or centre volume, to be of benefit. In *The Bone & Joint Journal* in 2023, Bloch et al⁷ discussed the importance of collaborative multidisciplinary team (MDT) discussion in improving outcomes following rTKA and revision total hip arthroplasty (rTHA).⁷ A revision arthroplasty network was established across five East Midlands hospitals in 2015, which involved weekly MDTs for discussion of all upcoming rTKA and rTHA procedures. Using the Hospital Episode Statistics database, Bloch et al⁷ investigated the rate of re-revision surgery pre- and post-network development and compared this to all hospitals across England as a control group. There were 1,028 rTKAs performed within the East Midlands Specialist Orthopaedic Network (EMSON) between 2011 and 2018. The cumulative incidence of re-revision surgery within one year of index rTKA fell from 11.6% before the intervention to 7.4% after; this improvement was not found to be statistically significant. However, there was a significant improvement in the number of complications seen at one- and two-year follow-up, and on comparative interrupted time series analysis (CITSA) there was a significant immediate improvement in one-year revision rates when compared with the rest of England. These results are limited by the small sample size, especially in the 90-day periods used for CITSA analysis, and future work with a larger patient cohort may help validate these findings. The focus of EMSON was to disseminate best practices, broaden experience, and use an evidence-based approach to improve outcomes rather than centralize care to one hospital or focus on surgeon volume. The network facilitated referral to the major revision centre based on the clinical opinion of the referring surgeon. Throughout the study only 4% of cases were transferred between hospitals, suggesting that most revisions were performed in