Unicompartmental compared with total knee replacement for patients with multimorbidities: a cohort study using propensity score stratification and inverse probability weighting

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Plain English summary

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We compared the risks and benefits of partial and total knee replacements in NHS patients with a complex medical history who would normally be excluded from randomised trials on this topic. We used information that was collected during hospital appointments for people who had a knee replacement between 2009 and 2016. It is difficult to directly compare the two groups because each individual patient has a different medical history. We tested advanced statistical methods to account for these differences.

In stage 1, we showed that some of these advanced statistical methods could replicate the results of a recently published surgical trial using routine data from the NHS. We compared patients in the trial with similar patients who were operated on in the NHS. Three of the proposed methods showed results similar to those obtained from the Total or Partial Knee Arthroplasty Trial (TOPKAT).

In stage 2, we used the successful methods from stage 1 to study the risks, benefits and costs of partial and total knee replacement surgery in patients with complex medical histories. Two of the statistical methods found that patients who had a partial knee replacement had less self-reported pain and better function after surgery than patients who had a total knee replacement. All three methods found that partial knee replacement was safer, was associated with a lower risk of blood clots (a known complication of knee surgery) and had lower mortality over 5 years. However, patients who had a partial knee replacement were twice as likely as those with a total knee replacement to need a second surgery within 5 years.

We found that partial knee replacements were less costly to the NHS and were associated with better overall quality of life for patients than total knee replacement.

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This report

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