

Effectiveness of hip or knee replacement surgery in terms of quality-adjusted life years and costs

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Background Concurrent head-to-head comparisons of healthcare interventions regarding cost-utility are rare. The concept of favorable cost-effectiveness of total hip or knee arthroplasty is thus inadequately verified.

Patients and methods In a trial involving several thousand patients from 10 medical specialties, 223 patients who were enrolled for hip or knee replacement surgery were asked to fill in the 15D health-related quality of life (HRQoL) survey before and after operation.

Results Mean (SD) HRQoL score (on a 0–1 scale) increased in primary hip replacement patients (n = 96) from 0.81 (0.084) preoperatively to 0.86 (0.12) at 12 months (p < 0.001). In revision hip replacement (n = 24) the corresponding scores were 0.81 (0.086) and 0.82

(0.097) respectively (p = 0.4), and in knee replacement (n = 103) the scores were 0.81 (0.093) and 0.84 (0.11) respectively (p < 0.001). Of 15 health dimensions, there were statistically significant improvements in moving, usual activities, discomfort and symptoms, distress, and vitality in both primary replacement groups. Mean cost per quality-adjusted life year (QALY) gained during a 1-year period was € 6,710 for primary hip replacement, € 52,274 for revision hip replacement, and € 13,995 for primary knee replacement.

Interpretation Hip and knee replacement both improve HRQoL. The cost per QALY gained from knee replacement is twice that gained from hip replacement. ■

Guest editorial

Hip, knee and revision hip replacement – are they as clinically and cost effective as we think?

Modern medicine is expensive and thus societal choices around resource allocation are important to ensure maximal benefit. Total hip and knee replacement are two of the commonest elective surgical treatments performed in the developed world and have been shown to be effective in relieving pain and improving function in those with advanced osteoarthritis. However, treatments need to be both clinically effective and cost effective in order to justify their widespread use, particularly in healthcare systems that are subsidised by general taxation, as is the practice in most European countries.

Comparing different treatments for different conditions is both difficult and contentious. Quality adjusted life years (QALYs) is one method of doing this and is predicated on the idea that the treatment cost of delivering a quantifiable unit of improvement in health can be measured. This will allow us to both contrast the value of treatments and ascertain levels of “willingness to pay” for health gain.

Rasanen and colleagues from Finland measured the quality of life gained following both primary and revision hip replacement and primary knee replacement by cost incurred to achieve that gain. Primary hip and knee replacement improved the mean quality of life scores of patients, but improvements after revision hip replacement were neither clinically nor statistically significant. Furthermore, the cost per unit of improvement was twice as high for TKR as THR

and nearly eight times as high for revision compared to primary total hip replacement.

This paper is a landmark as it elegantly demonstrates the effectiveness and cost effectiveness of both hip and knee replacements, whilst showing what many surgeons suspected that knee replacement results in slightly lower gains, compared to hip replacements, at higher costs. Probably the most interesting finding is that revision hip replacement results in little or no improvement in overall quality of life despite being very expensive. This finding should cause surgeons to reflect on their practice. Certainly, many revisions are performed to prevent symptoms worsening (such as after fracture or infection) and this analysis compares before and after rather than the sequelae of treatment versus no treatment. However, many revisions, particularly after knee replacement, are performed to treat stable conditions such as persistent pain. Even though the work presented here was published in 2007, we as a community have not yet established the utility, efficacy and wisdom of performing revision arthroplasty for stable conditions affecting pain and function. The findings of Rasanen and colleagues are as pertinent today as they were in 2007.

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