

Patient reported outcome measures following knee and hip replacement for individuals with Rheumatoid arthritis: evidence from routinely-collected data

Edward Burn¹, Nigel K Arden¹, Christopher J Edwards², Cyrus Cooper¹, David W Murray¹, Rafael Pinedo-Villanueva¹, Daniel Prieto-Alhambra¹

¹Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, ²NIHR Clinical Research Facility, University Hospital Southampton

Background

Most estimates of patient-reported outcome measures (PROMs) following total knee replacement (TKR) and total hip replacement (THR) are from individuals with osteoarthritis (OA). It is not well-known whether individuals with rheumatoid arthritis (RA) achieve similar results.

Objectives

To assess the association between RA, relative to OA, with 1) post-operative PROMs and 2) the change between pre- and post-operative PROMs for TKR and THR.

Methods

PROMs for TKR and THR between 2009 and 2015 identified using Hospital Episode Statistics (HES), with diagnosis of RA or OA identified in the Clinical Practice Research Datalink (CPRD). The condition-specific Oxford Knee Score/ Oxford Hip Score (OKS/ OHS), with pain and function subscales, and EuroQol 5-dimension (EQ-5D) overall quality of life were collected prior to and six months following surgery. OKS/ OHS ranges from 0 to 48, OKS/ OHS function from 0 to 20, OKS/ OHS pain from 0 to 28, and EQ-5D from -0.5 to 1, with higher scores being better for each. The effect of RA, relative to OA, on post-operative PROMs was estimated using multivariable linear regressions, which adjusted for age, gender, comorbidities (measured by the Charlson score) and socioeconomic status (measured by IMD Quintile). The effect of RA, relative to OA, on change in PROMs was assessed by adding pre-operative scores as an explanatory factor in the models.

Results

2,212 (2,070 OA and 142 RA) and 2,128 (2,030 OA and 98 RA) individuals informed the analyses of TKR and THR, respectively. A diagnosis of RA, relative to OA, was associated with a one-point lower post-operative OKS and a 3-point lower OHS, although only the latter difference was significant. These lower estimates of post-operative OKS/ OHS were primarily due to significantly lower scores on the function subscales. The estimated change in OKS/ OHS, after accounting for pre-operative scores, was similar for those with RA and OA. RA was also associated with a 0.1 lower post-operative EQ-5D, which was significant for both TKR and THR. The expected change in EQ-5D remained significantly lower for those with RA. The effect of diagnosis from the models is summarised in Table 1, with estimated change in OKS/ OHS shown in Figure 1.

Conclusions

Individuals with RA undergoing TKR and THR appear to achieve similar improvements in condition-specific scores as those with OA, although the gain in function may be slightly less. The gain in overall quality of life is less for those with RA, however, which is likely due to the systemic nature of the disease.

Table 1. Effect of RA, relative to OA, on 1) total post-operative scores and 2) change in scores. Estimated coefficients with 95% confidence intervals. Significant differences in bold.

	TKR		THR	
	Total	Change	Total	Change
OKS/ OHS (0 to 48)	-1.33 (-2.92 to 0.27)	-0.07 (-1.59 to 1.46)	-2.80 (-4.43 to -1.18)	-1.57 (-3.15 to 0.01)
-OKS/ OHS function (0 to 20)	-1.22 (-1.90 to -0.54)	-0.50 (-1.13 to 0.14)	-1.91 (-2.75 to -1.07)	-0.97 (-1.76 to -0.18)
-OKS/ OHS pain (0 to 28)	-0.13 (-1.12 to 0.87)	0.34 (-0.63 to 1.30)	-0.89 (-1.80 to 0.02)	-0.66 (-1.56 to 0.25)
EQ-5D (-0.5 to 1)	-0.12 (-0.16 to -0.08)	-0.09 (-0.13 to -0.06)	-0.12 (-0.17 to -0.08)	-0.08 (-0.13 to -0.04)

Figure 1. Estimated effect of diagnosis on expected change in OKS/ OHS by pre-operative score

