

Long-term Mortality in Patients Undergoing Total Knee Arthroplasty: Causes of Death and Predictors of Mortality

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INTRODUCTION:

Knee osteoarthritis (OA) is a common multifactorial joint disease that causes severe pain and is a leading cause of disability in older adults. Cardiovascular diseases have a high prevalence in patients with OA and are the most common causes of death. Total knee replacement (TKR) is a safe and cost-effective treatment for severe pain and walking disability in patients with OA. Although there have been several reports on short-term and mid-term mortality after TKR, to date there have been only few studies on long-term mortality, causes of death, and mortality-related factors associated with TKR.

We aimed to compare the mortality rates between patients with a minimum 10-year follow-up after TKR and the general population and analyze the causes of death. We also intended to investigate the predictors that affect long-term mortality rate.

METHODS:

A total of 601 patients with OA who had been operated on by the same surgeon from July 2005 to December 2011 and with a minimum 10-year follow-up were enrolled. Demographics and clinical parameters of all the patients were collected from the medical records. Confirmation was obtained from the Korea National Statistical Office regarding the survival/death status of all the patients and the cause and date of death of the deceased patients. The observed number of deaths was compared to the expected number of deaths using standardized mortality ratios (SMRs). A Kaplan–Meier estimate and Cox hazard model were used to analyze survivorship and find predictors.

RESULTS:

The overall mortality rate in the cohort (SMR: 0.69; $p < 0.001$) was lower than that in the general population. Among the predictors, neoplasms (SMR: 0.58; $p < 0.05$), circulatory diseases (SMR: 0.65; $p < 0.05$), and digestive diseases (SMR: 0.16; $p < 0.05$) were related to lower cause-specific SMRs. The 5-, 10-, and 15-year survival rates were 94%, 84%, and 75%, respectively. According to the Cox hazard regression analysis, female sex (hazard ratio [HR]=0.56; $p = 0.035$), older age (HR=1.04; $p = 0.01$), higher body mass index (BMI) (HR=0.94; $p = 0.01$), anemia (HR=1.59; $p = 0.02$), and higher Charlson comorbidity index (CCI) (HR=1.60; $p < 0.001$) were significant factors related to long-term mortality after TKR.

DISCUSSION AND CONCLUSION:

TKR is a worthwhile surgery that leads to reduced mortality rates among patients with OA compared to that among the general population, and the predictors that increase long-term mortality are older age, anemia, lower BMI, higher CCI, and male sex.