

Predicting mortality by comorbidity for patients with hip arthroplasty

Prospective observational register studies of a nationwide Swedish cohort

Hip arthroplasty is a common and successful treatment for patients with hip osteoarthritis (OA) and femoral neck fractures (FNF). Most patients with OA are otherwise healthy and will survive decades after surgery. Most patients with FNF are old and frail. Their prognosis is less optimistic but still hard to predict. We showed in this theses that the pre-operative comorbidity burden, measured by the Charlson and Elixhauser comorbidity indices, were not sufficient for accurate predictions of post-operative mortality. Association between Elixhauser and post-operative survival was however confirmed on an aggregated level. We also developed a parsimonious model for 90-day mortality after hip replacement due to OA, with good discriminative ability and calibration. It was externally validated with patients from England and Wales. We have provided a simple web calculator for clinical usage. It might ensure most patients that hip arthroplasty is a safe procedure, even in the presence of pre-existing comorbidity. The thesis is interdisciplinary, covering orthopedics, applied statistics and some elements of data science/machine learning and computer science.

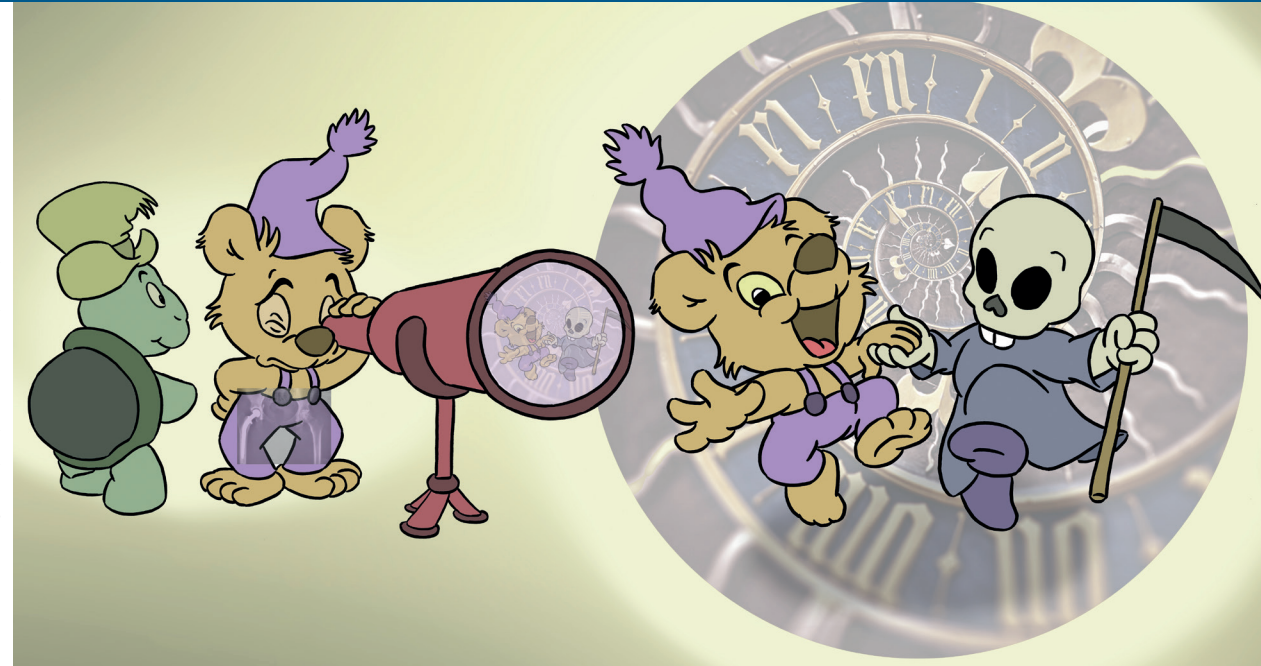


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