

The Impact of Ankle Arthritis Treatment on Quality Adjusted Life Years

Kelly Hynes, MD,BSc, Kevin Wing, MD,FRCS(C), Alastair Younger, MB ChB,ChM,FRCS, Andrea Veljkovic, MD,FRCS(C), Murray Penner, MD,FRCS(C), Jason Sutherland, MSc,PhD

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Introduction/Purpose: Patients living with end stage ankle arthritis suffer significant disability. They are two standard deviations below population scores for all symptom and function SF-36 sub-scales. In addition, they tend to be younger and still active in the workforce. The economic impact of disability attributable to end stage ankle arthritis has not been quantified. In the era of cost-effectiveness, policy makers want to see tangible evidence to justify the cost of treatment. One common metric has been quality adjusted life years (QALYs). The purpose of this study is to determine the gain in QALYs attributable to surgical treatment of end-stage arthritis.

Methods: This study is based on an existing longitudinal cohort of end stage ankle arthritis patients. The study cohort included 180 subjects (45% female, 55% male) with an average age of 61 years, treated with either ankle arthrodesis or arthroplasty. Patients responses to the SF-36 questionnaire were transformed to SF-6D using SF-6D preference based algorithm licensed software (University of Sheffield, UK) to calculate the health utility value at time of surgical consent and at one year postoperatively. The difference in health utility value was assumed to be the gain in health attributable to end-stage ankle arthritis surgery. Using three theoretical valuations per QALY; \$20000, \$50000, and \$100000, based on previously published cost per QALY for other orthopedic conditions, we calculated the valuation per QALY for treating ankle arthritis at one year post surgery.

Results: The mean pre-surgical health utility value was 0.603, and post-surgically it was 0.690, an average gain in health in one year of 0.087 QALY. This is greater than what is considered the minimally important difference threshold. We then calculated the economic gain at QALY valuations of \$20000, \$50000, and \$100000; at \$20000/QALY the cost per QALY is \$1740. At \$50000 the gain is \$4350 cost per QALY, and at \$100000 it is \$8700 per QALY.

Conclusion: From this study cohort, surgically treating end-stage ankle arthritis has a meaningful health benefit for a range of cost per QALYs. Moreover, spending on surgical treatment of end-stage ankle arthritis is cost-effective. These results from this cohort provide valuable empirical insights into treating end-stage ankle arthritis - these findings are meaningful for policy makers faced with resource allocation demands.

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