Outcomes of Modern Megaprostheses for Non-Oncologic Limb Salvage

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INTRODUCTION: Data describing the outcomes following megaprosthetic reconstruction for non-oncologic limb salvage are limited. Previous studies have demonstrated improved joint stability and patient mobility, despite high rates of complications. The purpose of this study was to compare implant survivorship and assess the frequency of complications when compared to amputation.

METHODS: Our institutional joint registry was utilized to retrospectively review 93 patients between 2004 and 2021. Ten patients were excluded due to absence of follow up. We identified 44 distal femoral replacements (DFR), 23 proximal femoral replacements (PFR).and 16 total femoral replacements (TFR). Comparative risk analyses were conducted in R (R Project for Statistical Computing, Vienna, version 4.1.3).

RESULTS: Mean patient age and follow up were 73 ± 11 years and 2.2 ± 2.5 years, respectively. Thirty (36%) patients sustained a complication. Complication rates by megaprosthetic type were 32% (DFR), 43% (PFR), and 25% (TFR). Among the 23 patients who underwent 38 reoperations, 10 (50%) first underwent surgery within 6 months postoperatively, 2 (8.7%) between 6 months and 1 year, 6 (26.1%) between 1 and 2 years, and 5 (11.3%) after 2 years. The most common reasons for reoperation were infection (40%), aseptic loosening (13%), and dislocation (11%). Mortality risk between groups did not differ, but the revision risk did (p = 0.07, 0.02). The 5-year probability of implant revision was 13.5% for DFR (95% CI, 0.04-0.29), 49.1% for PFR (95% CI 0.22-0.72), and 37.8% for TFR (95% CI 0.01-0.83).

DISCUSSION AND CONCLUSION: The use of megaprostheses for non-oncologic limb salvage is associated with significant risk of complications and an elevated revision rate at 5 years. Clinical decision making regarding pursuit of limb salvage versus amputation should take patient age, risk of further surgery, and perception of quality of life into consideration.