Proximal Humerus Fractures in the Elderly: What Treatment Delivers the Best Value?

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INTRODUCTION:
Proximal humerus fractures (PHFs) are the third most common fragility fracture seen in the elderly, and with growing rates of fragility fractures in the US, their economic impact on the healthcare system remains a concern. Optimal treatment remains debated, despite several randomized trials comparing outcomes across treatment options. Few studies have evaluated cost integrated with outcomes or quality-of-life impact to compare the five common PHF treatment options.
METHODS:
A cost-utility analysis was performed to compare nonoperative management, IMN, ORIF, hemiarthroplasty, and RTSA for PHFs in 65-year-old patients. Costs and QALYs were calculated using fixed complication and revision probabilities. Monte Carlo simulations were performed using distributions to model variation over 2-, 5-, and 10-year time horizons. Utility estimates were based on complication status, and costs (2025 USD) from CPT/DRG codes. Incremental cost-effectiveness ratios (ICERs) were calculated, with sensitivity analyses assessing model robustness.
RESULTS:
RTSA yielded the highest QALYs and was the most cost-effective treatment at all time horizons. At 2 years, RTSA produced 1.68 QALYs at a mean cost of $18,065, resulting in the lowest ICER of $27,190/QALY gained. By 10 years, RTSA produced 7.12 QALYs at a cost of $18,236, with an ICER of $7,019/QALY. ORIF and hemiarthroplasty were less effective and more costly than RTSA. Nonoperative care had the lowest costs but the fewest QALYs. At a willingness-to-pay threshold of $50,000/QALY, RTSA was the most cost-effective option in over 50% of simulations.
DISCUSSION AND CONCLUSION:
In the setting of rising fragility fractures and increasing healthcare costs, reverse shoulder arthroplasty offers the highest value among treatment options for complex proximal humerus fractures in adults over 65. It consistently yielded the greatest QALYs and outperformed surgical and nonsurgical strategies across all time points. These findings directly address the lack of cost-integrated outcome data and support RTSA as the preferred treatment strategy in this population.