

A Cost-Effectiveness Analysis of Reverse Total Shoulder Arthroplasty Compared to Locking Plates in the Management of Displaced Proximal Humerus Fractures in the Elderly in a Clinical RCT, The DelPhi Study

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Purpose: Proximal humeral fractures (PHFs) are the third most common fractures in elderly patients and responsible for considerable patient morbidity and high societal costs. Almost one-third of patients are treated operatively, and this trend is increasing. The DelPhi study is a multicenter randomized controlled trial (RCT) comparing 2 operative methods for PHFs. We conducted a health economy study in relation to the DelPhi study to evaluate the cost-effectiveness of surgical treatment with reverse total shoulder arthroplasty (RTSA) compared to open reduction and internal fixation (ORIF) in patients 65 to 85 years old with displaced PHFs.

Methods: A cost-utility analysis (CUA) was conducted alongside a multicenter RCT, taking a health-care perspective. A total of 124 patients with displaced PHFs were randomized to treatment with RTSA (n = 64) or ORIF (n = 60) during a 2-year period. The outcome measure was quality-adjusted life years (QALYs) derived from the generic questionnaire 15D in an intention-to-treat-population. The results were expressed as incremental cost-effectiveness ratios (ICERs), and a probabilistic sensitivity analysis was done to account for uncertainty in the analysis.

Results: The mean QALY in the RTSA group was 1.24 (95% confidence interval [CI] 1.21-1.28) and 1.26 (95% CI 1.22-1.30) in the ORIF group. The mean cost was higher in the RTSA group with mean cost of €36,755 (range, €17,654-€55,855) compared to €31,953 (€16,226-€47,279) in the ORIF group.

Conclusion: In the cost-utility analysis of operative treatment of displaced proximal humeral fractures, there was no significant difference between RTSA and ORIF.