Cost-Effectiveness of Adding Subacromial Decompression to Rotator Cuff Repair for Full-Thickness Tears

Introduction:

Limited evidence evaluates the cost-effectiveness of adding subacromial decompression (SAD) to rotator cuff repair (RCR) for full-thickness rotator cuff tears. Understanding whether SAD provides value beyond standard repair is essential for optimizing surgical decision-making.

Methods:

A systematic review was conducted following PRISMA 2020 guidelines to identify Level I–II studies comparing isolated RCR and RCR with SAD at ≥5-year follow-up. A decision tree model evaluated cost-effectiveness over a 5-year horizon. Costs, revision rates, and utility values (EQ-5D–based) were extracted from the literature. Health benefit was expressed in quality-adjusted life years (QALYs). Incremental cost-effectiveness ratios (ICERs) and net monetary benefit (NMB) were calculated using a $50,000/QALY willingness-to-pay threshold. Monte Carlo and one-way sensitivity analyses accounted for parameter uncertainty.

Results:

Over 5 years, RCR with SAD had a lower mean cost ($33,448) than isolated RCR ($34,593) and produced slightly higher QALYs (1.465 vs 1.454). RCR with SAD demonstrated a positive incremental NMB ($1,695) and a negative ICER, indicating dominance. Probabilistic sensitivity analysis favored RCR with SAD in 99.3% of 1,000 simulations. On one-way analysis, RCR with SAD remained cost-effective with burr costs up to $1,721, added operative time up to 43.6 minutes, and revision probabilities up to 10%.

Conclusion:

Subacromial decompression performed during rotator cuff repair is cost-effective at mid-term follow-up. Despite minor additional operative costs, its capacity to reduce revision rates and enhance health utility renders RCR with SAD the dominant strategy compared with isolated RCR. These findings support SAD as a value-based adjunct to standard repair for full-thickness rotator cuff tears.