

Is Direct-to-Implant Breast Reconstruction Cost Effective? A Cost Utility Analysis of Prosthetic Breast Reconstruction

Naveen M. Krishnan, MD, MPhil; John P. Fischer, MD; Marten N. Basta, BS; Maurice Y. Nahabedian, MD

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INTRODUCTION: Prosthetic reconstruction is most commonly performed using the 2-stage (Expander-implant) technique. However, with the advent of skin-sparing mastectomy and the use of acellular dermal matrices, 1-stage prosthetic reconstruction has become more feasible. Prior studies have suggested that 1-stage reconstruction has economic advantages relative to 2-stage reconstruction despite a higher revision rate. This is the first cost utility analysis to compare the cost and quality of life of both procedures in order to guide patient care.

METHODS: A comprehensive literature review was conducted using the MEDLINE, EMBASE, and COCHRANE databases to include studies directly comparing matched patient cohorts undergoing single-stage or staged prosthetic reconstruction. Six studies were selected examining 791 direct-to-implant reconstructions and 1142 expander-implant reconstructions. Costs were derived adopting both societal and third-party payer (MEDICARE) perspectives. Utilities were derived from surveying an expert panel. Probabilities of clinically relevant complications were combined with cost and utility estimates to fit into a decision tree analysis.

RESULTS: The overall complication rate was 35% for single-stage reconstruction and 34% for expander-implant reconstruction. Our baseline analysis using Medicare reimbursement revealed a cost decrease of \$580.15 and a clinical benefit of 0.90 quality-adjusted life years when performing single-stage reconstructions yielding an incremental cost-utility ratio of -\$647.97. When using societal costs, the incremental cost-utility ratio decreased to -\$5384.26. Sensitivity analysis revealed that single-stage reconstruction remained cost effective when the complication rate was varied or when the use of acellular dermal matrix was considered. Additionally, direct-to-implant reconstruction remained cost effective as long as the quality of life of a successful single-stage reconstruction remained higher than successful expander-implant reconstruction.

CONCLUSIONS: Direct-to-implant breast reconstruction is cost effective when used appropriately. Surgeons are encouraged to consider single-stage reconstruction when feasible in properly selected patients.

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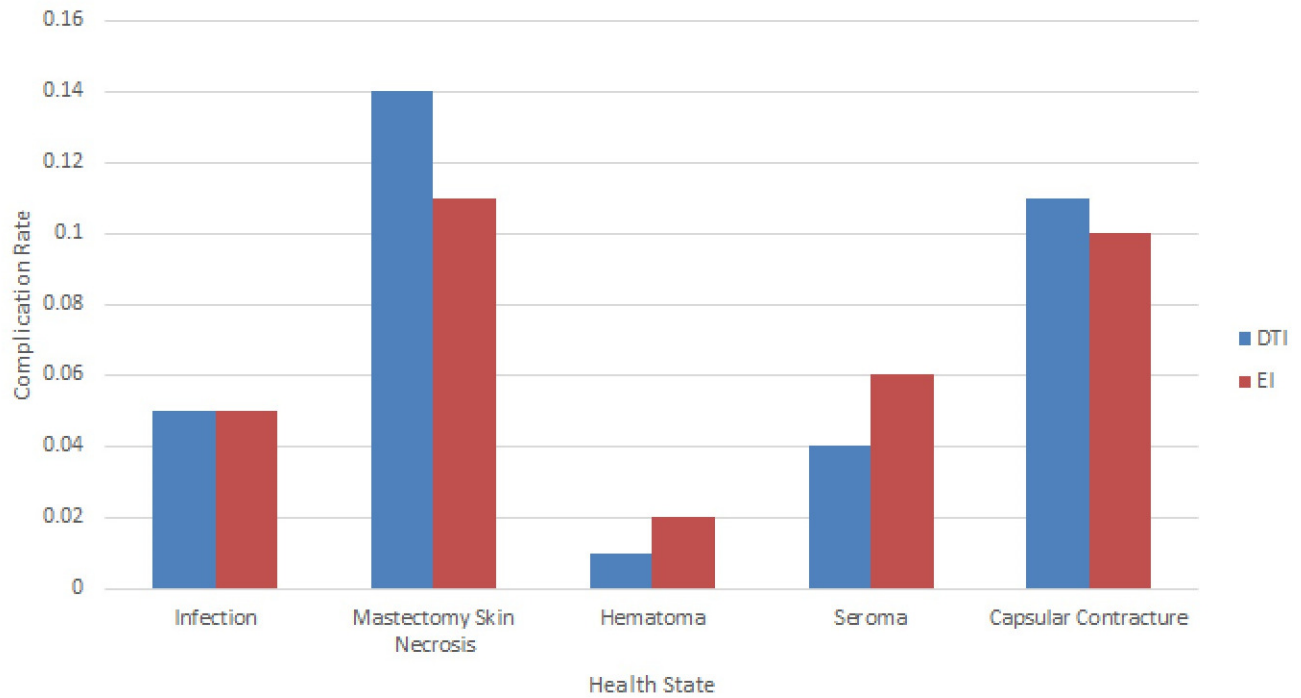
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FIGURE LEGEND:

Figure 1. Complications rates for health states for each reconstructive modality. The overall complication rate for single-stage reconstruction is similar to staged-reconstruction (35% vs 34%). Rates of mastectomy skin necrosis and capsular contracture higher in single-stage reconstructions while seroma and hematoma are higher in expander-implant reconstructions. Infection rates are identical.

Figure 2. Cost Effectiveness Analysis for both methods of prosthetic reconstruction showing single-stage reconstructions to be the dominant strategy when using out-of-pocket costs (societal perspective) for cost and quality-adjusted life years (QALYs) for Effectiveness.

Complication Rates for Health States



Cost-Effectiveness Analysis

