



Cost-Effectiveness of Surgical vs. Filler Rhinoplasty

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Introduction

- Non-surgical rhinoplasty using filler injections has gained popularity in the last decade due to its appeal for patients seeking nose enhancement with reduced risk, upfront costs, and recovery time associated with traditional surgical rhinoplasty.¹
- Liquid rhinoplasty using dermal filler is indicated for correction of mild cosmetic defects including low radix, dorsal hump or concavity, decreased tip projection, refinement, and rotation, as well as minor irregularities after primary rhinoplasty.
- Surgical rhinoplasty especially if paired with cartilage or other soft tissue grafts has the potential to address more extensive cosmetic and functional defects.²
- Objective: Assess the cost-effectiveness of permanent surgical rhinoplasty versus temporary liquid rhinoplasty lasting one year.

Methods

- TreeAge Pro was used to develop a Markov model for cost-effectiveness analysis, simulating the outcomes of surgical and liquid rhinoplasty over time, using the test case of a 30-year-old considering both options and followed over a 40-year-period.
- Primary outcomes included Satisfaction and Failure, and Failed states potentially proceeding to Revision procedures.
- Published pre- and post-procedure Rhinoplasty Outcome Evaluation (ROE) scores were used to inform QALY calculations.^{5,7}
- A willingness to pay for cosmetic rhinoplasty was assumed to be \$12,264 per QALY.⁸
- Incremental cost-effectiveness ratios (ICERs) were computed using both interventions.
- The analysis incorporated a standard global yearly discount rate of 3% and allowed for cost variation of +/- 15%.

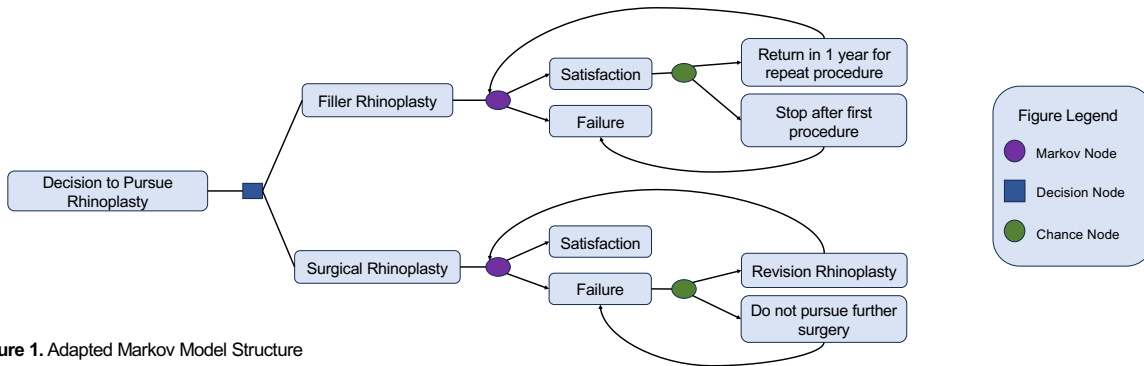


Figure Legend

- Markov Node
- Decision Node
- Chance Node

Figure 1. Adapted Markov Model Structure

Assumptions used in Markov Model

	Initial Cost*	Revision Cost*	Satisfaction Rate	Revision Rate	Pre-Procedure Satisfaction*	Post-Procedure Satisfaction*
Surgical Rhinoplasty	\$8,043 ³	\$15,000	84.6% ⁴	9.8% ⁴	33.75/100 ⁵	87.9/100 ⁵
Liquid Rhinoplasty	\$2,000*	\$2,000 (subsequent procedure)	62% return for revision after 1 year ⁶	62% retention rate after 1 year ⁶	18/100 ⁷	75/100 ⁷

Table 1. Assumptions used in Markov Model

* Obtained from expert opinion from senior author

* Using the Rhinoplasty Outcome Evaluation (ROE) questionnaire⁸

Results

- The average cost of Surgical Rhinoplasty was \$10,319.
- The average cost of Liquid Rhinoplasty was \$5,134.
- The Incremental Cost-Effectiveness Ratio per QALY gained for surgical rhinoplasty was found to be \$10,454 which falls below the established Willingness to Pay threshold of \$12,264.

Discussion

- The findings support the cost-effectiveness of surgical rhinoplasty over liquid rhinoplasty.
- The low ICER for surgical rhinoplasty not only indicates its superior effectiveness but also highlights its cost-effectiveness, positioning it as a more favorable option within the acceptable cost-saving range.

Limitations of our study include:

- A paucity of literature on liquid rhinoplasty outcomes, given its status as a newer cosmetic procedure characterized by significant practitioner variation.
- Wide variations in both liquid and filler rhinoplasty procedures, influenced by practitioner preferences and geographic regions.
- Inherent scope variations between liquid rhinoplasty, which primarily addresses select cosmetic defects, and surgical rhinoplasty, which offers a broader range of cosmetic and functional interventions.

Conclusion

- To the best of our knowledge, this is the first study to assess QALY and cost-effectiveness of liquid versus surgical rhinoplasty.
- Our findings suggest that surgical rhinoplasty is both less costly and more effective than liquid rhinoplasty, falling within the acceptable cost-saving range.
- Future investigations should consider additional factors, including complication rates, recovery time, and variations in perioperative and operating room expenses, to provide a more comprehensive evaluation.

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