Cost-Effectiveness of Transoral Robotic Surgery in the Unknown Primary: The Problem of Extended Dominance

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Dr Byrd and colleagues have published a cost-effectiveness analysis of transoral robotic surgery (TORS) in patients with an unknown primary.¹ Using “proportion of primary sites identified” as the marker of effectiveness, the authors examine 3 strategies: evaluation under anesthesia (EUA) and tonsillectomy, EUA/tonsillectomy followed by TORS base-of-tongue resection (sequential EUA/TORS), and EUA/tonsillectomy with base-of-tongue resection (simultaneous EUA/TORS). They conclude that the incremental cost-effectiveness ratios (ICERs) for sequential and simultaneous EUA/TORS are $8619 and $5774, respectively.

This is, unfortunately, incorrect.

To begin with, sequential EUA/TORS is, by definition, ruled out by extended dominance and cannot be considered a viable strategy.² Sequential EUA/TORS does not have a meaningful, reportable ICER, and the correct ICER for simultaneous EUA/TORS is $8090—40% higher than reported by the authors.

The authors do briefly mention extended dominance in figure 1; their interpretation of this relationship is, however, erroneous. They state, “Simultaneous EUA/TORS would be the dominant strategy with . . . a proportion identified of 0.957.” While it is true that, under a threshold of 0.957, sequential EUA/TORS is no longer ruled out, it is not true that simultaneous EUA/TORS is “the dominant strategy” above this threshold. The authors ignore the fact that EUA/tonsillectomy is never dominated and must be considered. Its ICER, compared with no investigation, is $4533 (not $0, as the authors report).

Finally, the reader faces uncertainty comparing table 4 to table 6. Total hospital costs for sequential and simultaneous EUA/TORS are given in table 4 as $4446 and $5889, respectively, and as $5318 and $6037, respectively, in table 6. It is unclear why.

This confusion is more than incidental; it markedly changes the results. If the data from table 4 are used, the TORS strategies have ICERs of $7089 (sequential) and $11,346 (simultaneous). In this case, sequential EUA/TORS is no longer dominated, but the ICER for simultaneous EUA/TORS is nearly double what the authors report.

Dr Byrd and colleagues have written an important article: the cost-effectiveness of robotic surgery is under active debate in other fields,³,⁴ and this debate is warranted in otolaryngology–head and neck surgery. However, a number of incorrect statements plague this article. If the authors’ estimates are correct, one must specifically exclude sequential EUA/TORS, ignore the reported $8619 ICER, and include (or at least consider) EUA/tonsillectomy in the workup of the unknown primary. Any recommendation for sequential TORS is specifically contradicted by their results.

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