



Anterior Temporal Lobectomy Compared with Laser Thermal Hippocampectomy for Mesial Temporal Epilepsy: A Threshold Analysis Study

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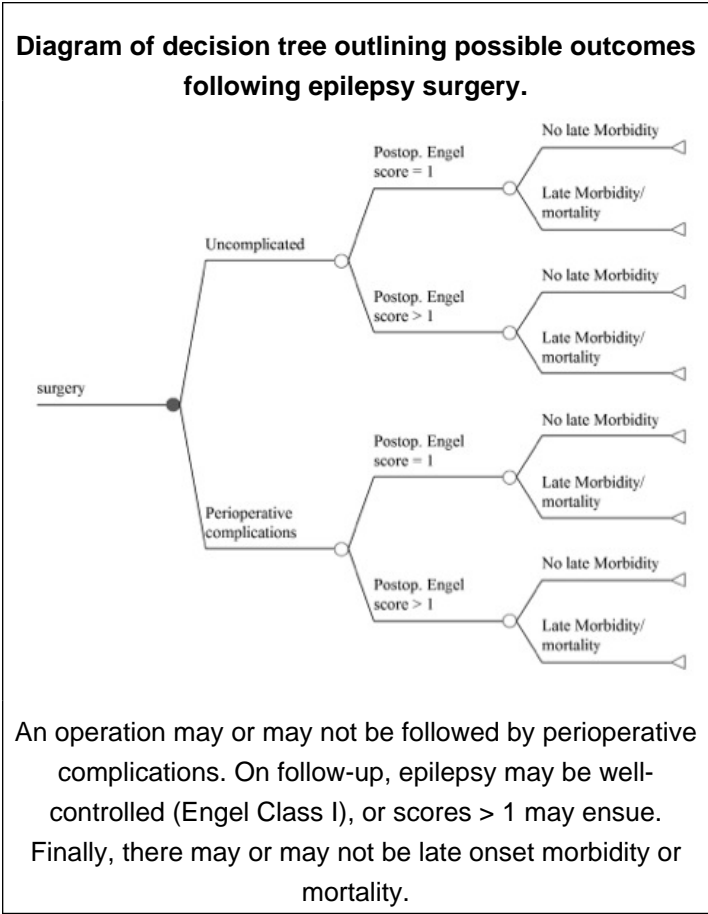


Introduction

Anterior temporal lobectomy (ATL) is the gold standard surgical treatment for refractory temporal lobe epilepsy. ATL carries risks associated with invasiveness, including cognitive decline and damage to eloquent structures. Laser thermal hippocampectomy (LTH) offers a less invasive alternative to the standard open approach. In this decision analysis, we determine the success rate at which LTH would be equivalent to ATL.

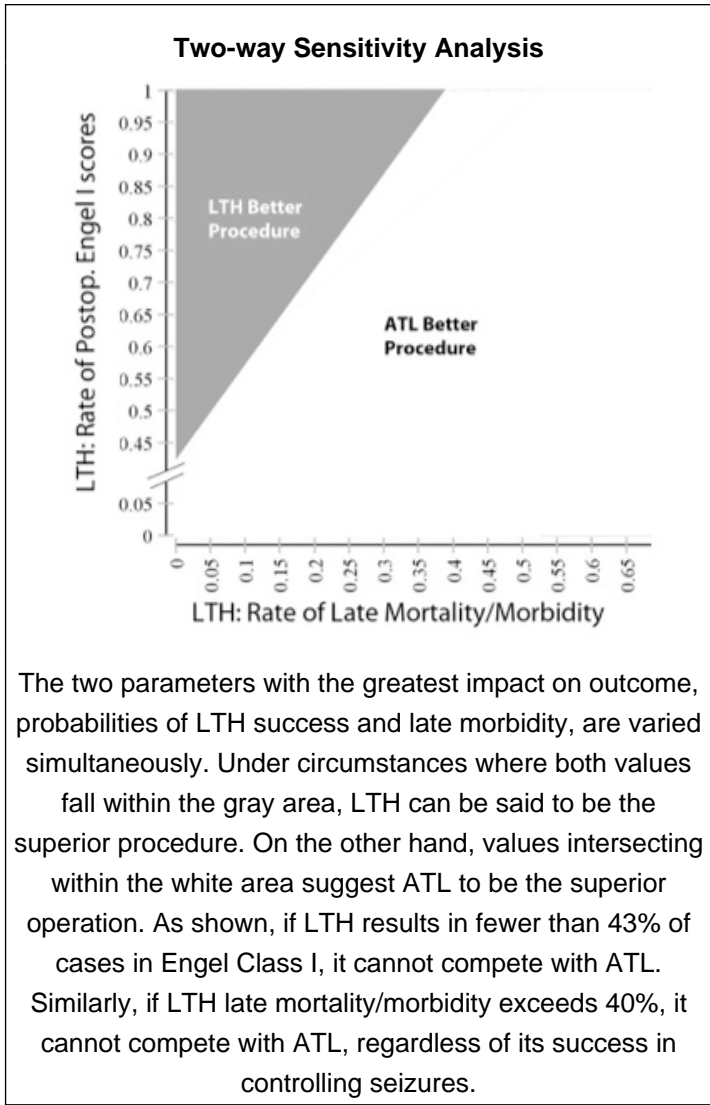
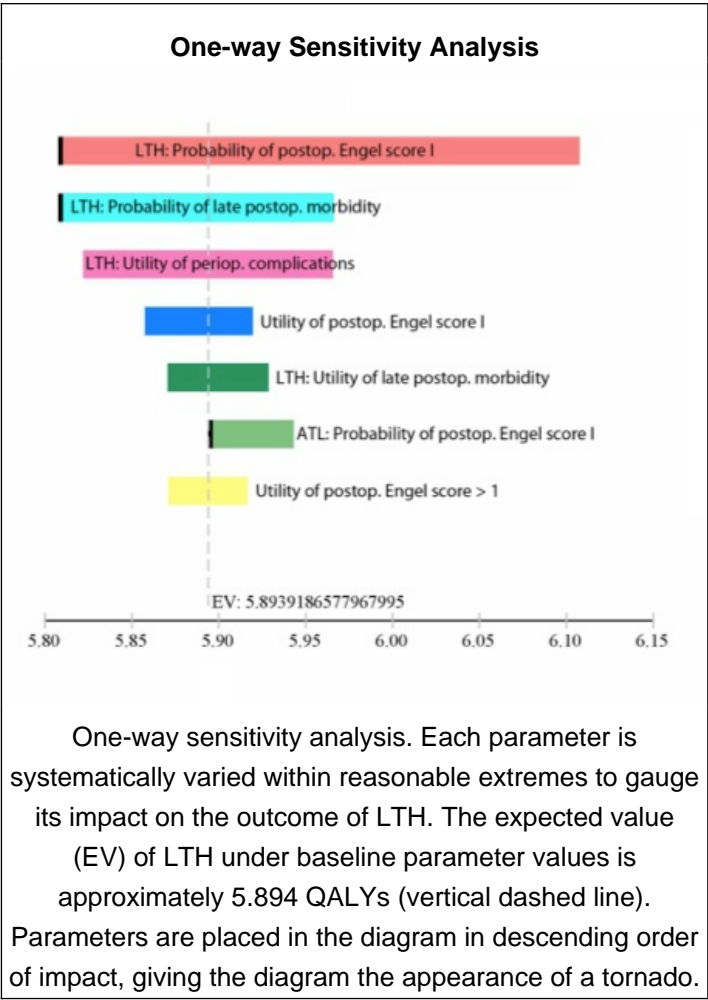
Methods

MEDLINE searches were performed for studies of ATL. Using complication and success rates from the literature, we constructed a decision analysis model for ATL and LTH. Utility values for the various outcomes & complications after ATL and LTH were extracted from literature examining patient preferences in similar clinical conditions. We performed a sensitivity analysis in which major parameters were systematically varied within their 95% CIs.



Results

350 studies involving 25,144 cases of ATL were included. Outcomes of LTH were taken from a multicenter series of 68 cases. Late results (probability of seizure control and late morbidity) of LTH are most likely to affect outcomes relative to ATL. If LTH results in fewer than 43% of Engel class I outcomes, then it is inferior to ATL. If LTH late mortality/morbidity is greater than 40% then it is inferior to ATL regardless of seizure control.



Conclusions

Our results suggest that LTH has a similar utility to ATL. LTH is a promising and less invasive alternative to ATL in refractory temporal lobe epilepsy. LTH utility may remain comparable to ATL even if long-term seizure control is less than that of ATL.