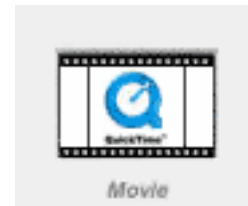




# Hippocampal Transection Plus Tumor Resection as a Novel Surgical Treatment for Temporal Lobe

## Epilepsy Associated with Cerebral Cavernous Malformations

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### Introduction

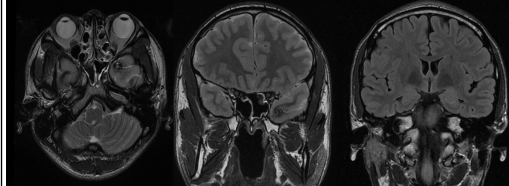
The optimal surgical treatment for cavernous-malformation-related temporal lobe epilepsy (CRTLE) is still controversial, because it frequently involves hippocampus as an epileptogenic zone. In those cases, simple tumor resection cannot necessarily result in postoperative seizure freedom. Therefore, more aggressive procedures such as lobectomy or hippocampectomy are considered as surgical options. However, it is believed that the impact of them on neuropsychological functions is not negligible, especially if the lesion is located in the dominant hemisphere.

To solve this question of how to balance postoperative seizure outcomes and neuropsychological outcomes, here we describe our unique surgical strategy for CRTLE, considering hippocampal transection (HT), in which the longitudinal hippocampal circuits are disrupted by transecting the pyramidal layer of the hippocampus in 5-mm intervals, in addition to tumor resection.

### Methods

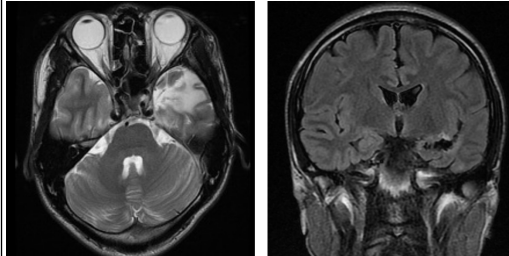
From 2005 to 2013, additional HT has been performed for 6 patients with CRTLE. Patient information including side of operations, follow-up periods, seizure outcome, and preoperative and postoperative (between 6 months and 12 months) Wechsler Memory Scale-Revised (WMS-R) has been collected.

**Case1: 26 y.o. male with CRTLE**



CCM at left temporal pole, 5mm in diameter. No hippocampal abnormality, no memory impairment

**Case1: postoperative course**



No postoperative seizure (ILAE 1A) during 19 months follow-up. WMS-R: Stable in all 5 indices.

### Results

2 cases of HT was performed on the dominant side and 4 cases on the non-dominant side. In the mean follow-up of 68.7 months [range 20-119], the postoperative seizure outcome is as follows: Engel class I in 5 cases (83.3%) and II in 1 case (16.7%).

Perioperative changes in WMS-R score were as follows; in verbal memory, 92.5 preoperatively versus 99.7 postoperatively ( $P=0.403$ ), in delayed recall, 88.3 versus 98.5 ( $P=0.25$ ), and in general memory, 92.5 versus 99.5 ( $P=0.459$ ). Overall, no patient presented with the more than 20% decline in any of the WMS-R scores postoperatively.

### Conclusions

Postoperative seizure outcomes are excellent in our study with favorable postoperative memory outcomes. Although it did not reach the statistical significance, memory functions were rather improved postoperatively. In patients with CRTLE, additional HT is a considerable treatment option.

### Learning Objectives

By the conclusion of this session, participants should be able to discuss, in small groups, the optimal surgical treatment for CRTLE, validity of HT, and the physiological mechanism of how hippocampal transection works.

### References

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