

Temporal lobe epilepsy surgery case series

Forty-nine unilateral TLE surgical patients were assessed using the Beck Depression Inventory-Fast Screen (BDI-FS) and Beck Anxiety Inventory (BAI) preoperatively and 6 and 12 months postoperatively. Measures of intellectual function, semantic knowledge, memory and executive function were completed preoperatively, at 6 and 12 months following surgery.

Preoperatively, 33 (67%) patients had minimal depressive symptoms, 8 (16%) were mildly depressed, 2 (4%) were moderately depressed, and 6 (12%) reported severe depressive morbidity. Twenty-three (47%) patients reported minimal anxiety, 18 (37%) were mildly anxious, 6 (12%) were moderately anxious and 2 (4%) patients reported severe anxiety symptoms. A mixed-model repeated-measures analysis was performed on the BDI-FS and BAI scores, adjusting for pertinent covariates identified in univariable analyses. At a year following TLE surgery, anxiety symptoms significantly improved but depressive morbidity did not. Indicators of frontal lobe dysfunction moderated the magnitude and direction of mood change. Specifically, pre-surgical cognitive measures of frontal lobe dysfunction predicted increased depression and anxiety symptoms following surgery. There was no relationship between preoperative BDI-FS or BAI scores and seizure outcome at 12 months or change in affective morbidity and seizure outcome.

This is the first longitudinal study to provide evidence that specific pre-surgical cognitive and behavioural indices of frontal dysfunction are predictive of poorer psychiatric outcome following TLE surgery. In addition, our findings highlight the potential utility of a dysexecutive behavioural rating scale (DEX) as an assessment tool in epilepsy. Examination of executive functioning in pre-surgical evaluations may lead to an increase in the power of prognostic models used to predict the psychiatric outcome of TLE surgery ¹⁾.

2016

Law et al., retrospectively assessed [verbal memory](#) change approximately 1 year after unilateral [temporal lobe epilepsy surgery](#) using a list learning task. Participants included 23 children who underwent temporal lobe surgery with sparing of the mesial structures (13 left), and 40 children who had a [temporal lobectomy](#) that included resection of mesial structures (22 left).

Children who underwent resection from the left lateral and mesial temporal lobe were the only group to show decline in verbal memory. Furthermore, when they considered [language](#) representation in the left temporal resection group, patients with left language representation and spared mesial structures showed essentially no change in verbal memory from preoperative to follow-up, whereas those with left language representation and excised mesial structures showed a decline. Postoperative seizure status had no effect on verbal memory change in children after left temporal lobe surgery. Finally, they found that patients with intact preoperative verbal memory experienced a significant decline compared to those with below average preoperative verbal memory.

The findings provide evidence of significant risk factors for verbal memory decline in children, specific to left [mesial temporal lobe epilepsy](#). Children who undergo left temporal lobe surgery that includes mesial structures may be most vulnerable for verbal memory decline, especially when language representation is localized to the left hemisphere and when preoperative verbal memory is intact ²⁾.

2015

Boucher et al., compared preoperative vs. postoperative memory performance in 13 patients with SAH with 26 patients who underwent ATL matched on side of surgery, IQ, age at seizure onset, and age at surgery. Memory function was assessed using the Logical Memory subtest from the Wechsler Memory Scales - 3rd edition (LM-WMS), the Rey Auditory Verbal Learning Test (RAVLT), the Digit Span subtest from the Wechsler Adult Intelligence Scale, and the Rey-Osterrieth Complex Figure Test. Repeated measures analyses of variance revealed opposite effects of SAH and ATL on the two verbal learning memory tests. On the immediate recall trial of the LM-WMS, performance deteriorated after ATL in comparison with that after SAH. By contrast, on the delayed recognition trial of the RAVLT, performance deteriorated after SAH compared with that after ATL. However, additional analyses revealed that the latter finding was only observed when surgery was conducted in the right hemisphere. No interaction effects were found on other memory outcomes. The results are congruent with the view that tasks involving rich semantic content and syntactical structure are more sensitive to the effects of lateral temporal cortex resection as compared with mesiotemporal resection. The findings highlight the importance of task selection in the assessment of memory in patients undergoing TLE surgery ³⁾.

1)

Pope RA, Thompson PJ, Rantell K, Stretton J, Wright MA, Foong J. Frontal lobe dysfunction as a predictor of depression and anxiety following temporal lobe epilepsy surgery. *Epilepsy Res.* 2019 Mar 19;152:59-66. doi: 10.1016/j.eplepsyres.2019.03.003. [Epub ahead of print] PubMed PMID: 30909053.

2)

Law N, Benifla M, Rutka J, Smith ML. Verbal memory after temporal lobe epilepsy surgery in children: Do only mesial structures matter? *Epilepsia.* 2016 Dec 24. doi: 10.1111/epi.13635. [Epub ahead of print] PubMed PMID: 28012164.

3)

Boucher O, Dagenais E, Bouthillier A, Nguyen DK, Rouleau I. Different effects of anterior temporal lobectomy and selective amygdalohippocampectomy on verbal memory performance of patients with epilepsy. *Epilepsy Behav.* 2015 Nov;52(Pt A):230-5. doi: 10.1016/j.yebeh.2015.09.012. PubMed PMID: 26469799.

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