

IS SELECTIVE AMYGDALOHIPPOCAMPECTOMY INFERIOR TO STANDARD RESECTION IN TEMPORAL LOBE EPILEPSY? – YES

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Temporal lobe epilepsy surgery (TLES) is an accepted treatment for pharmaco-resistant epilepsy. Seizure control is the primary aim of TLES. There is still no consensus concerning the best surgical approach and the extent of the resection to receive the optimal postsurgical outcome. Surgical treatment for TLE mainly targets the mesial structures, employing a variable degree of lateral neocortical resection. There is ongoing debate regarding whether a selective amygdalohippocampectomy (SAH), in which surgery is restricted to the mesial temporal structures, should be used as a first-choice method, or whether larger resections, standard anterior temporal lobectomy (ATL)/ anteromedial temporal resection (AMTR), are preferable. TLES can have negative effects on cognition and behavior (Helmstaedter et al, 2007); in some patients an improvement of cognition is possible. The choice of surgical technique can affect both the success rate and the occurrence of collateral damage. Visual field impairment and memory decline should particularly be taken in consideration.

Based on the published results, it appears that more extensive resections may be superior with regards to seizure control. In a meta-analysis of non-randomized studies, seizure-free outcomes were greater after AMTR than after SAH (Josephson et al, 2013). The primary goal, i.e. seizure freedom, can be determined by the location of the temporal lobe pathology outside the amygdalohippocampal complex when the seizure origin is not limited to the mesiotemporal structures. This constellation may require additional resection of neocortical structures after SAH. SAH may have better outcomes with regards to cognitive functions; however, the outcome may be determined by several factors besides the extent of the removed tissue. Different surgical approaches (transsylvian, transtemporal, or subtemporal) may influence the cognitive outcome differently. The dominance of the operated hemisphere may play a role. A differential effect of left/right SAH versus AMTR on material-specific memory was reported, with transsylvian SAH appearing favorable in right MTLE and AMTR in left MTLE (Helmstaedter et al, 2008).

In individual patients, the exact temporal lobe localization of the memory functions could help with the **surgical treatment** decision. Memory function in the posterior hippocampus, which is usually spared by AMTR, may contribute to better preservation of post-surgical memory (Bonelli et al, 2008). On the other hand, the tissue beyond the hippocampus and parahippocampal complex or remnants of the mesial structures may be capable of generating seizures in some MTLE patients and it may be important to remove the hippocampus completely as well as the other mesial temporal structures in order to achieve seizure freedom (Thom et al, 2010). Patient age and cognitive level before the surgery may have also an impact on the outcome. We observed a better memory outcome with selective surgery in a younger group than in a group of patients over 45. However, memory outcome is not the only factor that should be taken into consideration. For example, the impact of the extent of the resection on psychiatric aspects or on extratemporal cognitive functions has not been sufficiently clarified. It appears that the visual field may be less damaged by AMTR than by SAH.

In certain cases resection sparing the mesial structures should be considered (Mintzer and Sperling, 2008). Both AMTR and SAH are effective, and there are cases when SAH should be preferred, i.e., in patients with increased risk of postsurgical memory decline. Electro-corticography based tailored approach can be useful in some cases. However, AMTR should be preferred in most patients, as seizure freedom is the main goal of TLES and seizure control appears superior with AMTR. For most MTLE patients, a standard anterior and mesial temporal lobe resection will lead to seizure freedom (Josephson et al, 2013). We have to consider MTLE as a group of closely related syndromes with variable types and extents of histopathology. In the future, identifying the various subgroups requiring different diagnostic and surgical approaches may improve surgical outcomes (Thom et al, 2010). It may be difficult to draw clear conclusions based on the literature data as there are significant variations from center to center in data collection and surgical approaches (Thom et al, 2010). A large controlled multicentric study would help define the optimal surgical methods for individual candidates for TLES.

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