

Long-term outcomes of epilepsy surgery - prospective studies regarding seizures, employment and quality of life

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- I. Edelvik A, Rydenhag B, Olsson I, Flink R, Kumlien E, Källén K, Malmgren K. Long-term outcomes of epilepsy surgery in Sweden: a national prospective and longitudinal study. *Neurology*, 2013. 81(14): p.1244-1251.
- II. Edelvik A, Flink R, Malmgren K. Prospective and longitudinal long-term employment outcomes after resective epilepsy surgery. *Neurology*, 2015. 85(17): p. 1482-1490.
- III. Edelvik A, Taft C, Ekstedt G, Malmgren K. Health-related quality of life and emotional wellbeing after epilepsy surgery - a prospective, controlled, long-term follow-up. *Manuscript*.

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Long-term outcomes of epilepsy surgery - prospective studies regarding seizures, employment and quality of life

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ABSTRACT

Epilepsy surgery is a treatment option for selected patients with drug-resistant epilepsy. Patients need individual pre-surgical counselling on chances of seizure freedom and other outcomes in a long-term perspective. The aim of this thesis was to investigate long-term outcomes as to seizures, antiepileptic drugs (AEDs), employment and health-related quality of life (HRQOL) and to investigate prognostic factors for seizure and employment outcomes.

All three studies were prospective, longitudinal and population-based. Study I and II were based on outcome data from the Swedish National Epilepsy Surgery Register. Study III was a controlled prospective, cross-sectional, national long-term follow-up study 14 years after epilepsy surgery evaluation where HRQOL was investigated using the 36-item Short Form Health Survey.

In *Study I*, 62% of adults and 50% of children were seizure-free at long-term (5 or 10 years after surgery). Predictors for seizure freedom were MRI abnormalities, lower seizure frequency at baseline and shorter duration of epilepsy. At 10 years, 86% of seizure-free children and 43% of seizure-free adults had discontinued AED medication.

In *Study II*, employment rates were mainly unchanged at group level 5, 10 and 15 years after surgery. Predictors for postoperative employment were pre-operative employment, seizure freedom and younger age. Only 57% and 47% of those who were employed full-time before surgery and became seizure-free were still in full-time employment 10 and 15 years after surgery. Out of the seizure-free patients who had been on benefits or sick leave before surgery, 30% were employed full-time at long-term follow-up. Compared to the general population fewer patients worked up to the age of 65.

In *Study III*, HRQOL scores were compared to non-operated controls and to a matched norm population. At long-term, operated patients reached norm values on all domains except Social Functioning and Mental Health, whereas controls scored lower than norm on five of eight domains. Changes in HRQOL were small from two-year to long-term follow-up. Change in seizure status for the operated patients did not influence HRQOL results.

In conclusion, long-term seizure freedom was achieved by 50-60%. Post-operative discontinuation of AEDs was common especially in seizure-free children. Many adults could continue or go back to work, and HRQOL was better at group level for operated patients than for controls. Younger age at surgery and shorter epilepsy duration were predictive of better results, indicating the importance of earlier referrals for pre-surgical evaluation.

Keywords: Epilepsy surgery, long-term, seizure outcome, antiepileptic drugs, employment, health-related quality of life