

Supplementary methods.

The following variables were included as potential predictors in the initial multivariable analyses:

A. **DEMOGRAPHY** – sex, age at onset of epilepsy, duration of epilepsy prior to surgery and handedness (right, left, ambidextrous or not recorded)

B. **INVESTIGATIONS**

i. Pathology as defined by MRI (in groups: as hippocampal sclerosis; discrete pathologies (dysembryoplastic neuroepithelial tumour, cavernoma, glioma and focal cortical dysplasia); dual pathology; other pathology; normal MRI). All MRIs were done at an epilepsy centre and reported by expert neuroradiologists

ii. EEG telemetry changes: of 693 individuals, 46 either did not have video telemetry performed at our centre, or the results were unavailable. People classified as having EEG data concordant for hemisphere and lobe with the resected area had no interictal or ictal epileptic activity detected in any other brain region. Those classified as contralateral discordant (any abnormality in the contralateral hemisphere) or ipsilateral discordant (any abnormality in the ipsilateral hemisphere but a different lobe) usually also had concordant features. The EEG data were classified from the written summaries created at the time of the evaluation

Background EEG changes (grouped as concordant for hemisphere and lobe, contralateral discordant, ipsilateral discordant, normal, abnormal but location not indicated, or no results available) – see above for details

Interictal discharges (grouped as concordant for hemisphere and lobe, contralateral discordant, ipsilateral discordant, no interictal discharge recorded, abnormal but location not indicated, or no results available) – see above for details

EEG ictal onset (grouped as concordant for hemisphere and lobe, contralateral discordant, ipsilateral discordant, seizure but no scalp EEG change, no seizure recorded, abnormal but location not indicated, or no results available) – see above for details

iii. Intracranial electrodes used (yes or no)

iv. MRI abnormality location (grouped as concordant with area of surgery, discordant or normal MRI; those with discordant changes had more than one brain area affected, or dual pathology)

C. **CLINICAL HISTORY**

i. History of a prior neurological insult (e.g. meningitis, abscess; yes or no)

ii. History of prolonged early childhood convulsions (longer than 20 minutes, aged five years or younger; yes or no); this is distinct from status epilepticus as part of habitual epilepsy

iii. Head injury prior to onset of epilepsy:

- no
- minor head injury
- clinically important head injury [that is, moderate to severe with, for example, fracture, post-traumatic amnesia of more than 30 minutes or focal deficit]
- unclear

iv. History of status epilepticus (yes or no)

v. History of secondarily generalised tonic clonic seizures (SGTCS). This was classified as occurring in the year before surgery; at earlier times only; or never. The estimation of whether SGTCS occurred in the year prior to surgery was clear from records (85%), was a calculated probability based on the number of episodes and the duration of epilepsy (9%) or a reasonable estimate based on documented notes (7%)

vi. Focal seizures with loss of awareness per month in the year before surgery (<4, 4 to <8, 8 to <15, ≥15)

vii. First degree relative with a history of epilepsy (yes or no)

D. **AED USE** – number of AEDs taken at time of surgery (excluding as required AEDs); number of AEDs ever taken

E. SURGICAL DETAILS

- i. Operation type (temporal resection, temporal lesionectomy, extratemporal resection or extratemporal lesionectomy). For Cox regression this was grouped as temporal or extratemporal surgery
- ii. Laterality
- iii. Year in which the surgery was performed. This was grouped into five approximately equal groups (1990 to 1994, 1995 to 1998, 1999 to 2002, 2003 to 2006, 2007 to 2010)

F. PSYCHIATRIC/PSYCHOLOGICAL HISTORY

- i. Preoperative verbal IQ, grouped as <70 , ≥ 70 , not performed (or results not available)
- ii. Preoperative performance IQ, grouped as <70 , ≥ 70 , not performed (or results not available)
- iii. Psychiatric history recorded: this was diagnosed by either a consultant psychiatrist or neurologist specialising in epilepsy
- iv. Non-epileptic attack disorder prior to surgery (yes or no)
- v. Learning disability recorded (yes or no)
- vi. Preoperative Hospital Anxiety and Depression Scale (HADS) anxiety score, grouped as no symptoms of anxiety (score <8), some symptoms of anxiety (score ≥ 8)
- vii. Preoperative HADS depression score, grouped as no symptoms of depression (score <8), some symptoms of depression (score ≥ 8)