

Successful epilepsy surgery for tuberous sclerosis complex evaluated by stereoelectroencephalography

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- Epilepsy surgical assessments for tuberous sclerosis complex (TSC) with multiple tubers can be challenging, particularly if non-invasive investigations are not sufficiently localising
- Successful epilepsy surgery is possible in TSC with multiple bilateral tubers using SEEG based on a strong implantation hypothesis
- SEEG has the added advantage of being able to evaluate networks between the superficial cortex and the deeper cortical structures

- Tubers in TSC can have different epileptogenic potential:
 - “Drug-resistant” epileptogenic tubers (Y, S network)
 - “Drug-controlled” epileptogenic tubers (E’ network)
 - “Inert” tubers
- Interictal discharges and electrographic seizures between “seizure generating” tubers and “subclinical” tubers can be indistinguishable morphologically
- To determine the culprit epileptogenic tuber, careful correlation, using SEEG, of chronological occurrence of ictal clinical manifestation with spatiotemporal organisation of the ictal epileptic discharges is important to identify the culprit lesion

- The Y and S network were identified as the primary epileptogenic zone as all clinical seizures were localised to this network prior to AED withdrawal.
- The E' network was not part of the primary epileptogenic zone as electrographic seizures were only generated from this network whilst on AEDs, and when the patient was weaned off AEDs, E' would first activate the Y, S network before clinical seizures occurred
- Removal of the tuber generating the ictal seizure can provide seizure freedom