Electroclinical reasoning report

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Successful epilepsy surgery in frontal lobe epilepsy with startle seizures: a SEEG study*

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Epileptic Disorders

R.I. 31-year-old, right-handed, male

- Unremarkable personal and family history
- Age at onset of current seizures: 3 years
- AEDs tested : VPA + Methsuximide

  Current treatment: VPA 2000mg/day
  LMT 200mg/day
  LCM 200mg/day
- Longest seizure-free period: 7 years (after initiating the treatment)
- Current seizure(s) frequency: weekly (12 seizures/month)
- Neurological examination: normal
- Neuropsychological evaluation :
  - IQ=95
  - executive disfunction
  - attention deficit

Imaging: 1.5 T cerebral MRI – no clear-cut lesion

- Seizure induced by unexpected noise - video

- usually no aura (sometimes fear), grimacing (“chapeau de gendarme”), brief axial tonic contraction, anterior flexion with tonic contraction of upper limbs, short loss of contact

History

Seizures

Neuropsy

Imaging

Video EEG

Hypothesis

icEEG

Surgery

Conclusion

Interictal bifrontal epileptiform discharges with midline dominance, phase reversal in F3

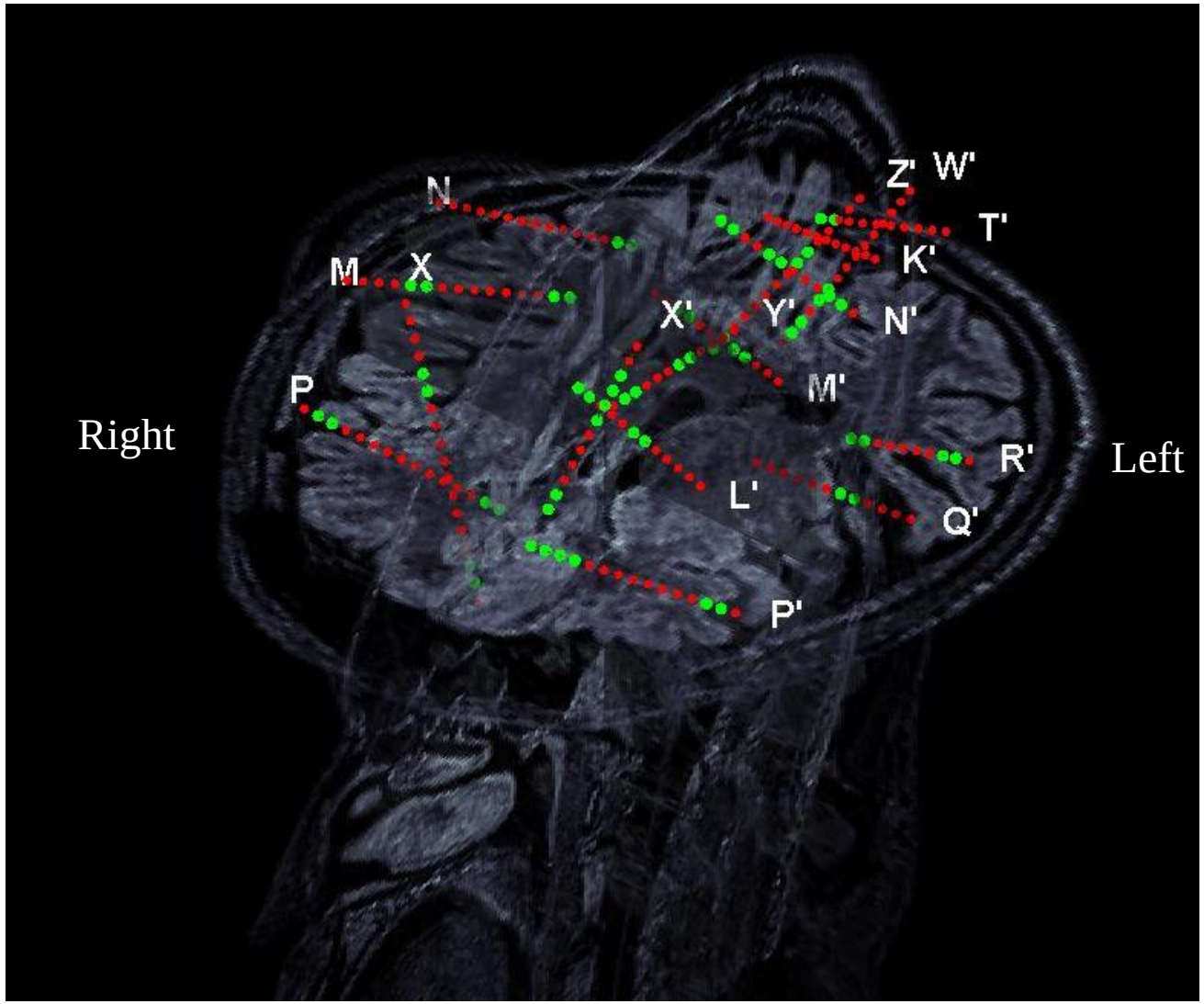
Interictal left frontal short runs of rapid activity during sleep

Epileptic Disorders

- Ictal VEEG shows large bifrontal baseline shift with superimposed fast activity followed by a diffuse electrodecrement that largely involves bifronto-parietal territories and dominates over the midline without clear cut lateralization

Epileptic Disorders

Implantation chart

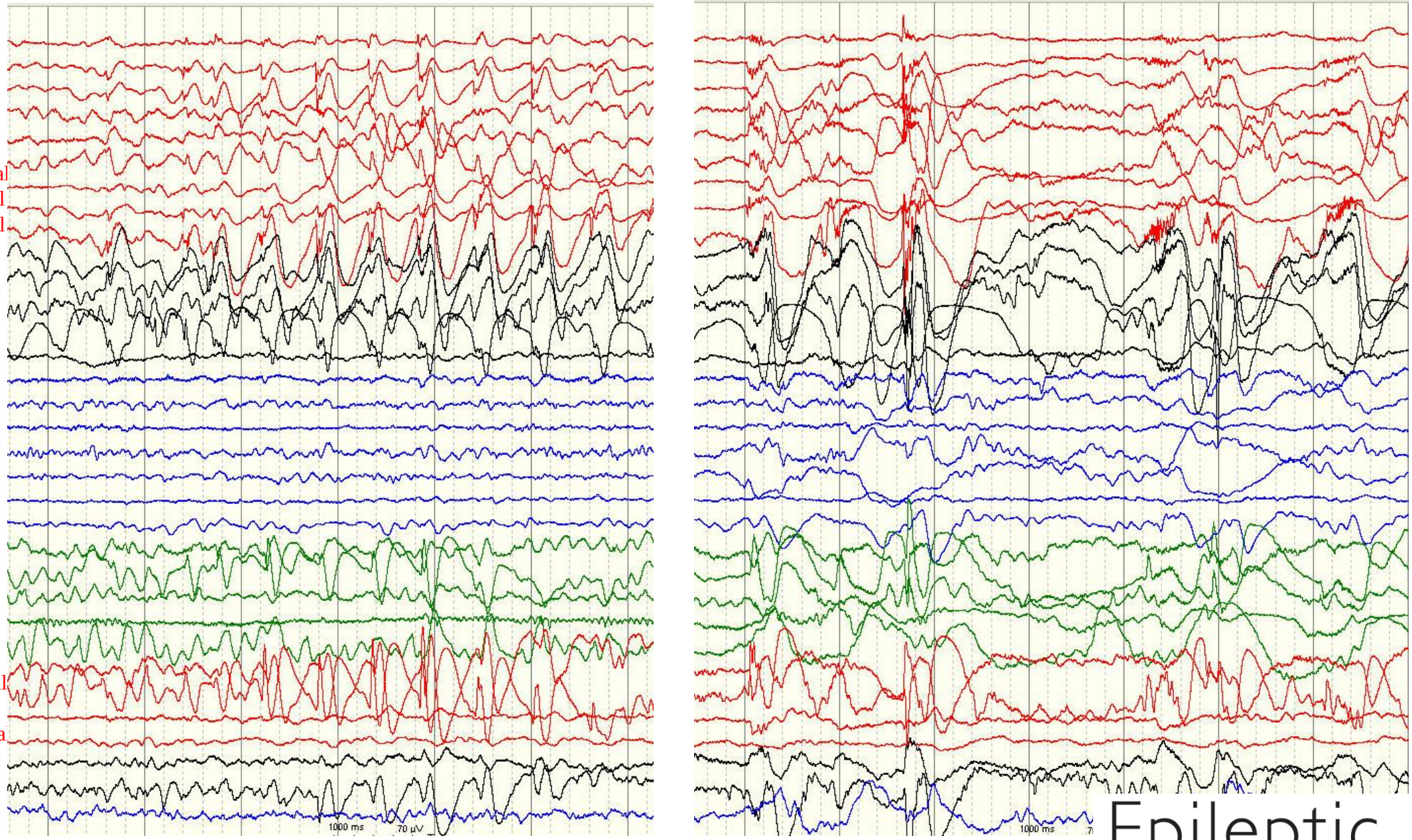


Epileptic Disorders

Interictal SEEG

awake

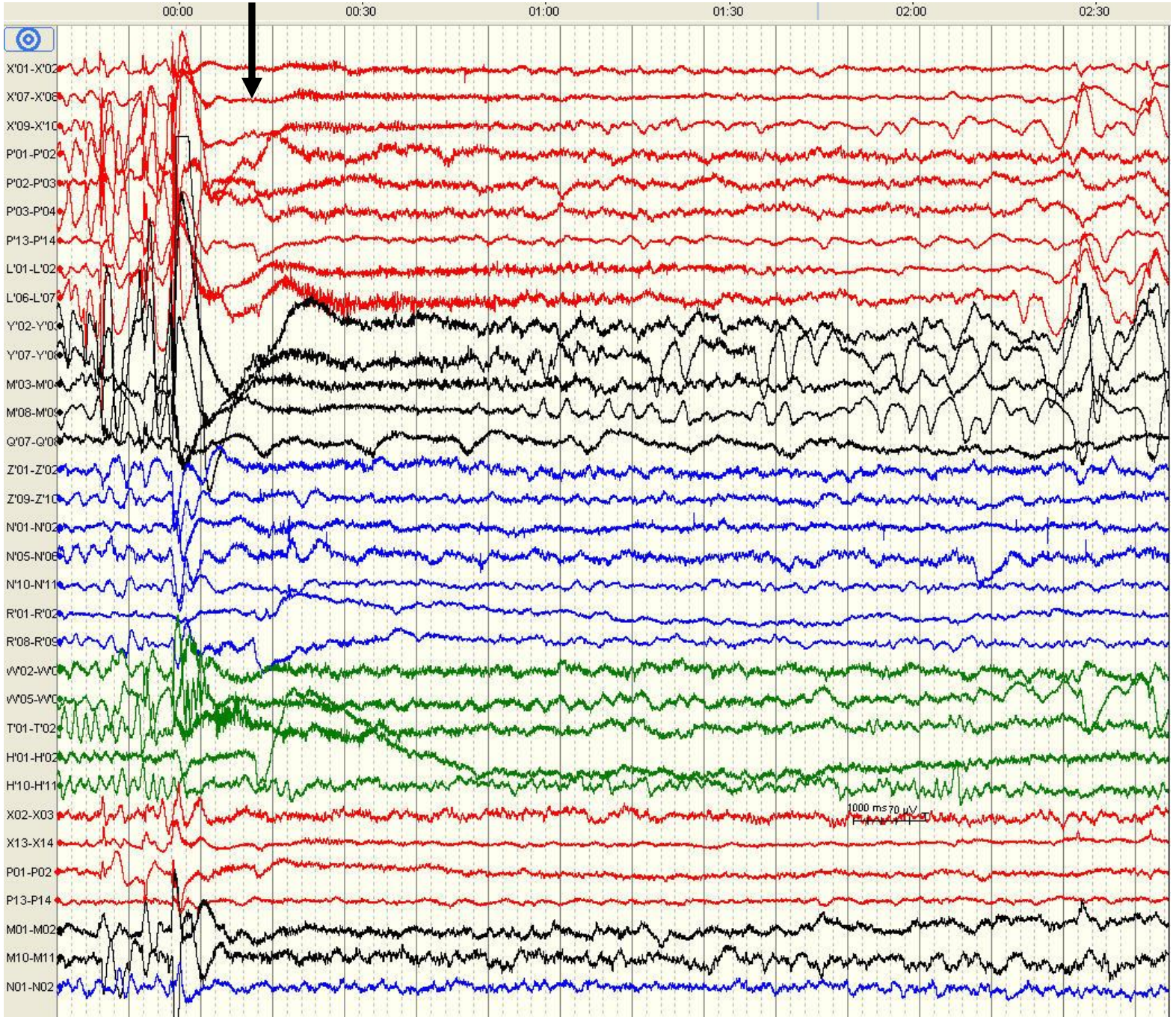
sleep



Epileptic Disorders

Ictal SEEG

Clinical onset



L Anterior cingulate
L Superior Frontal Gyrus

L Anterior Cingulate

L Ventro-Lateral Prefrontal
L Dorso-Medial Prefrontal
L Dorso-Lateral Prefrontal
L Middle Cingulate
L Superior Frontal Gyrus
L preSMA
L Premotor
L Operculum Frontalis
L Posterior Cingulate
L Premotor
L SMA
L Premotor
L Operculum Rolandis

L Internal Parietal

L Paracentral Lobule
L Postcentral Gyrus
R Medial Orbitofrontal
R Dorso-Lateral Prefrontal
R Anterior Cingulate
R Ventro-Lateral Prefrontal
R preSMA
R Premotor
R Premotor

Epileptic Disorders

History

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Video EEG

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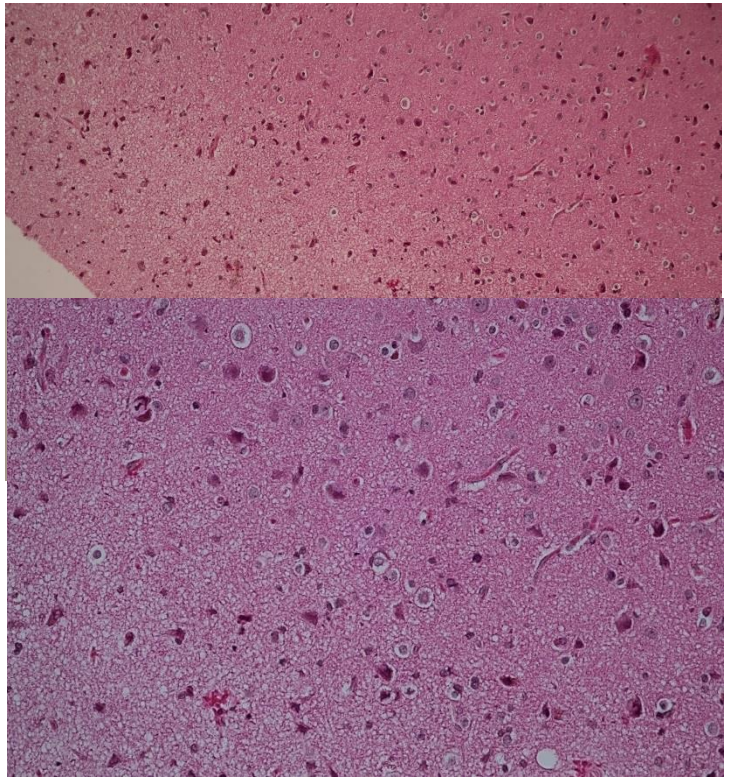
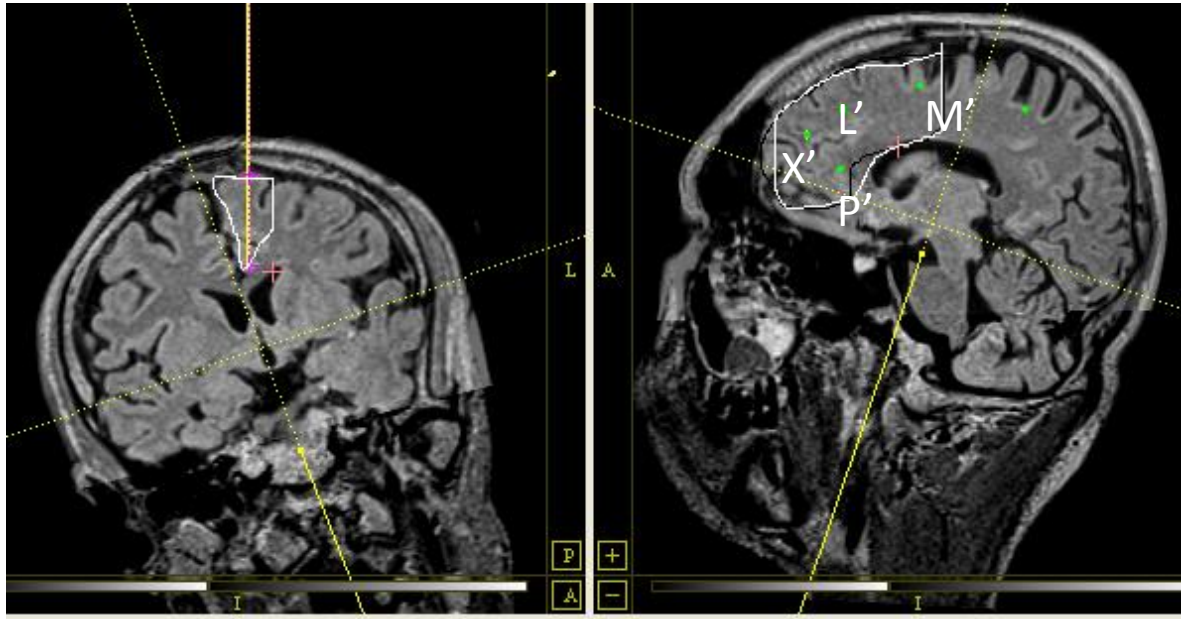
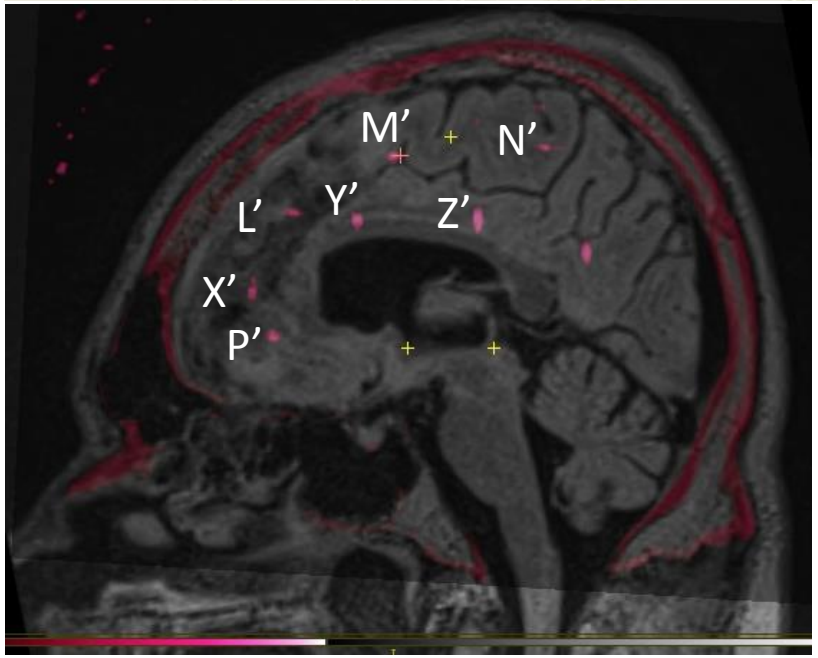
Conclusion

Tailored resection



Histopathology:
Focal Cortical Dysplasia Type IB
(ILAE Classification 2011)





Coregistration of postresection MRI
with postimplantation CT scan

Epileptic Disorders

History

Seizures

Neuropsy

Imaging

Video EEG

Hypothesis

icEEG

Surgery

Conclusion

Outcome – Engel IA

- 1 year seizure freedom

Postresection Neuropsy:

- Executive disfunction
- Verbal memory impairment

Epileptic Disorders