FAKULTNÍ NEMOCNICE U SV. ANNY V BRNĚ

Temporal lobe epilepsy surgery

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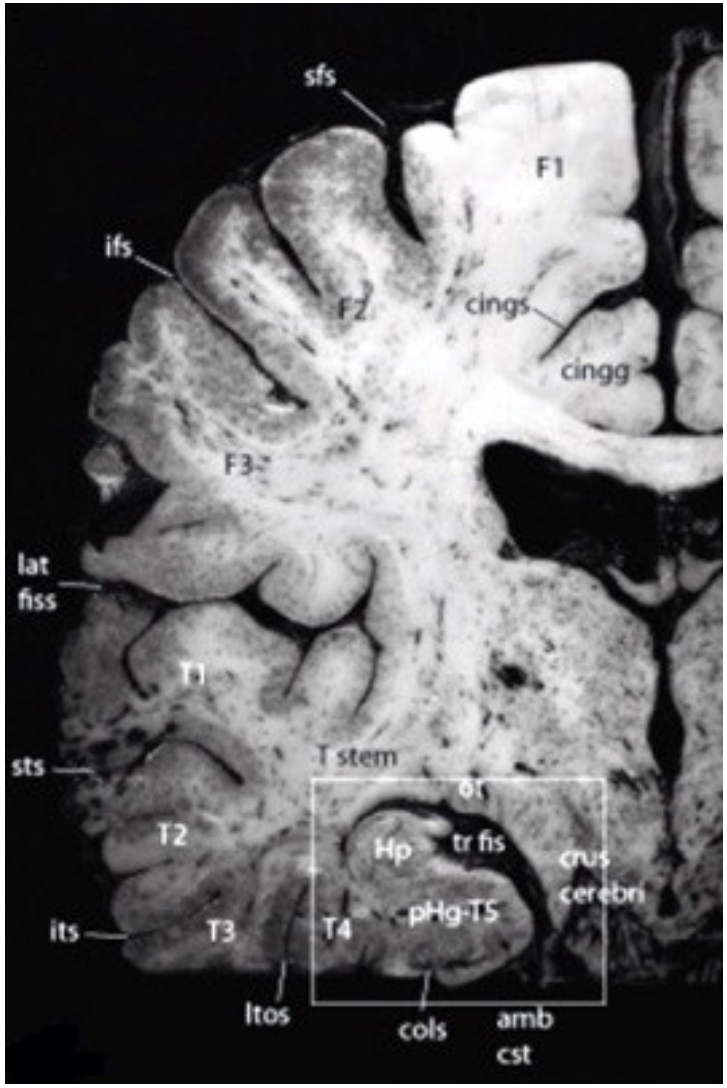
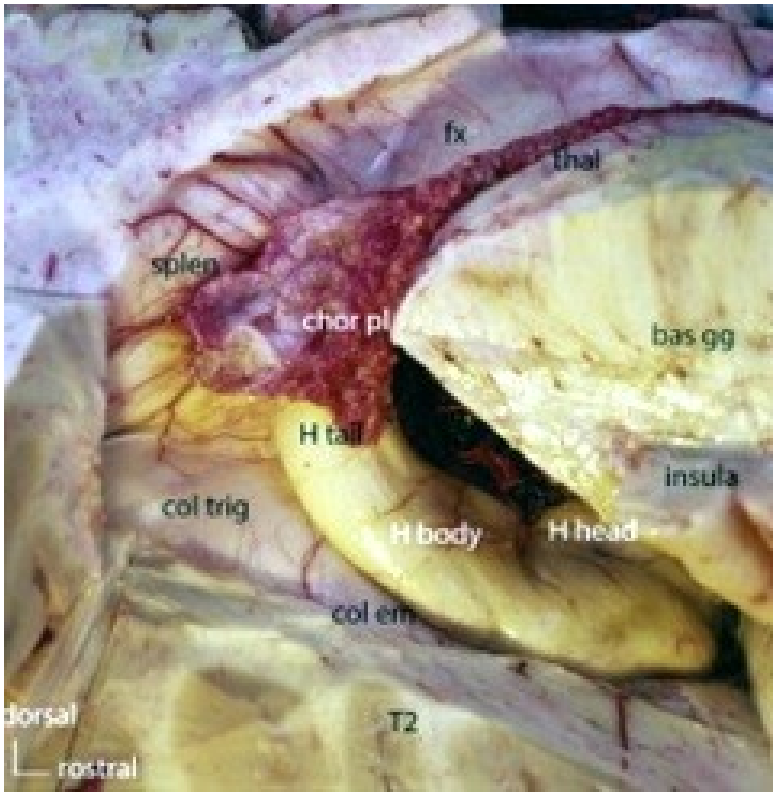
Epilepsy Center Brno

Temporal lobe anatomy





C. Destrieux, Surgical anatomy of the hippocampus, Neurochirurgie 59 (2013) 149–158

Temporal lobe epilepsy surgery

Objective:

- complete removal of functionally altered brain tissue causing clinical epileptic manifestation

- no seizures after surgery, without any neurological deficit, i.e. without reducing the quality of life

Types of epilepsy surgery

Lesionectomy

Structural pathology removing - tumor (LGG, DNET, ganglioglioma), vascular malformation (cavernoma, AVM), gliosis (post-traumatic, post-inflammatory, post-stroke), cortical dysplasia

Cortical resection

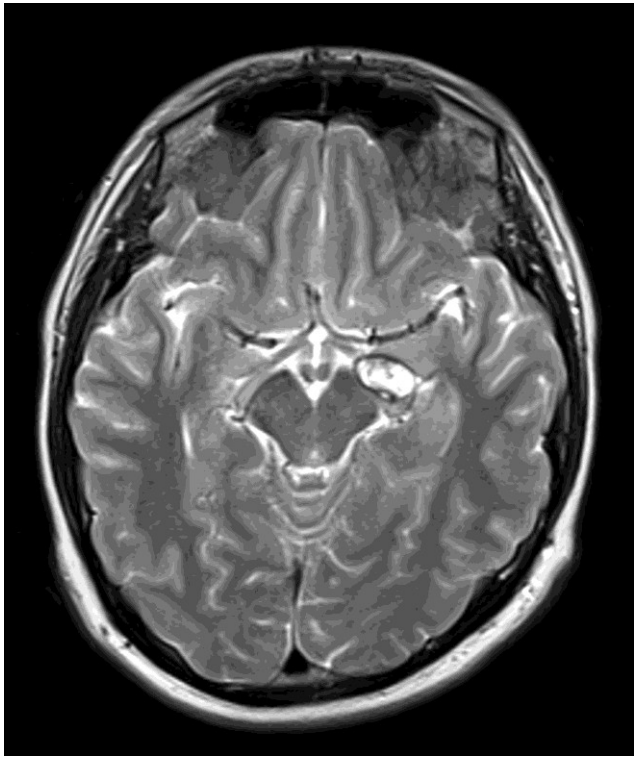
Non- lesional epilepsy (mostly extratemporal localisation)

Standard temporal resections

MTLE mesial temporal lobe epilepsy
MTS mesiotemporal sclerosis

Cavernoma

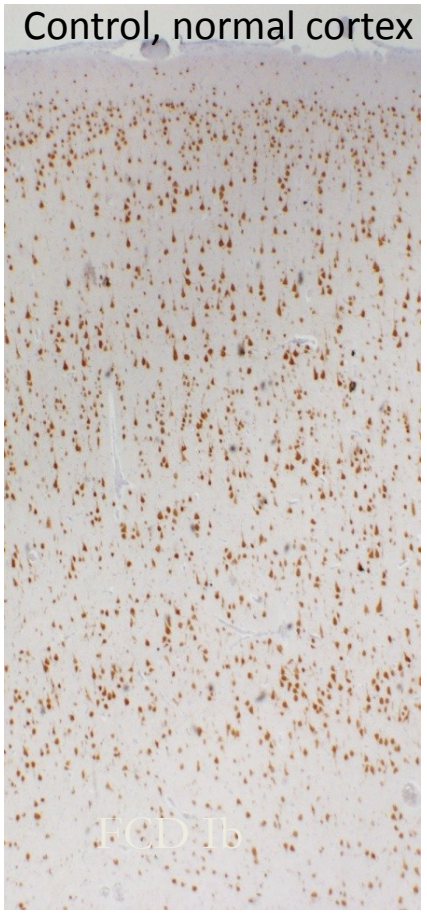




Glioblastoma multiforme

FCD Type Ib

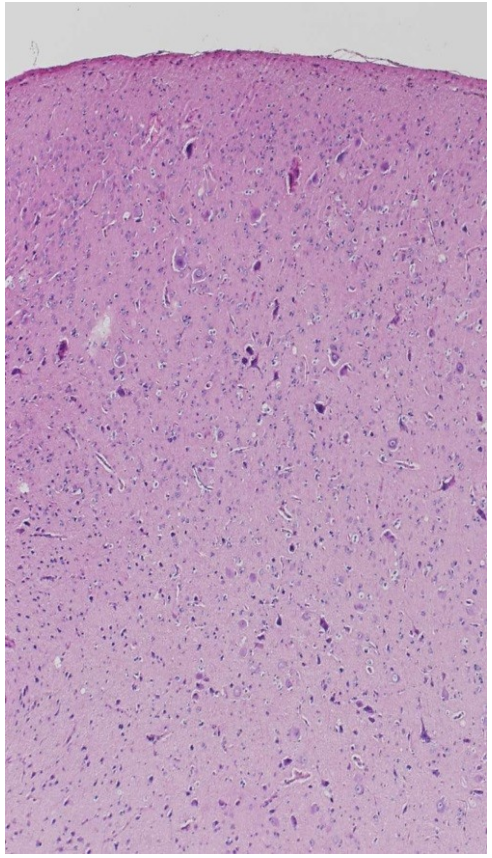
cortical dysplasia with abnormal tangential cortical lamination
affecting 6-layered horizontal composition of the neocortex

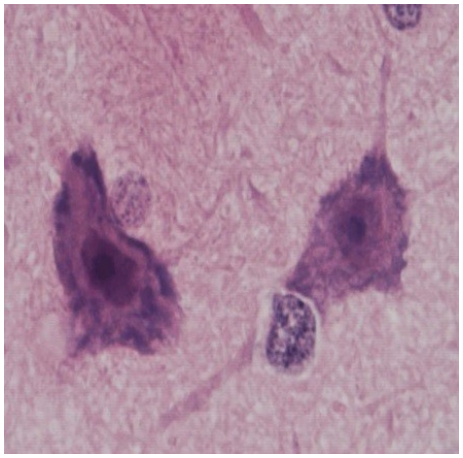


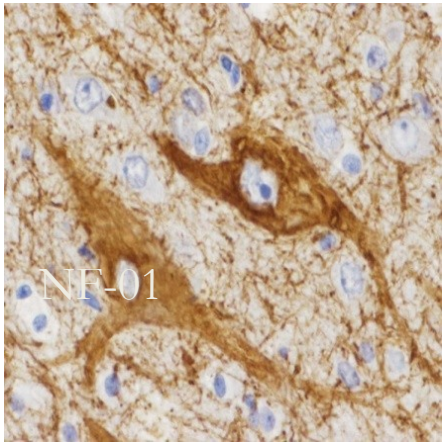
- **abnormal layering of L2, L4, or both; L2 either missing** or significantly depleted
- blurred demarcation between L1 and L2, and between L2 and 3; L4 can be also missing
- less sharply demarcated border toward white matter, immature small diameter neurons, hypertrophic neurons outside L5

FCD Type IIa

cortical dysplasia with dysmorphic neurons

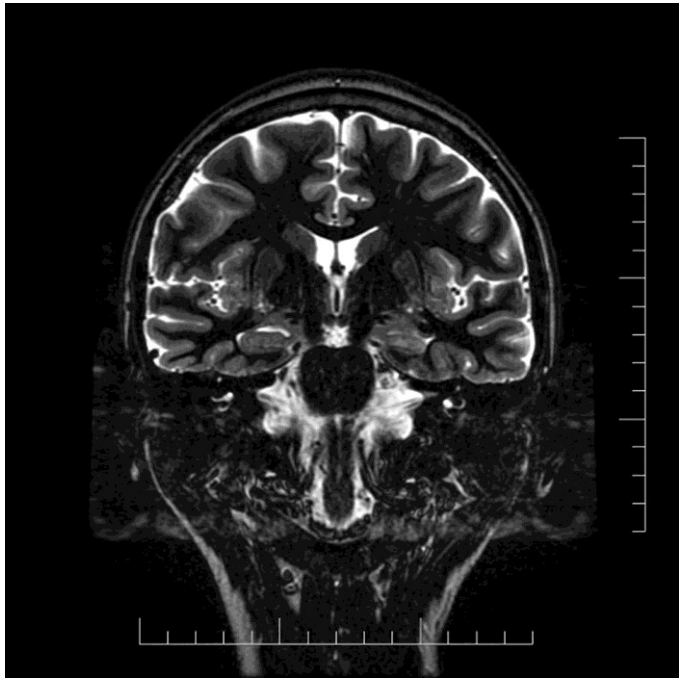


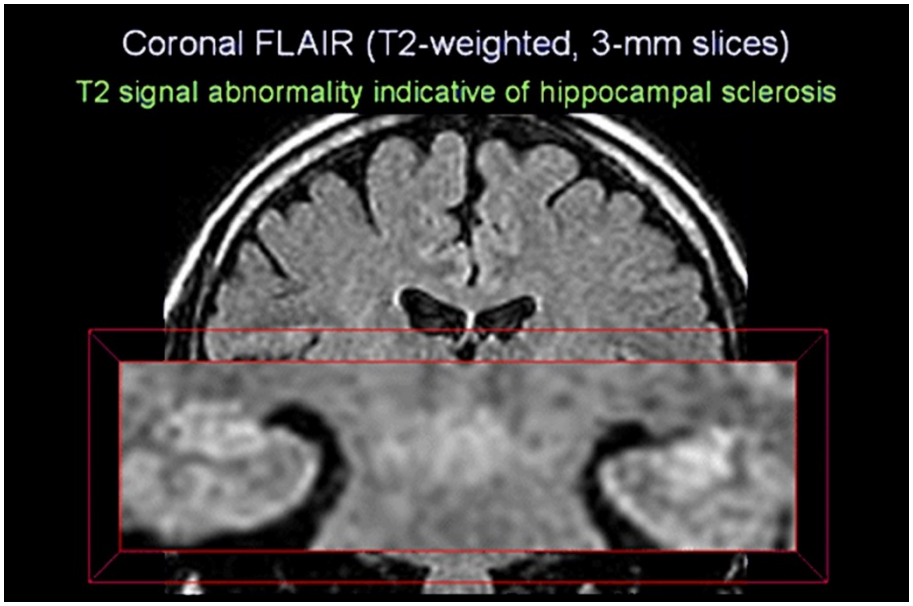


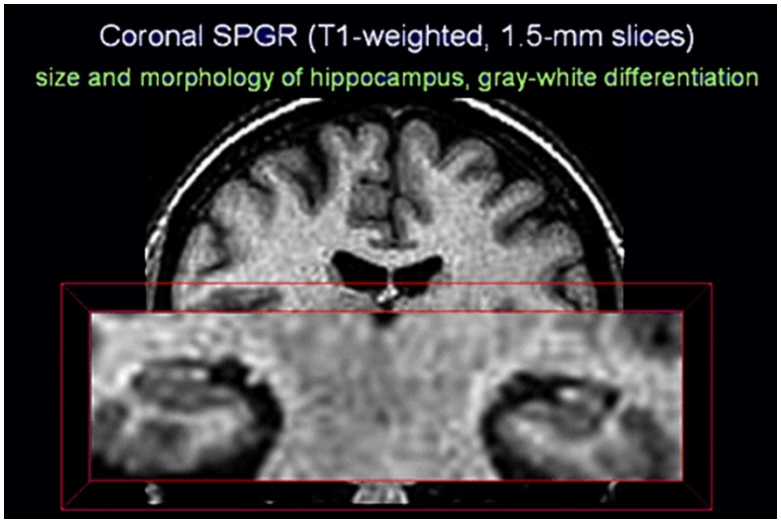


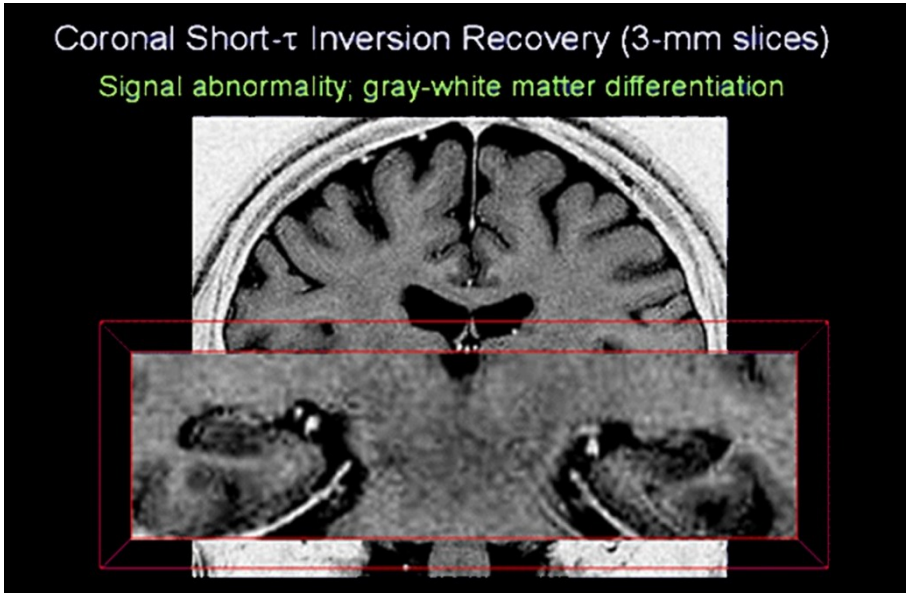
- severe cortical dyslamination
- **dysmorphic neurons:** neuronal cell diameter enlarged, cell nucleus diameter enlarged, aggregation of Nissl substance and its margination, accumulation of NFs (both phosphorylated and nonphosphorylated)
- junction at gray/white matter blurred with heterotopic neurons in white matter

Hippocampal sclerosis





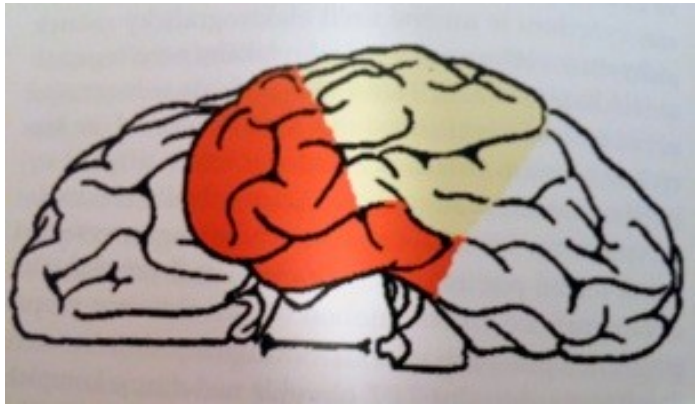


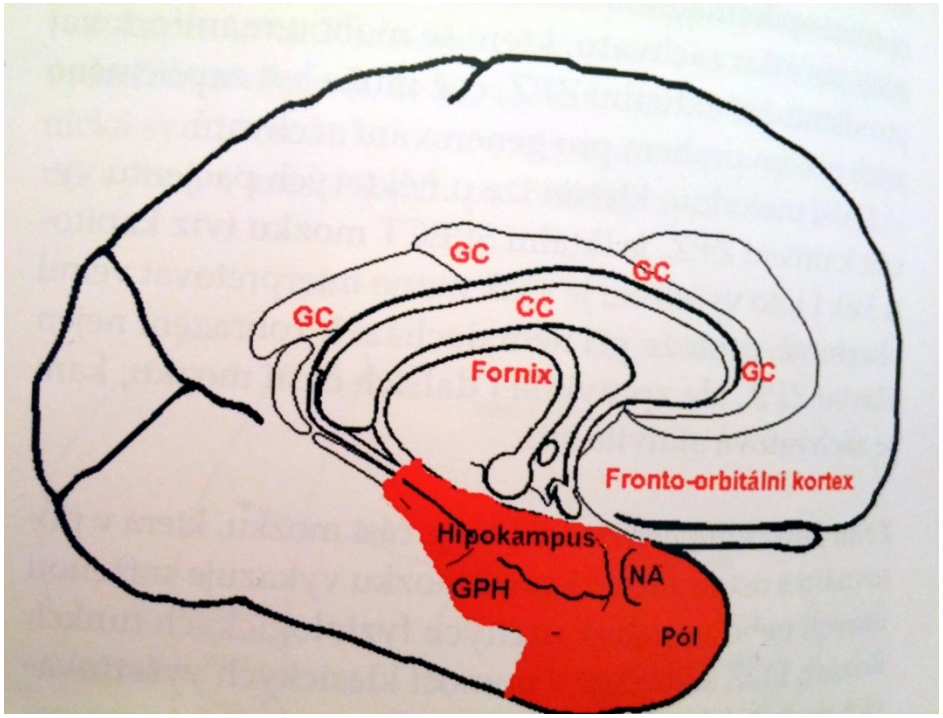


Imaging the Temporal Lobe, Pratik Mukherjee, http://www.medscape.org/viewarticle/468200_3

AMTR
Anteromedial temporal resection

Temporal pole approx 3.5 cm removal (without the superior temporal gyrus), the amygdala, part of the hippocampus and part of theparahippocampal gyrus.



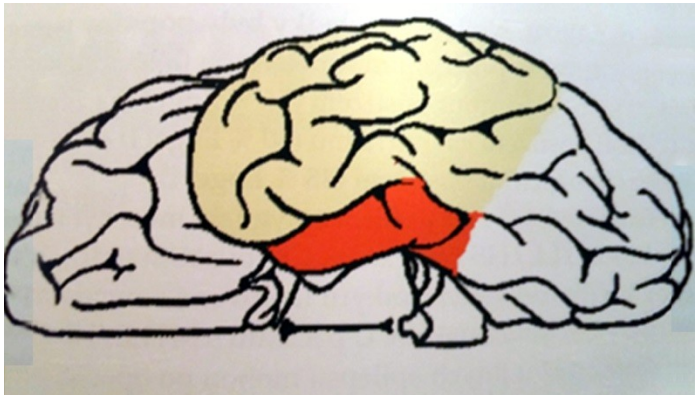


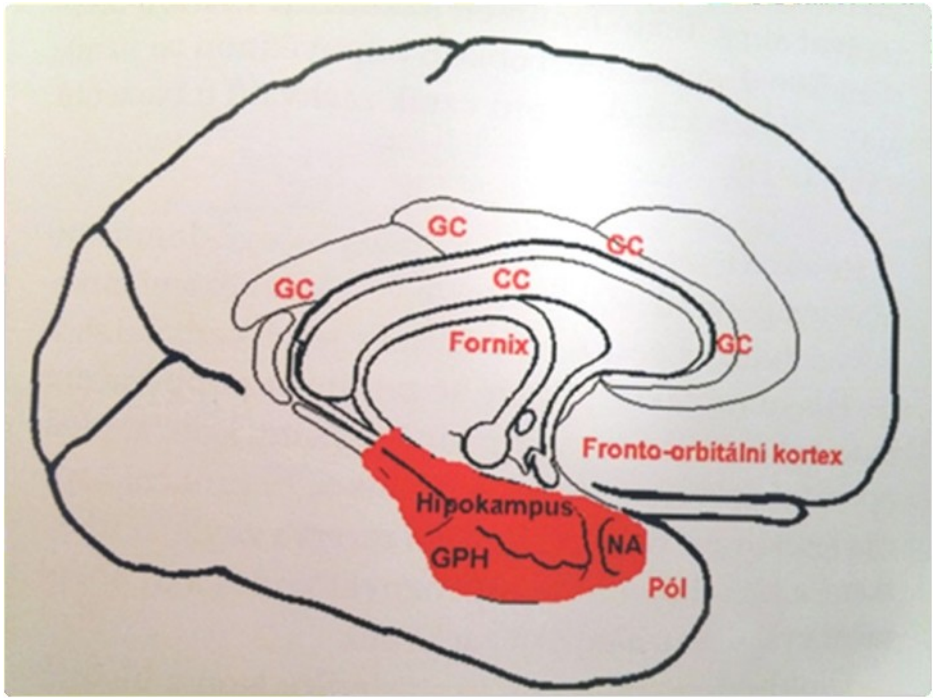
M.Brázdil a kol., Farmakorezistentní epilepsie, Triton, 2004

AHE
Selective amygdalohippocampectomy

Removal of the amygdala, part of the hippocampus and the parahippocampal gyrus
Temporal neocortex saved.

1958 Niermeyer - transcortical approach via gyrus temporalis medius
1985 Yasargil a Wieser - via fissura Sylvii





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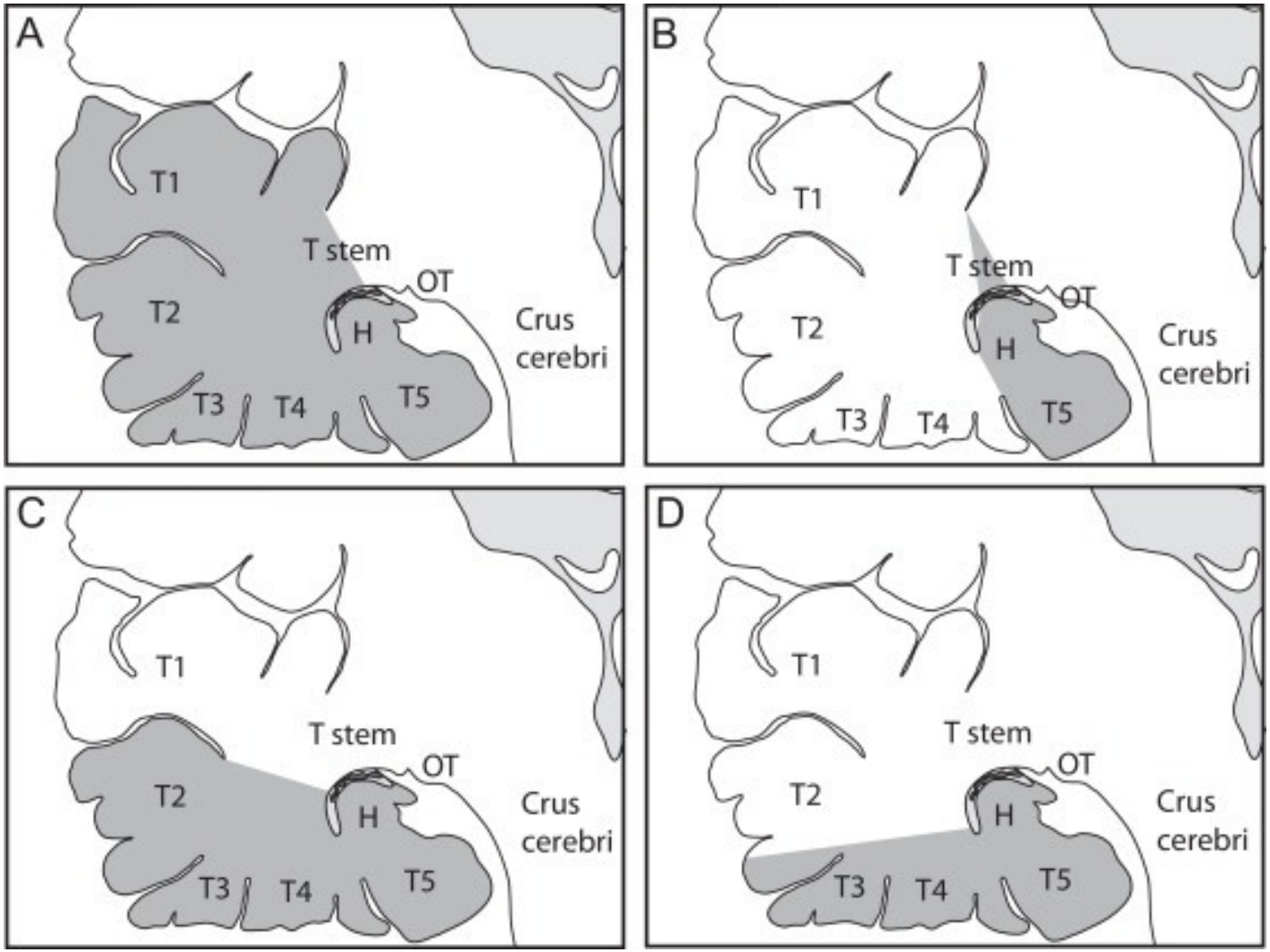
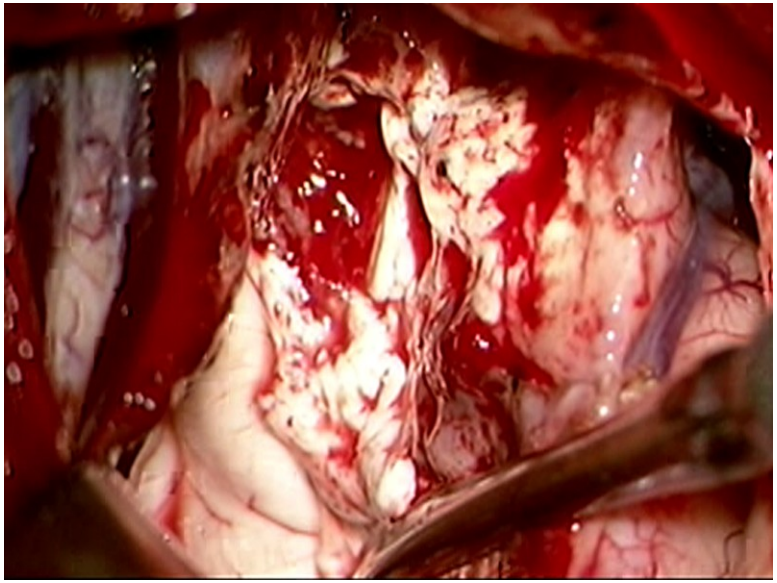
Types of temporal resection



C. Destrieux, Surgical anatomy of the hippocampus, Neurochirurgie 59 (2013) 149–158


ALM

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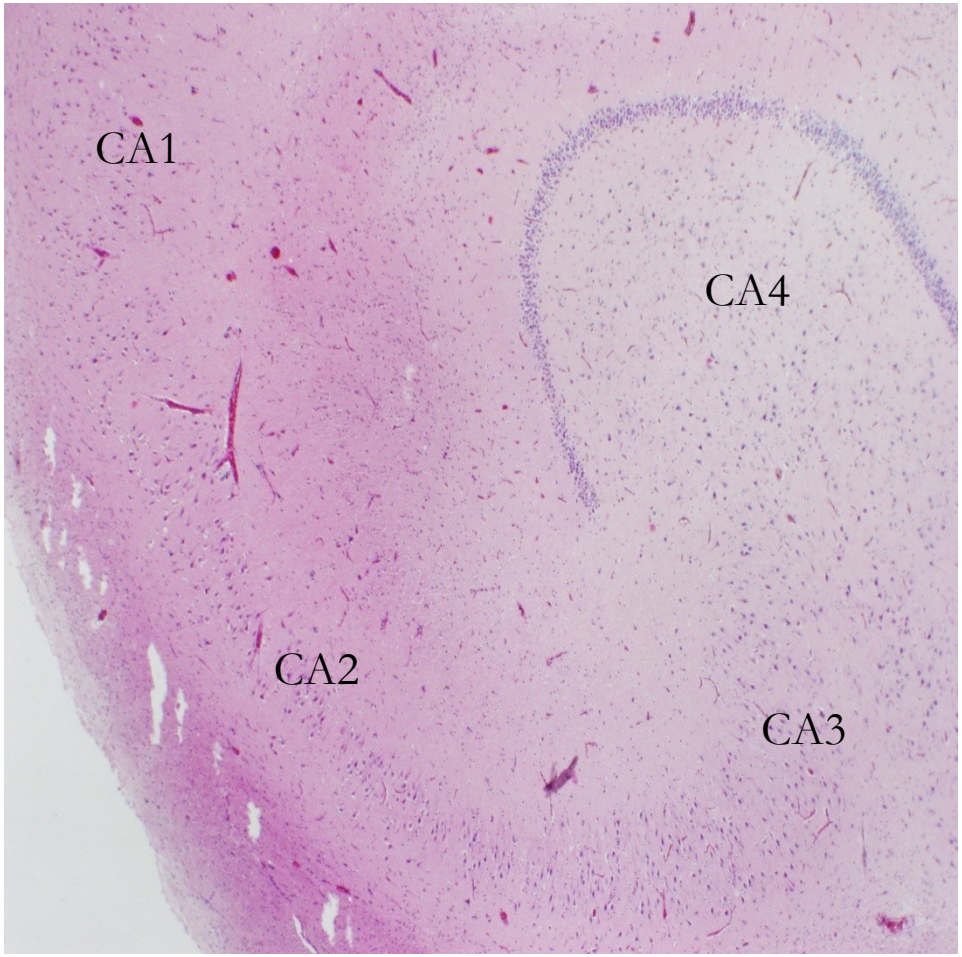
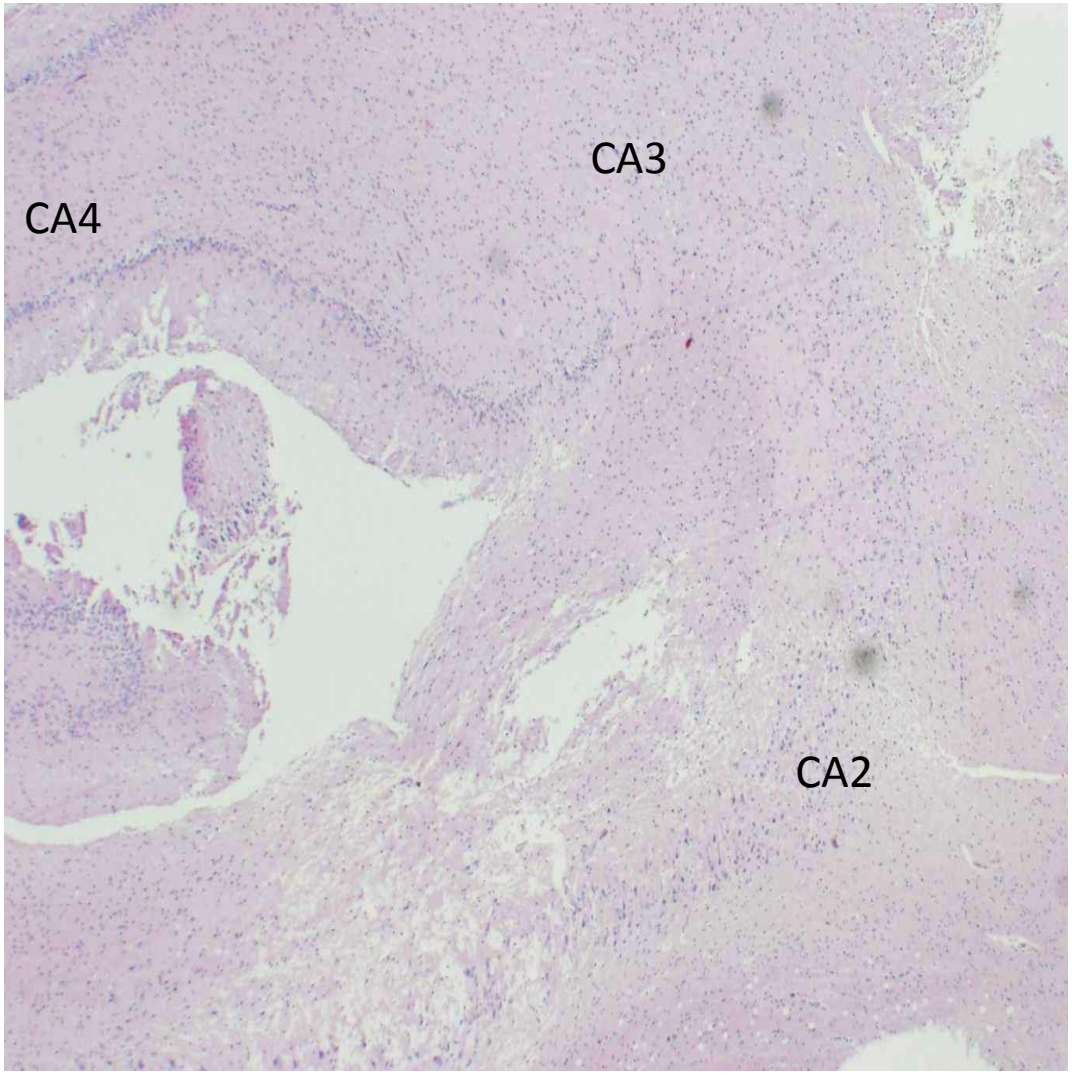
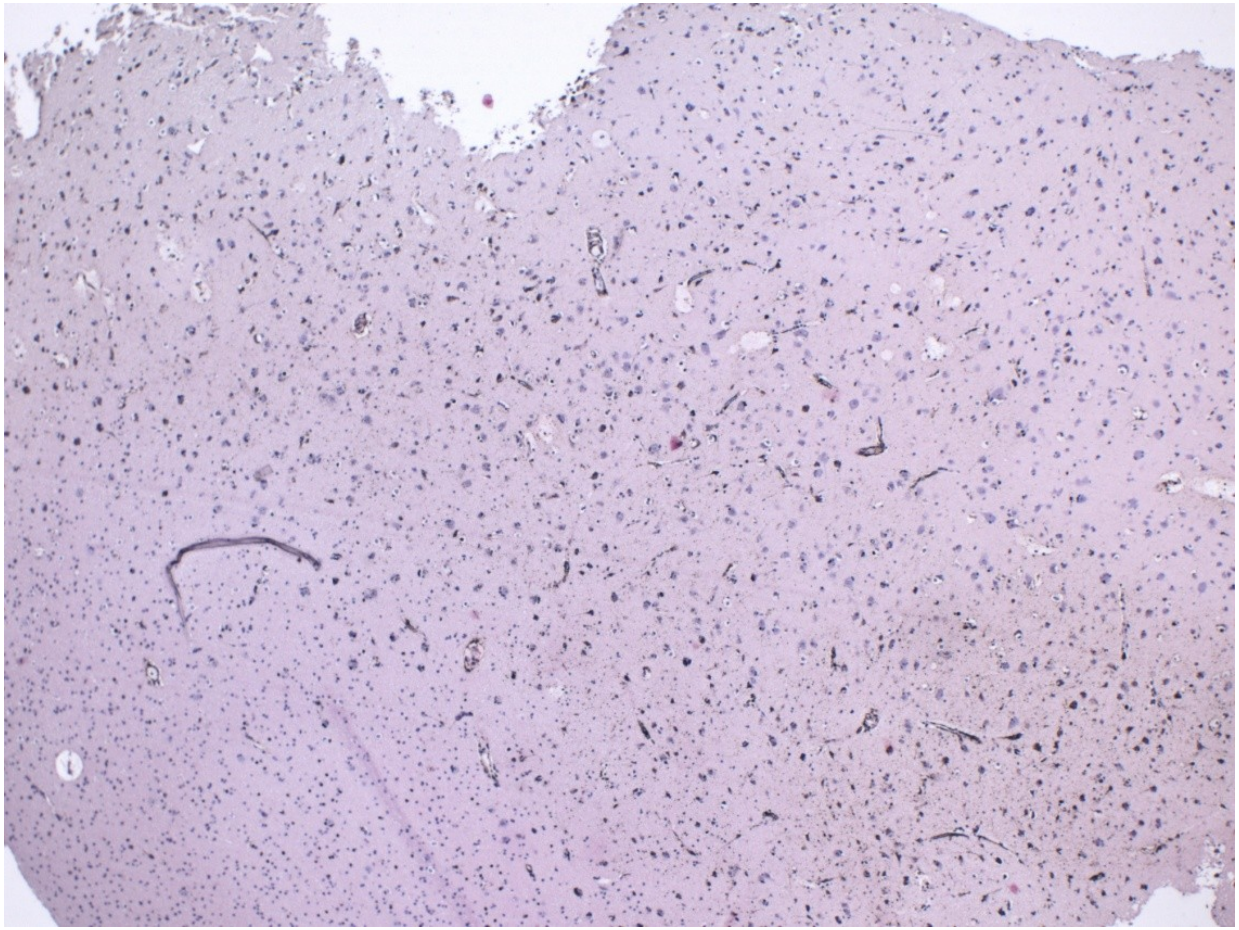
Hippocampus



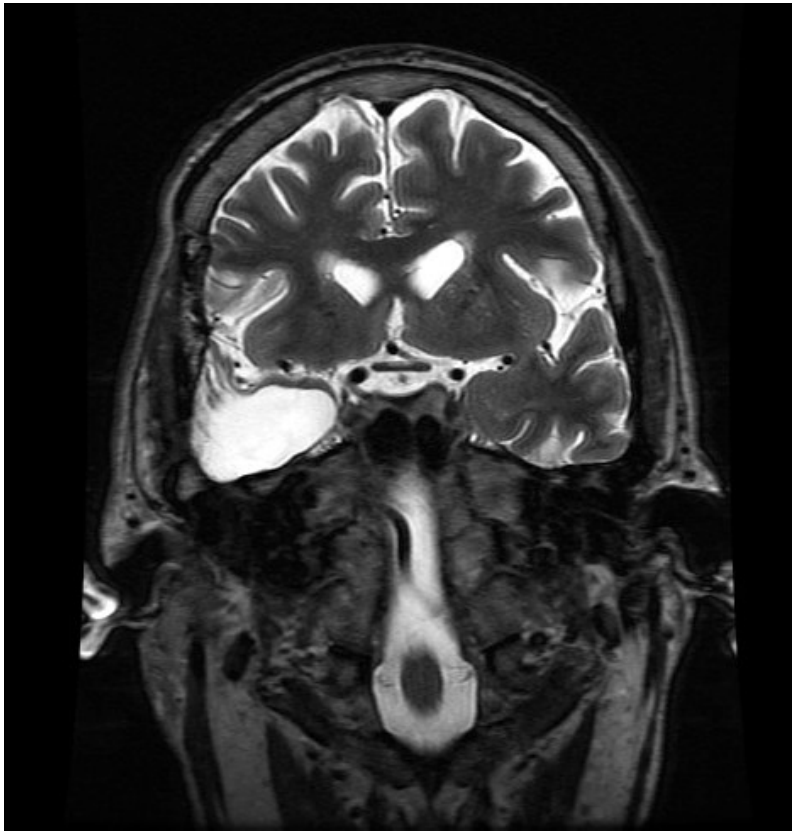
Hippocampal sclerosis, ILAE typ 1



Amygdala



Postoperative CT and MRI scan



Engel's classification

Effect of surgery:

Engel I - no seizures

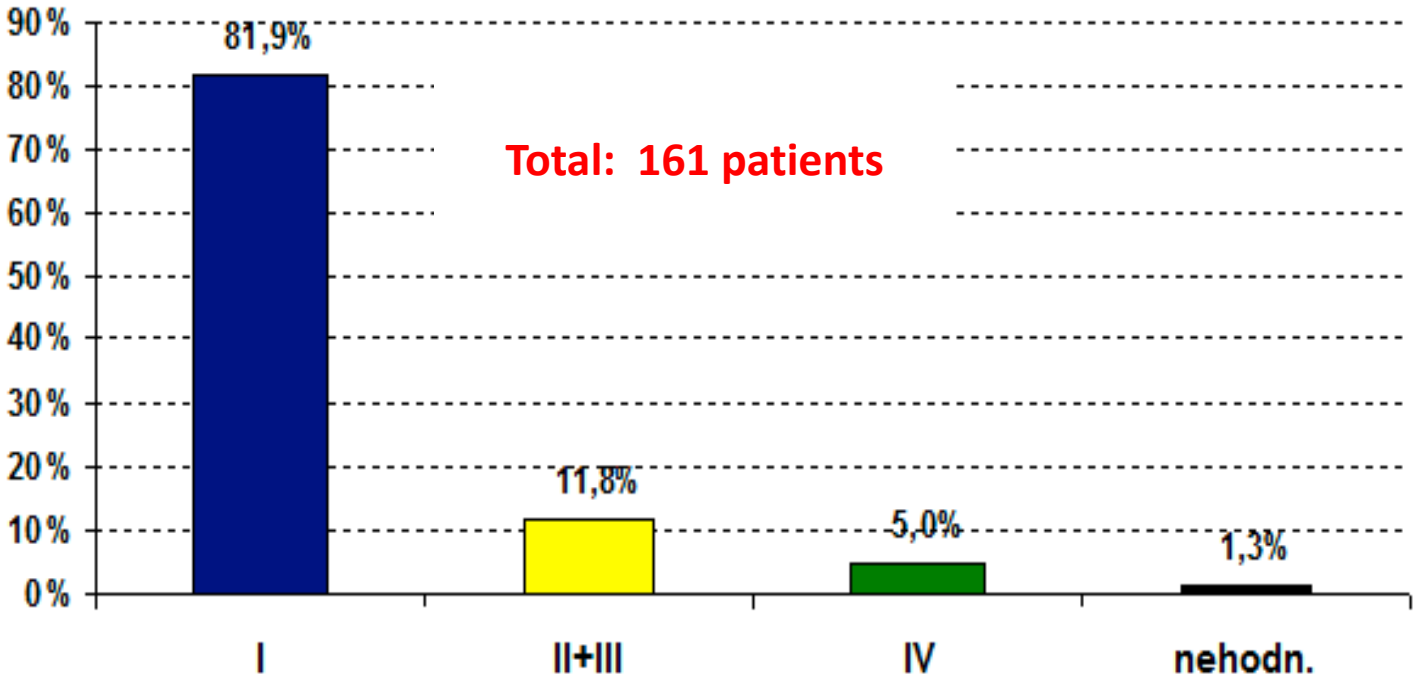
Engel II - nearly seizure-free, sporadic seizure

Engel III - a significant improvement

Engel IV - insignificant improvement, unchanged, worsening

Temporal lobe epilepsy surgery- outcome

Epilepsy Center Brno
1995-2009



Engel classification

Temporal lobe epilepsy surgery

Epilepsy Center Brno
2015

19 temporal resections

2 cortical resections

5 lesionectomy (4x cavernoma, 1x glioma)

12 AMTR

AMTR 5 men, 7 women, average age 32 yrs
7x l.dx., 5x l.sin.

Epilepsy surgery in Czech republic

2002 - 2014

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ÚVN (Prague)	26	25	28	29	35	39	38	29	38	25	14	23	16
Na Homolce (Prague)	23	21	18	8	18	15	12	8	17	17	10	20	12
FN Motol (Prague)	7	16	12	4	11	13	15	15	23	22	16	7	15
FN St.Anne (Brno)	**15**	**16**	**25**	**38**	**42**	**68**	**38**	**25**	**38**	**28**	**24**	**30**	**21**
	71	**78**	**88**	**81**	**106**	**135**	**103**	**77**	**116**	**67**	**64**	**80**	**64**

Teamwork

EPILEPSY CENTER BRNO

Neurologist
Neurosurgeon
Neuroradiologist
Neuropsychologist
EEG technician
Histopathologist
Geneticist

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