

### Introduction

Mesial temporal lobe epilepsy is the most common cause of refractory epilepsy in adults. In these patients selective or non-selective amygdalohippocampectomy can lead to seizure freedom in 66% of cases (1). However, the prognostic factors determining seizure outcome are still debatable. The purpose of this study was to identify the pre and post operative factors that are independent predictors of seizure outcome of patients who underwent non-selective amygdalohippocampectomy in Epilepsy Surgery Group from Centro Hospitalar de Lisboa Ocidental.

### Methods

Retrospective case-control study of the patients who underwent non-selective amygdalohippocampectomy, in our center, between 1997 and 2015. Exclusion criteria was follow-up < 1 year. Data was collected by consultation of Epilepsy Surgery Group prospective database, National Patient Registry and telephonic interview if missing data. Pre-operative data analysed included demographic characteristics, epilepsy history and imaging findings. Post-operative data collected were seizure outcome according to Engel classification, pathology results, presence of seizures in first post-operative week and surgical complications. Patients were divided in two groups according to Engel classification - seizure free (Engel class I) and non seizure free (Engel Classes II- IV). Univariate analysis of the aforementioned variables was performed using *openepi* software. p-value was calculated with Fisher exact test for discrete variables and *t* test for continuous variables. 95% confidence interval was used.

### Results

During this period 119 patients underwent anterior temporal lobectomy and amygdalohippocampectomy. 63 patients (53%) were female and 56 (47%) were male. The mean age at the time of surgery was 31.88 years. Right side surgery was performed in 66 patients (55%) and left side surgery was performed in 53 patients (45%). After an average 9 years follow-up (range 1-18 years) 91 patients (76%) were seizure-free and 28 patients (24%) were non seizure free - 18 patients Engel Class II, 7 patients Engel Class III and 3 patients Engel Class IV - tables 1 and 2.

**Table 1**

	n (%)	Mean (±SD)	Median	Range
Male	56 (47%)			
Female	63 (53%)			
Age at surgery (years)		31,88 (±12,93)	34	1-63
Surgery location - right	66 (55%)			
Surgery location - left	53 (45%)			
Follow-up (years)		8,70 (±5,19)	8	1-18

Patient characteristics

**Table 2**

Seizure outcome	Engel I	Engel II	Engel III	Engel IV
n (%)	91 (76%)	18 (15%)	7 (6%)	3 (3%)
	Seizure free 91 (76%)	Non seizure-free 28 (24%)		

Seizure outcome

In univariate analysis 4 factors were associated with non-seizure free outcome: negative MRI (p=0.039), date of surgery before 2005 (p=0.033), major surgical complications (p<0.0001, OR 13.04) and seizures in early post-operative period (p=0.05). No significant differences were found in gender, age at time of surgery, epilepsy duration, early insults, pathology result and surgery side - tables 3 and 4.

**Table 3**

Variable	Seizure-free (n=91)	Non seizure-free (n=28)	p value
Gender (female)	48	15	0.56
Age at 1 <sup>st</sup> seizure (<10 years)	57	16	0.47
Epilepsy duration (>10 years)	66	16	0.14
Febrile seizures	31	9	0.58
Traumatic brain injury	7	5	0.10
CNS infection	15	4	0.55
Perinatal anoxia	3	0	0.46
Family history of epilepsy	6	0	0.20
Generalized seizures	52	15	0.51
Seizure frequency	13.95 (±21.74)	12.85 (±21.83)	0.83
Negative MRI	0	2	<b>0.039</b>

Pre-operative variables

**Table 4**

Variable	Seizure-free (n=91)	Non seizure-free (n=28)	p value
Age at surgery	31.30 (±12.65)	33.79 (±13.88)	0.30
Surgery on the left side	40	13	0.49
Surgery before 2005	45	20	<b>0.033</b>
Invasive EEG	4	3	0.19
Seizures in the 1 <sup>st</sup> post-operative week	6	7	<b>0.05</b>
Major surgical complications	3	8	<b>&lt;0.0001</b>
Pathology other than MTS	11	6	0.18

Post-operative variables

### Discussion

With the exception of major surgical complications, the other negative prognostic factors found in our series had also been described in previous series (2). The negative MRI rises the hypothesis of an extra-temporal foci and major surgical complications can generate a new epileptic foci. Seizures in early post-operative period could be a reflection of a remaining epileptic foci. The increased risk of non seizure freedom in patients operated before 2005 could be related to lack of experience of epilepsy group, improvement in diagnostic studies or late epilepsy recurrence in patients with longer follow-up.

This study is limited because it is a retrospective analysis, EEG data were not analysed, the absence of multivariate analysis and it is a single center analysis.

### Conclusions

In our series, negative pre-operative MRI, surgery before 2005, major surgical complications and seizures in early post-operative period were associated with higher risk of non seizure-freedom after non-selective amygdalohippocampectomy.

### Learning Objectives

Identify some factors associated with non seizure freedom after anterior temporal lobectomy and amigdalo-hipocampectomy.

### References

- 1 - Téllez-Zenteno et al - "Long term seizure outcomes following epilepsy surgery: a systematic review and meta-analysis" - Brain (2005) 128:1188-1198
- 2 - Zhang et al - "Identification of common predictors of surgical outcomes for epilepsy surgery" - Neuropsychiatric disease and treatment (2013) 9:1673-1682