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# **Surgical Outcome of Drug-Resistant Epilepsy in Prasat Neurological Institute**

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# Background

- ▣ More than **30%** of patients with epilepsy are refractory to antiepileptic drug treatment. For these drug-resistant patients surgery is a therapeutic option.
- ▣ Data from multiple sources suggest that between **55 - 70%** of patients underwent temporal resection and **30-50%** of patients underwent extra-temporal resection become completely seizure-free.

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## Background

- Assessment of long-term outcome is essential for epilepsy surgery because it is an irreversible procedure and has a chronic effect on the life quality.
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# Objective

- To study seizure outcome and predictor of seizure recurrence in patients with drug-resistant epilepsy in Prasat Neurological institute(PNI), Thailand.
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## Methods

- ▣ Patients with drug-resistant epilepsy whose aged above **15** years old and underwent epilepsy surgery in PNI during **November 2010- November 2014** were recruited. All of them must have at least 6 months follow up post-operatively.
  - ▣ Seizure outcome was evaluated every 6 months using **ENGEL classification**. All variables related to the outcome were collected from outpatient and inpatient records.
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# Methods

- ▣ Seizure outcome was analyzed using **survival analysis** and predictors of seizure recurrence were analyzed using **Kaplan-Meier method** and **Cox proportional hazards model**.
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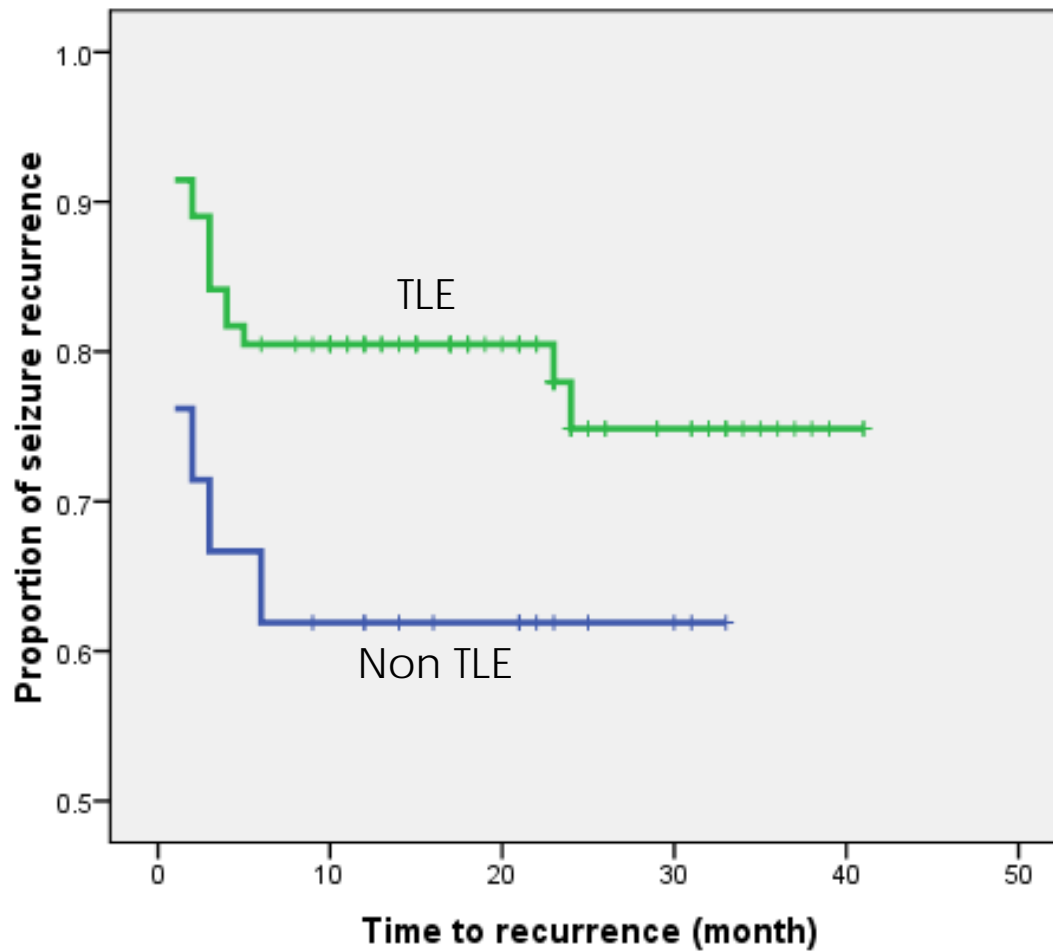
## Results

- ▣ **One hundred and three** adult patients with mean age of **36** years old (15-69) were studied. Forty-seven percent is female. Mean age onset of epilepsy is **18** years old (1-58). Mean epilepsy duration is **16** years (1-52). Mean seizure frequency is **12** per month (1-210).
  
  - ▣ Mean follow-up is **22** months (6-41). About **eighty-three** percent have temporal lobe epilepsy (TLE).
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# Results

Follow up period	6 mo	1 yr	2 yr	3 yr
	n=103	n=95	n=51	n=18
<b>Engel 1</b>	71%	78%	80%	78%
<b>Engel 2</b>	15%	8%	6%	6%
<b>Engel 3</b>	11%	12%	14%	3%
<b>Engel 4</b>	4%	2%	0	0





Survival time	month	95% CI
Overall	31.1 ± 1.7	27.9-34.4
TLE	32.46 ± 1.8	28.98-35.94
Non TLE	21.19 ± 3.3	14.74-27.64

**Log rank (Mantel-Cox) p-value 0.09**

<b>TLE</b>	<b>82</b>	<b>73</b>	<b>38</b>	<b>16</b>	<b>4</b>
<b>Non TLE</b>	<b>21</b>	<b>12</b>	<b>9</b>	<b>4</b>	

Kaplan-Meier survival estimates for TLE & non TLE using seizure recurrence as the primary end point

# Results

Seizure free (percent)	6 month	1 year	2 years	3 years
<b>Non TLE (n=21)</b>	71.4	61.9	61.9	-
<b>TLE (n=82)</b>	92.7	80.4	78	78

## Univariable and multivariable survival analysis of time to first seizure

Variables	Crude HR	95% CI	p-value	Adjusted HR	95% CI	p-value
<b>Age</b>	1.00	0.97-1.03	0.78			
<b>Sex</b>	0.84	0.39-1.83	0.66			
<b>Onset</b>	1.00	0.97-1.03	0.94			
<b>Duration</b>	0.99	0.96-1.03	0.70			
<b>Seizure frequency</b>	1.00	0.99-1.01	0.42			
<b>Risk factors</b>	1.97	0.90-4.26	0.09			
<b>TLE</b>	1.98	0.86-4.55	0.11			

## Univariable and multivariable survival analysis of time to first seizure

Variables	Crude HR	95% CI	p-value	Adjusted HR	95% CI	p-value
<b>IED population</b>						
- 1 population	1					
- ≥2 populations	1.84	0.81-4.18	0.14			
- none	0.52	0.15-1.84	0.31			
<b>IED pattern</b>						
- regional	1					
- multiregional	0.72	0.17-3.09	0.66			
- none	0.42	0.13-1.42	0.16			
<b>Ictal onset</b>						
- 1 onset						
- ≥ 2 onsets	2.83	1.12-7.19	<b>0.03</b>	7.2	1.38-37.28	<b>0.02</b>
- none	0.55	0.13-2.38	0.43			
<b>Ictal pattern</b>						
- regional	1					
- multiregional & generalized	2.68	0.36-19.95	0.34			
- non-localizable	0.76	0.23-2.56	0.66			

## Univariable and multivariable survival analysis of time to first seizure

Variables	Crude HR	95% CI	p-value	Adjusted HR	95% CI	p-value
<b>MRI</b>	1.93	0.58-6.44	0.29			
- 1 lesion						
- multiple lesions	3.35	1.46-7.65	<b>0.04</b>	1.75	0.55-5.63	<b>0.35</b>
- no lesion	3.09	0.86-11.11	0.09			
<b>ICEEG used</b>	2.17	0.94-4.99	0.07			
<b>Side of surgery</b>	0.57	0.25-1.27	0.17			
<b>Operation</b>						
- lobectomy	1					
- lesionectomy	0.99	0.29-3.39	0.99			
- multilobar resect	3.46	1.27-9.41	<b>0.02</b>	13.51	1.05-173.1	<b>0.045</b>

# Complication

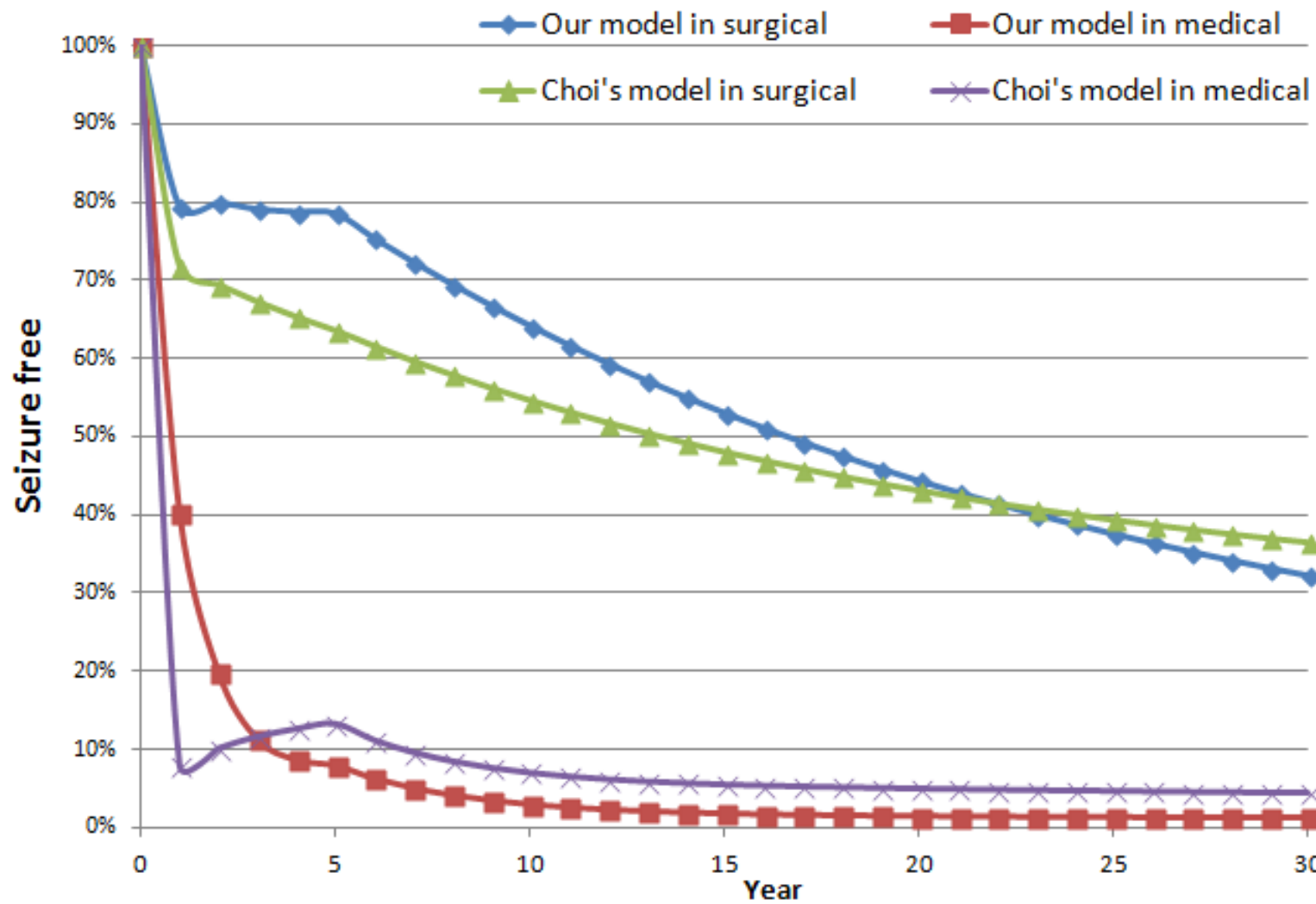
- Rate of transient complication (recover within 6 mo) is 10.6% and permanent complication (recover in >6mo) is 9.7%.
- No death.

	quadrantanopia	hemianopia	memory	naming	weakness
Temporary	3	0	1	5	2
Permanent	4	2	0	3	1
Total	7	2	1	8	3

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## Discussions

- Surgical treatment in TLE and non TLE patients with drug-resistance results in favorable outcome (seizure free rate 78% (TLE) and 62% (non TLE) at 2 years).



Kitwitee P & Unnwongse K et al 2014.



# Discussions

- Multiple ictal onsets and multilobar resections are negative predictors of seizure outcome.
- In line with previous studies, multiple ictal onsets required multilobar resections may reflect broad epileptogenic zones or complex epileptogenic network.

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## Advantages and Limitations

- Has homogeneous data from one center, one team, one surgeon, and same set of technology.
  - However it has short term follow up and has small number of patients, therefore long term outcome and subgroup analysis could not be accomplished.
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## Conclusions

- Favorable seizure outcomes after epilepsy surgery were obtained in both TLE and non TLE patients with drug resistance.
  - Number of ictal onset and type of operation predict seizure recurrence after surgery.
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Thank you for your attention



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