

# Welcome!

2018 Annual Pediatric Epilepsy  
Patient Care Conference  
April 28, 2018



**EPILEPSY  
FOUNDATION**

Arizona

BARROW Neurological Institute  
at **PHOENIX CHILDREN'S** *Hospital*

# Surgical Treatment for Epilepsy

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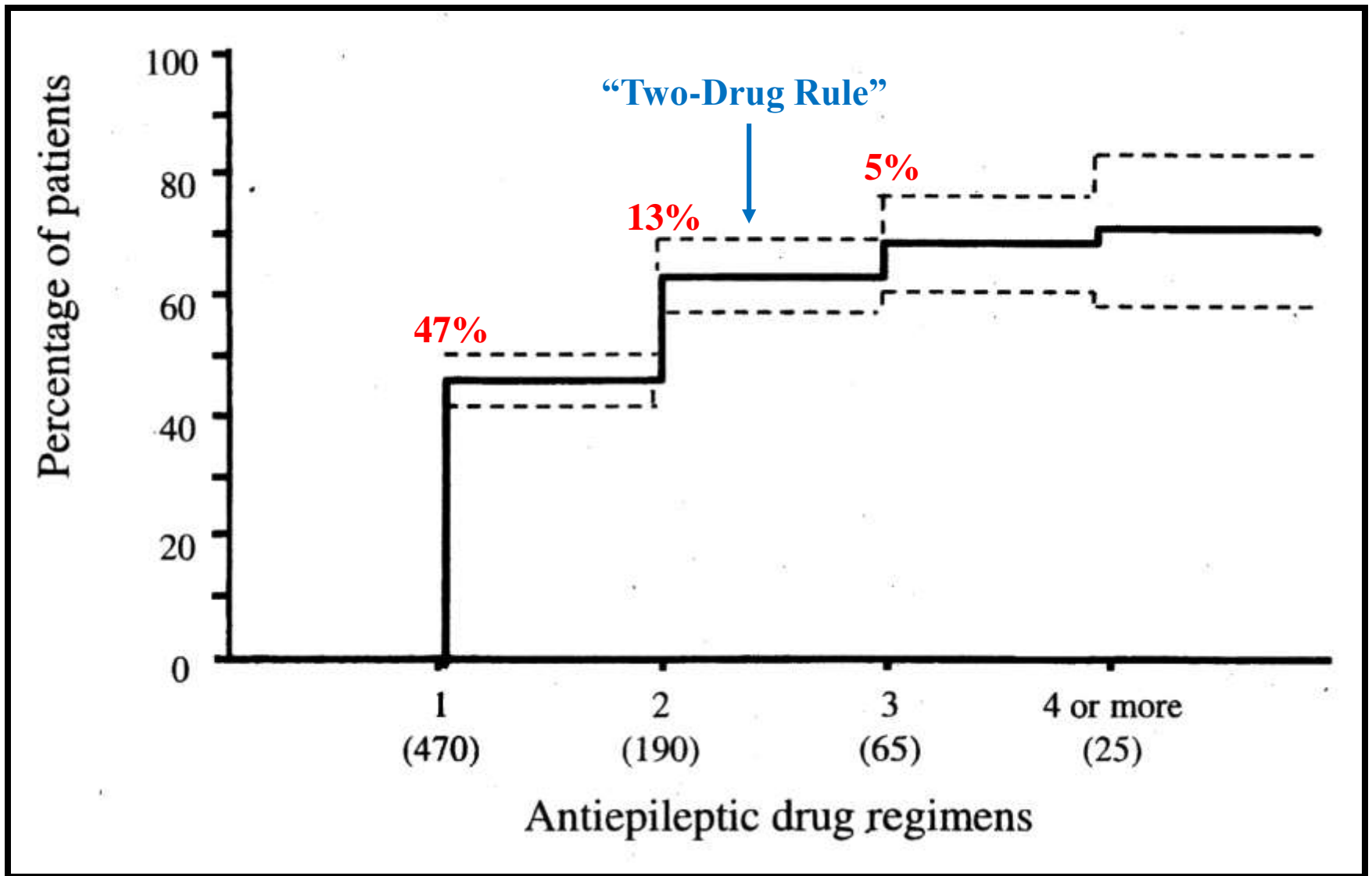
Pediatric Epilepsy  
Patient Care Conference  
April 27, 2018



BARROW Neurological Institute  
at **PHOENIX CHILDREN'S** Hospital

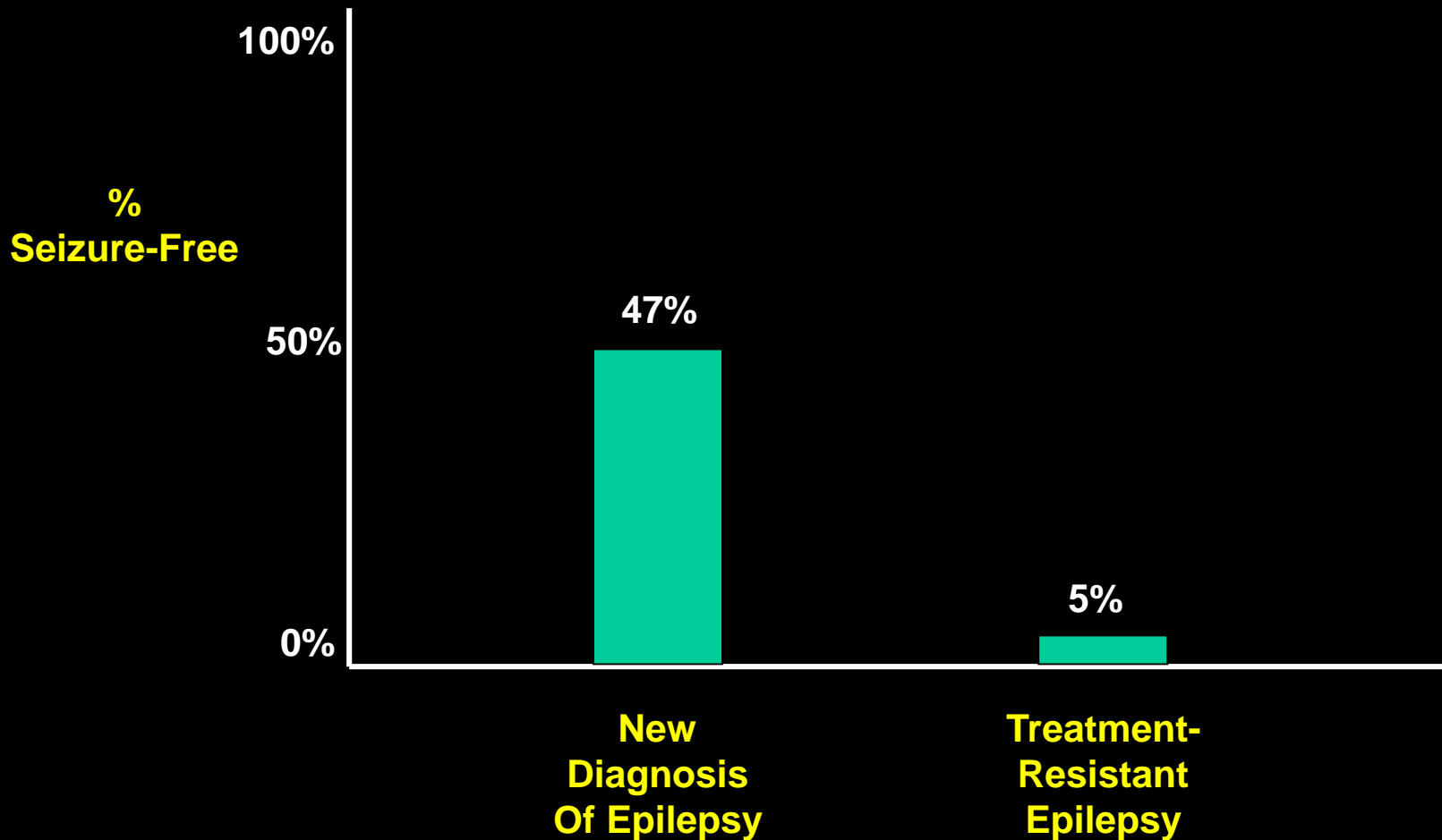




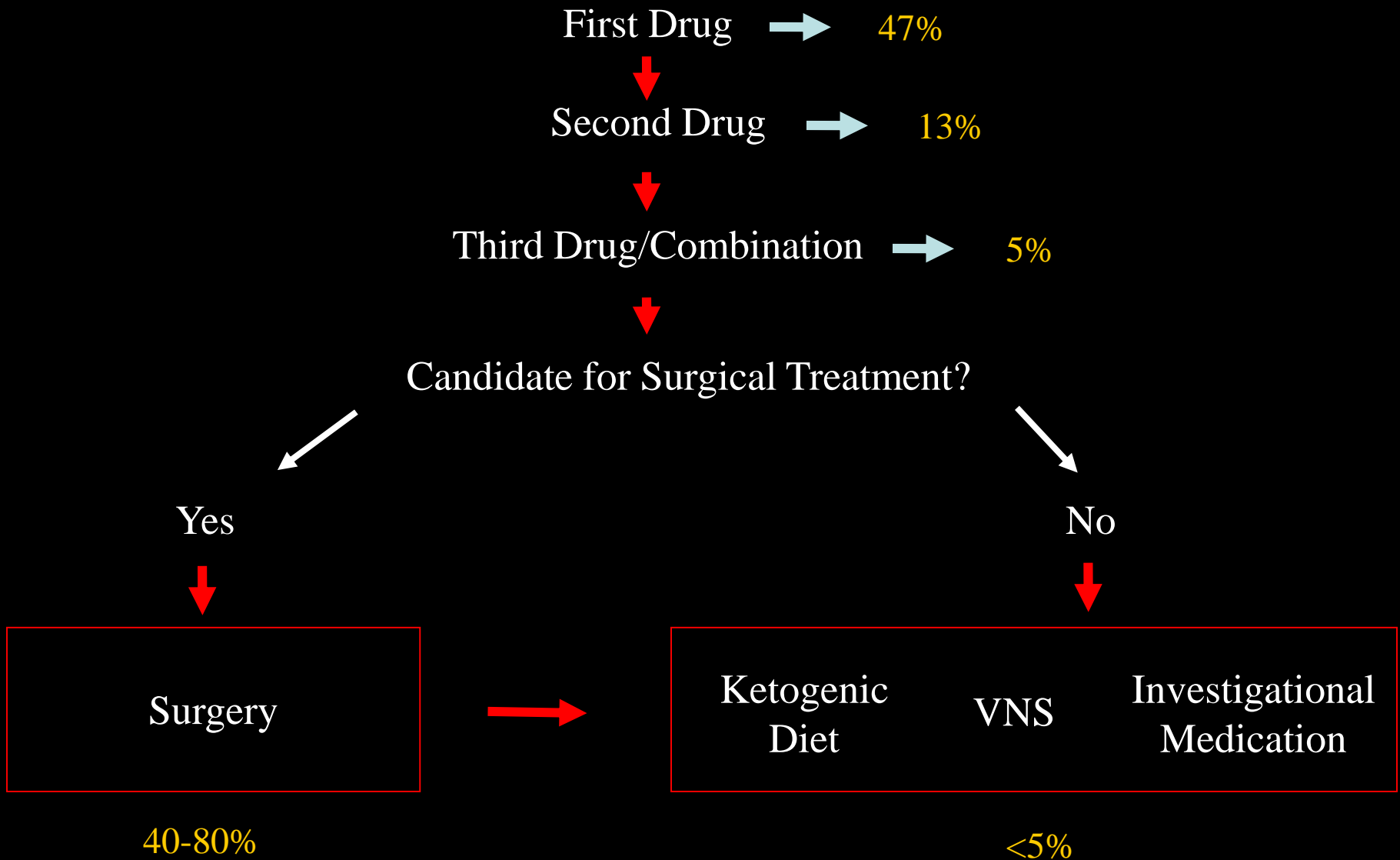


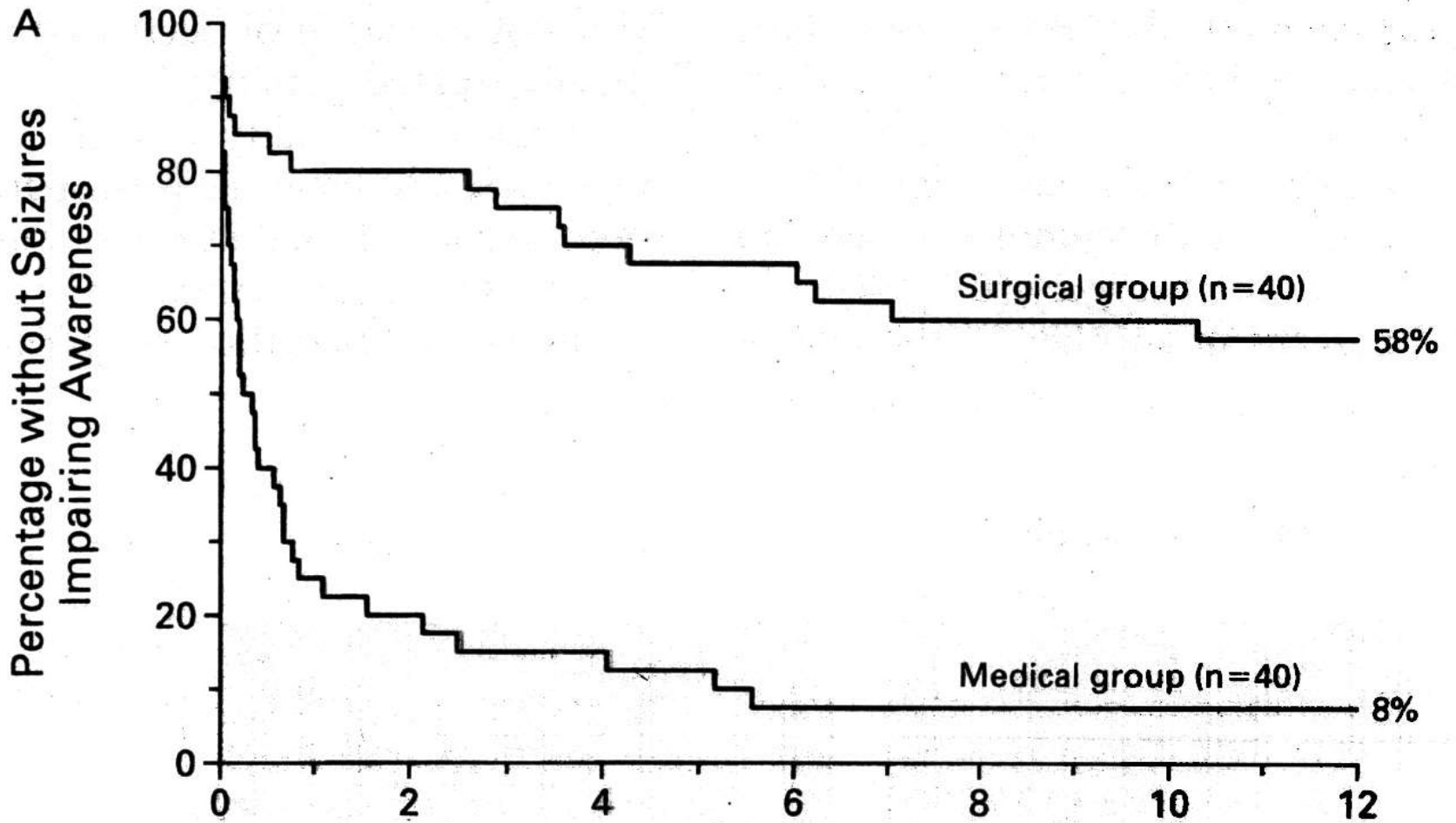
# Epilepsy and Medications

## Likelihood of Being Seizure-Free



# Epilepsy Treatment Algorithm





Wiebe S, NEJM, 2001

# When to Consider Epilepsy Surgery?

```
graph TD; A[When to Consider Epilepsy Surgery?] --> B[Not Controlling Seizures]; A --> C[Too Many Side Effects]; B --- D[Or]; D --- C;
```

**Not  
Controlling  
Seizures**

**Or**

**Too  
Many  
Side Effects**



# When are You a Good Candidate For Epilepsy Surgery?



**Seizures Always  
Start in the  
Same Place  
or Area**

**And**

**That Place  
or Area is  
Safe  
To Treat**

# **Epilepsy Surgery: Two Key Concepts**

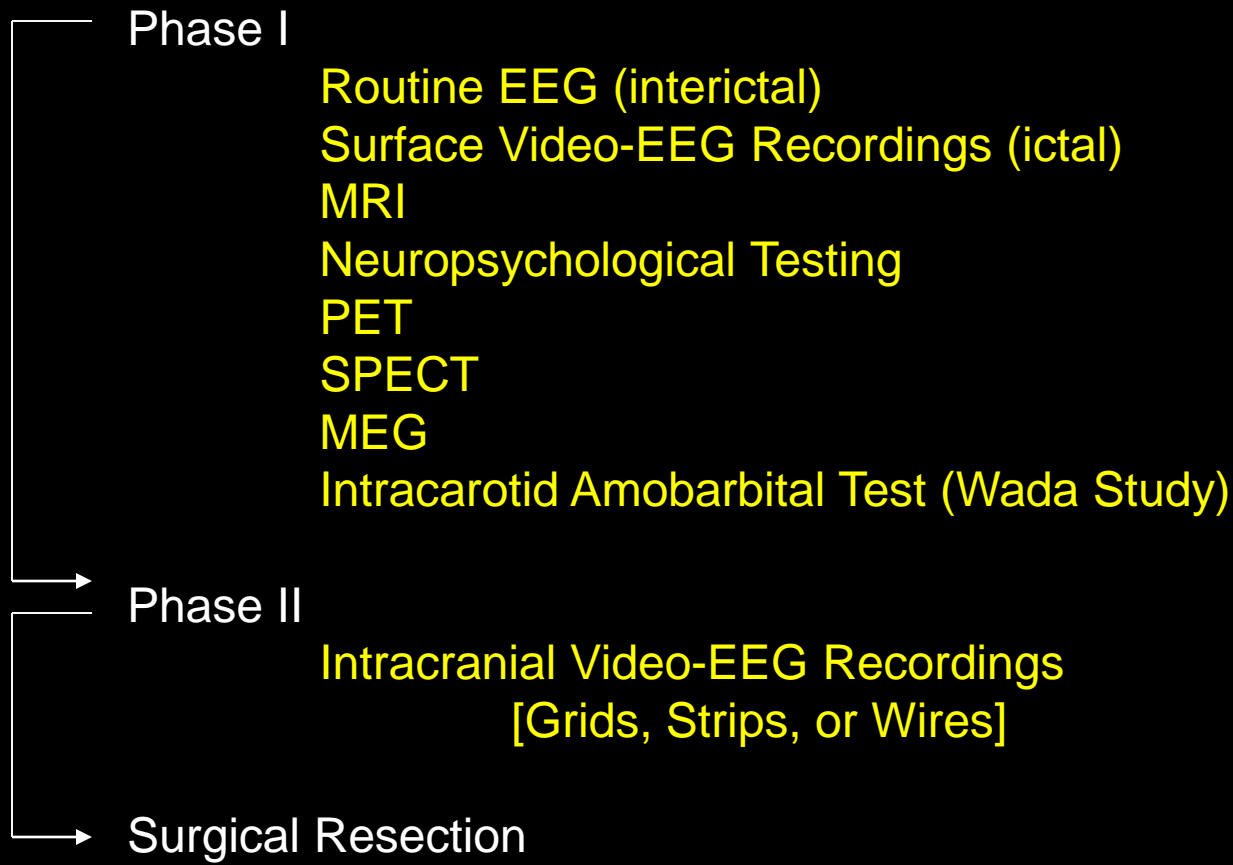
## **Localization**

**Where Are The Seizures Coming From?  
Will Surgery Work?**

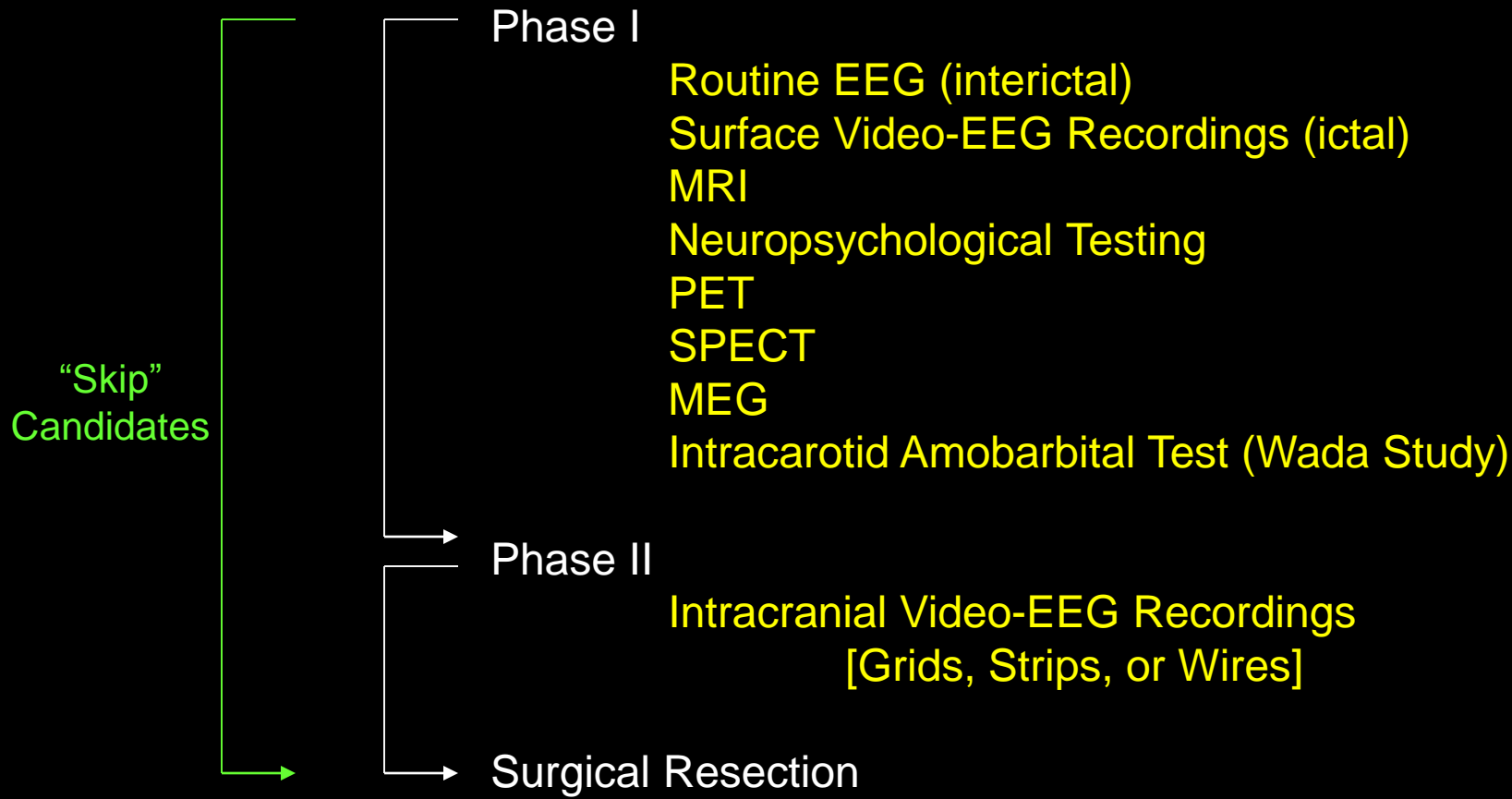
## **Functional Mapping**

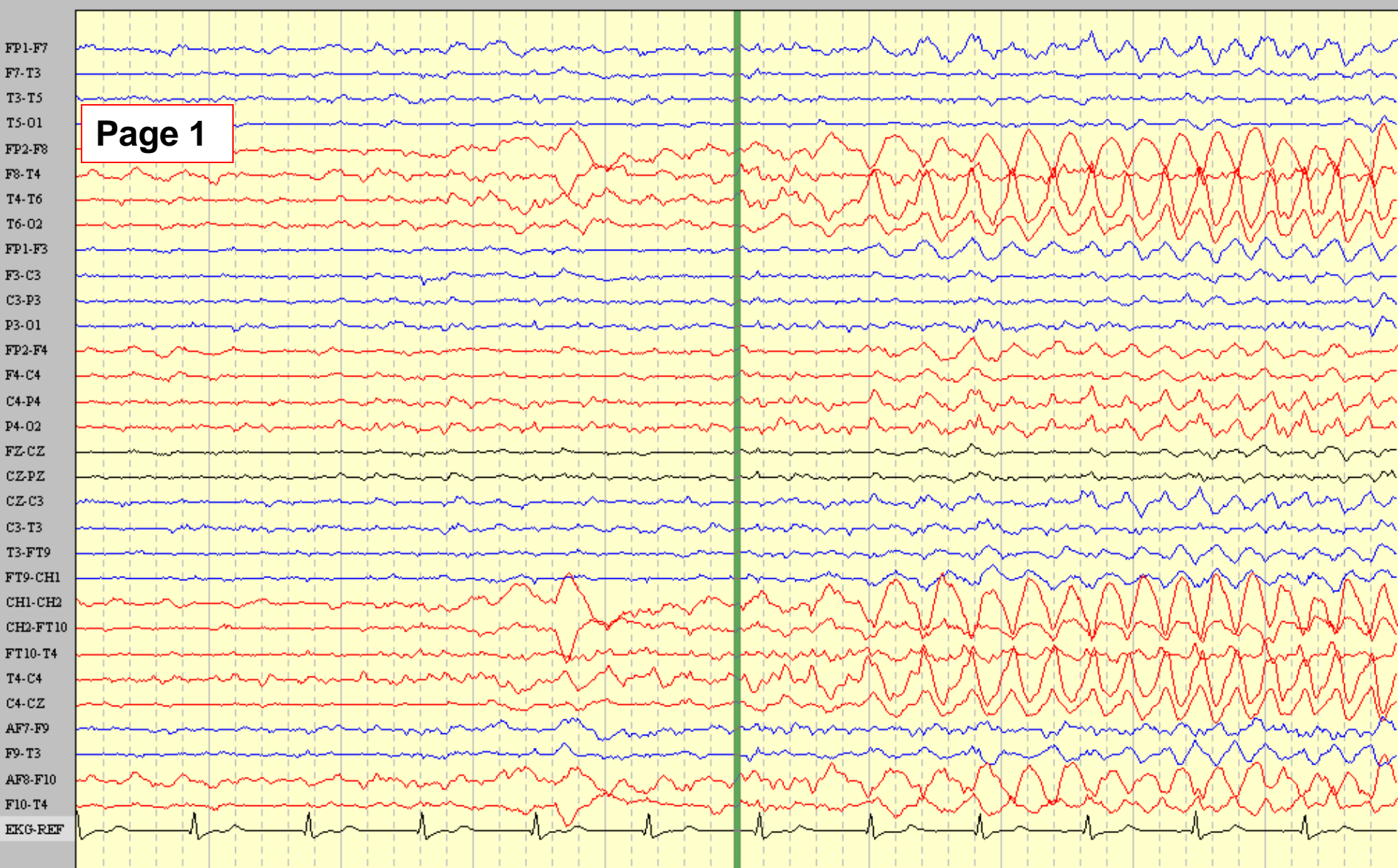
**Where Are Critical Brain Regions?  
Is Surgery Safe?**

# Intractable Epilepsy Pre-Surgical Evaluation

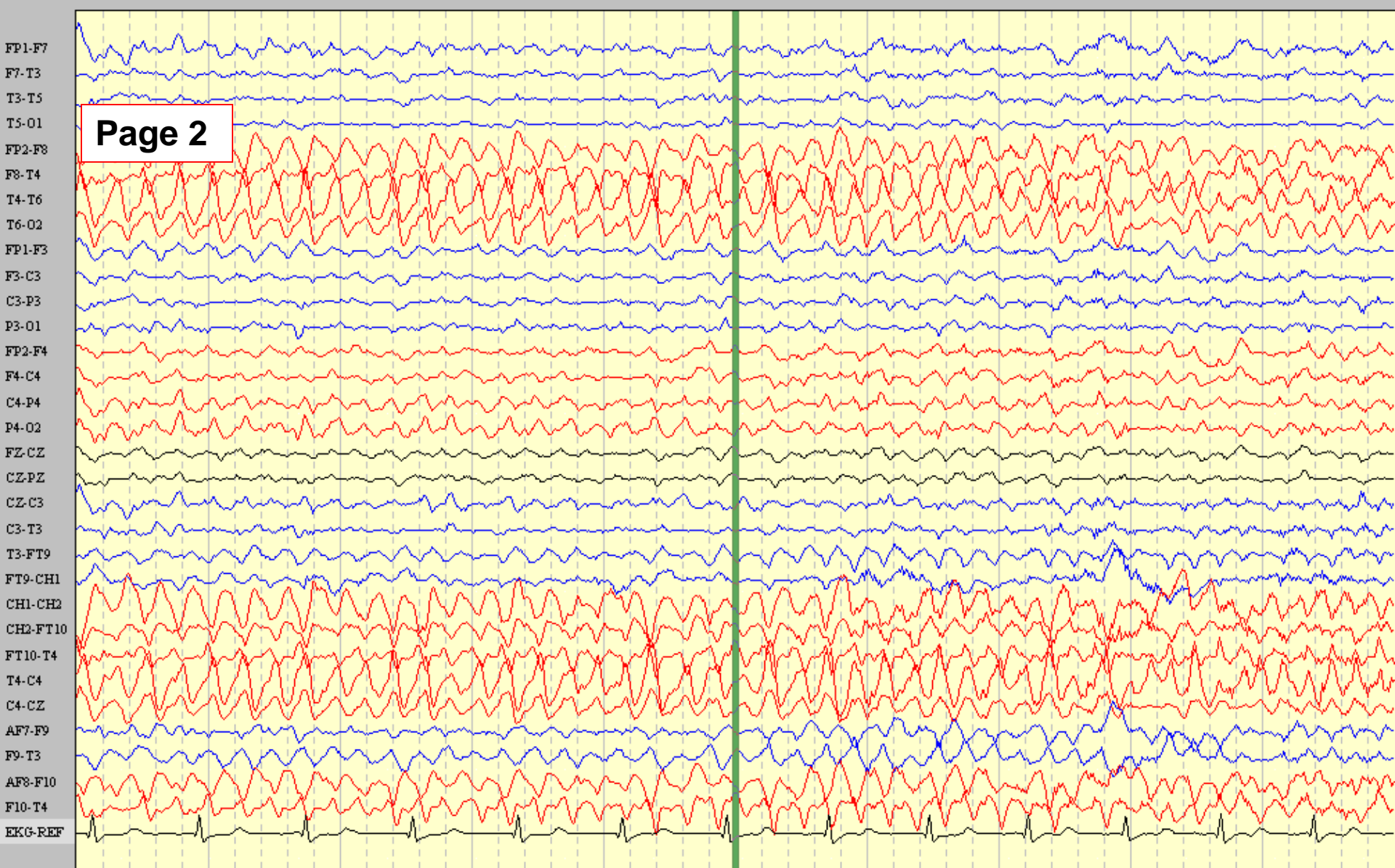


# Intractable Epilepsy Pre-Surgical Evaluation



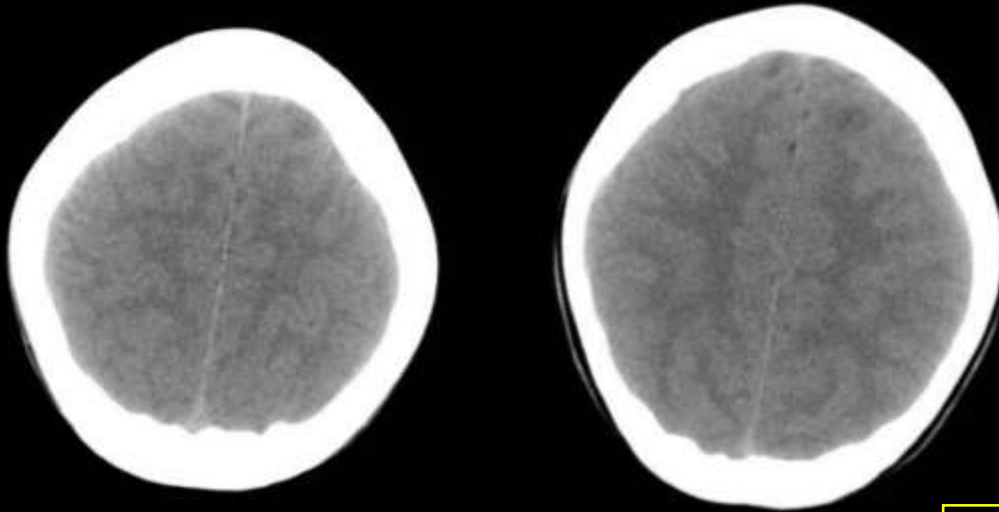


**12 Year Old Girl  
Temporal Lobe Epilepsy**



Page 2

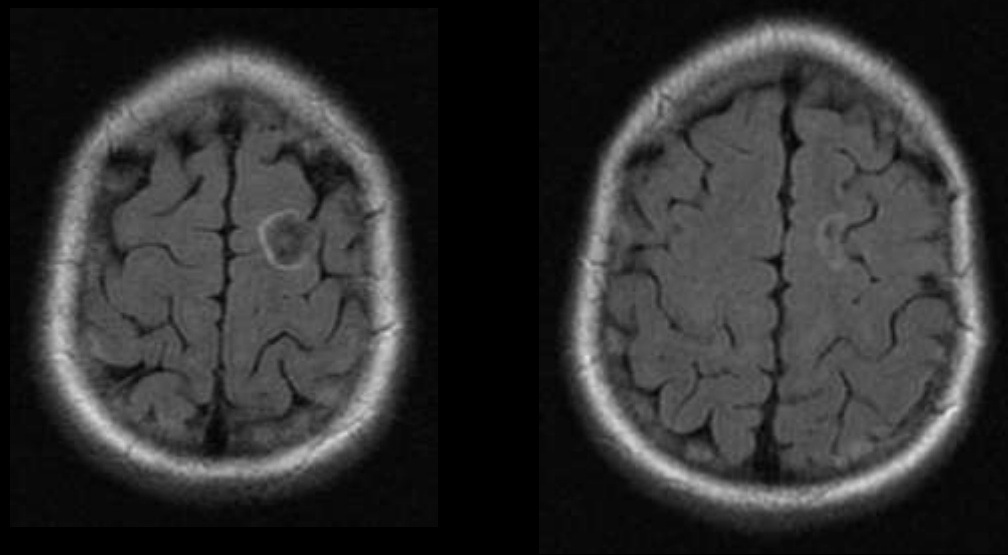
**12 Year Old Girl  
Temporal Lobe Epilepsy**



**Head CT  
“Normal”**



**9 Year Old Girl  
Recent Onset of Seizures**

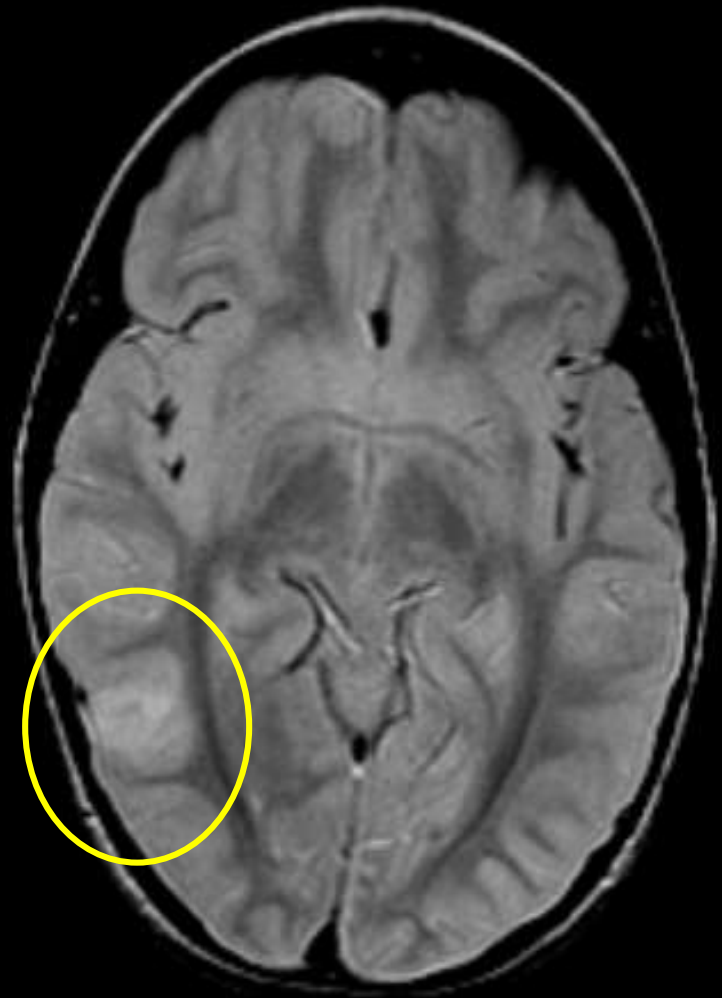


**Head MRI  
Abnormal**

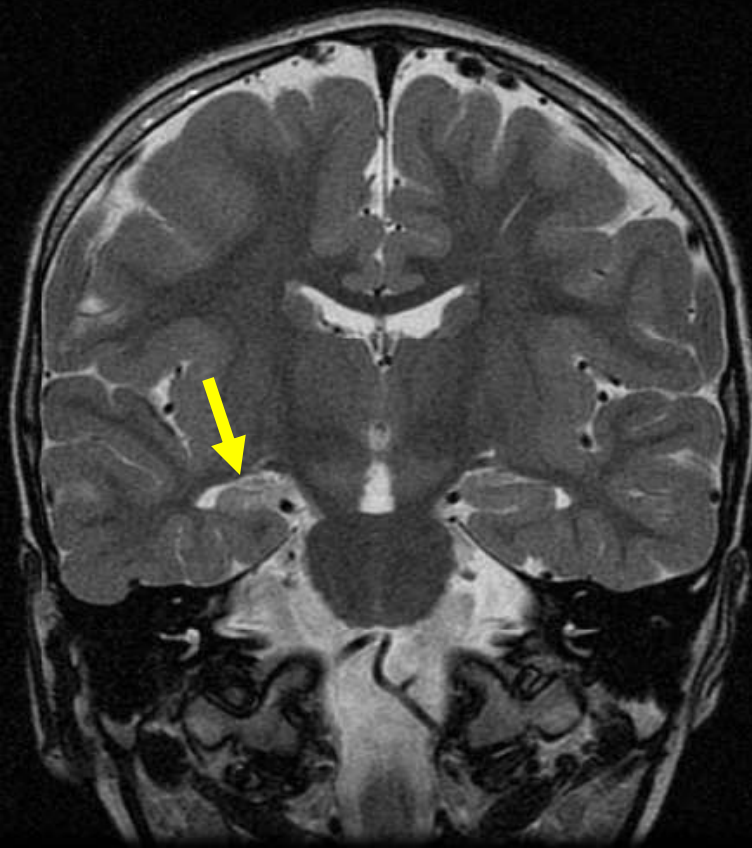


**8 Year Old Boy  
Epilepsy**

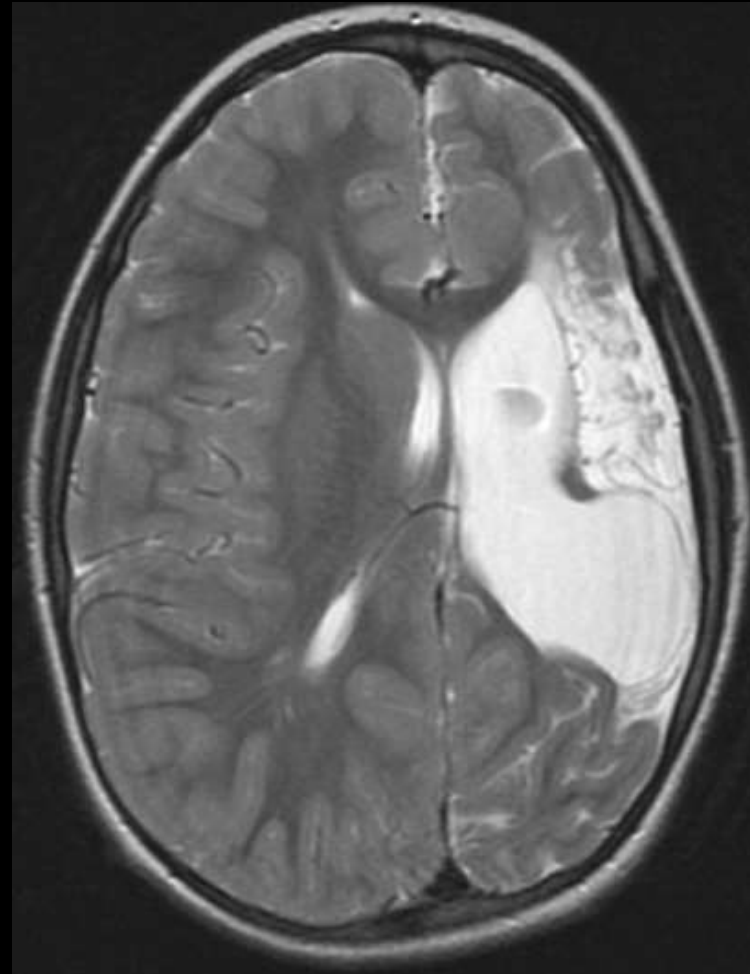
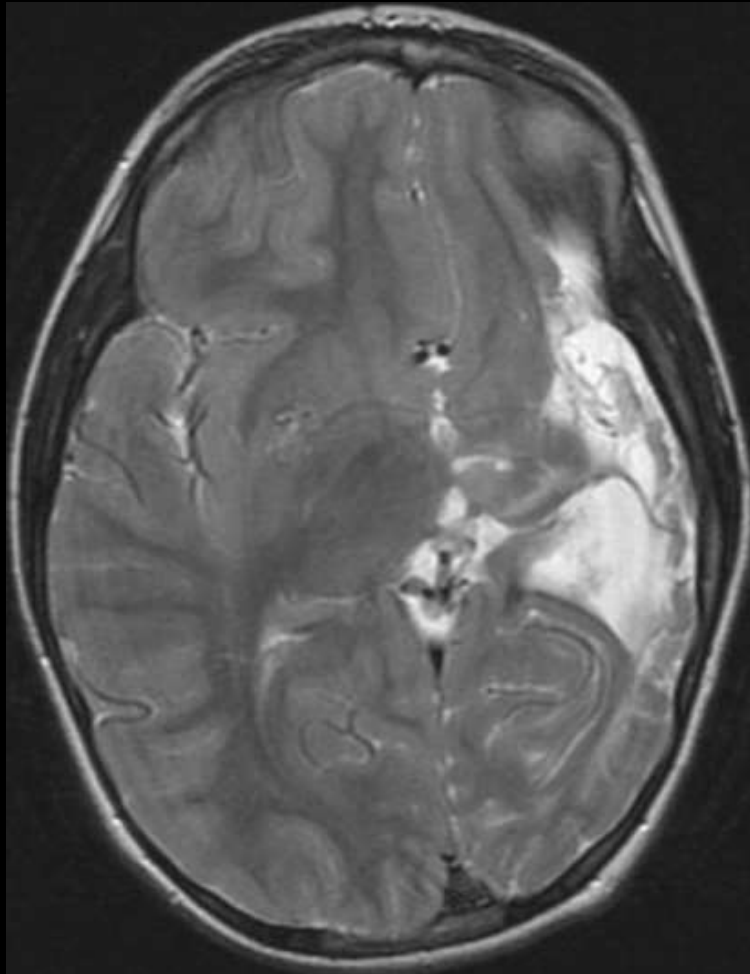
**Focal Cortical Dysplasia  
Or Low Grade Tumor**





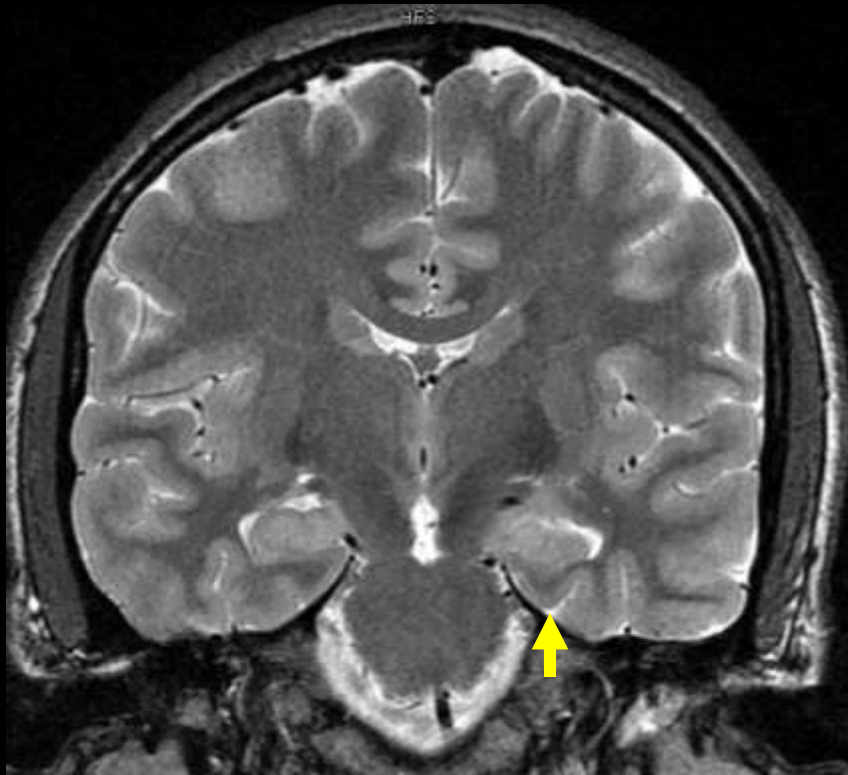


**3 Year Old Boy  
Epilepsy  
Mesial Temporal Sclerosis**

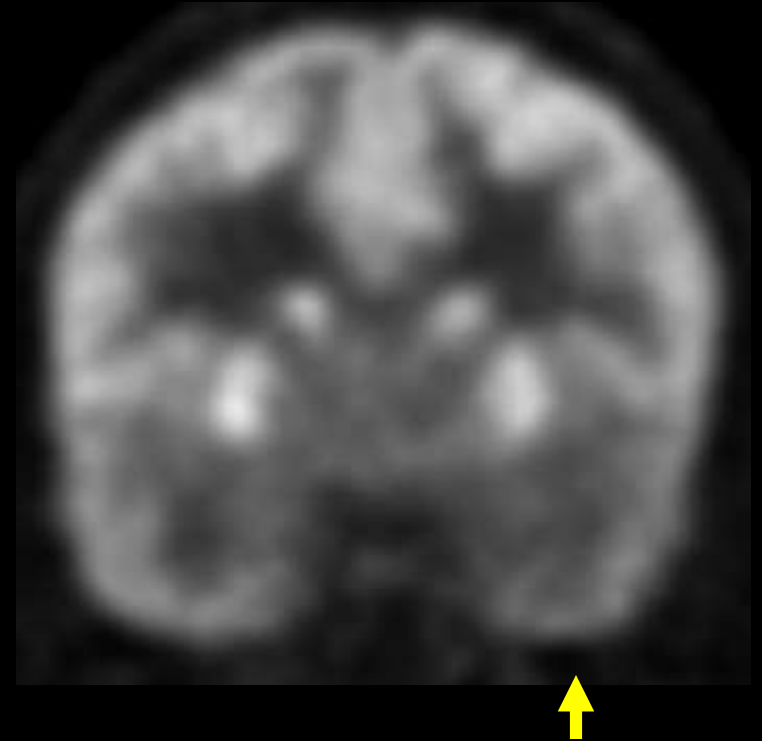


**7 Year Old Boy  
Epilepsy  
Congenital Left Stroke**

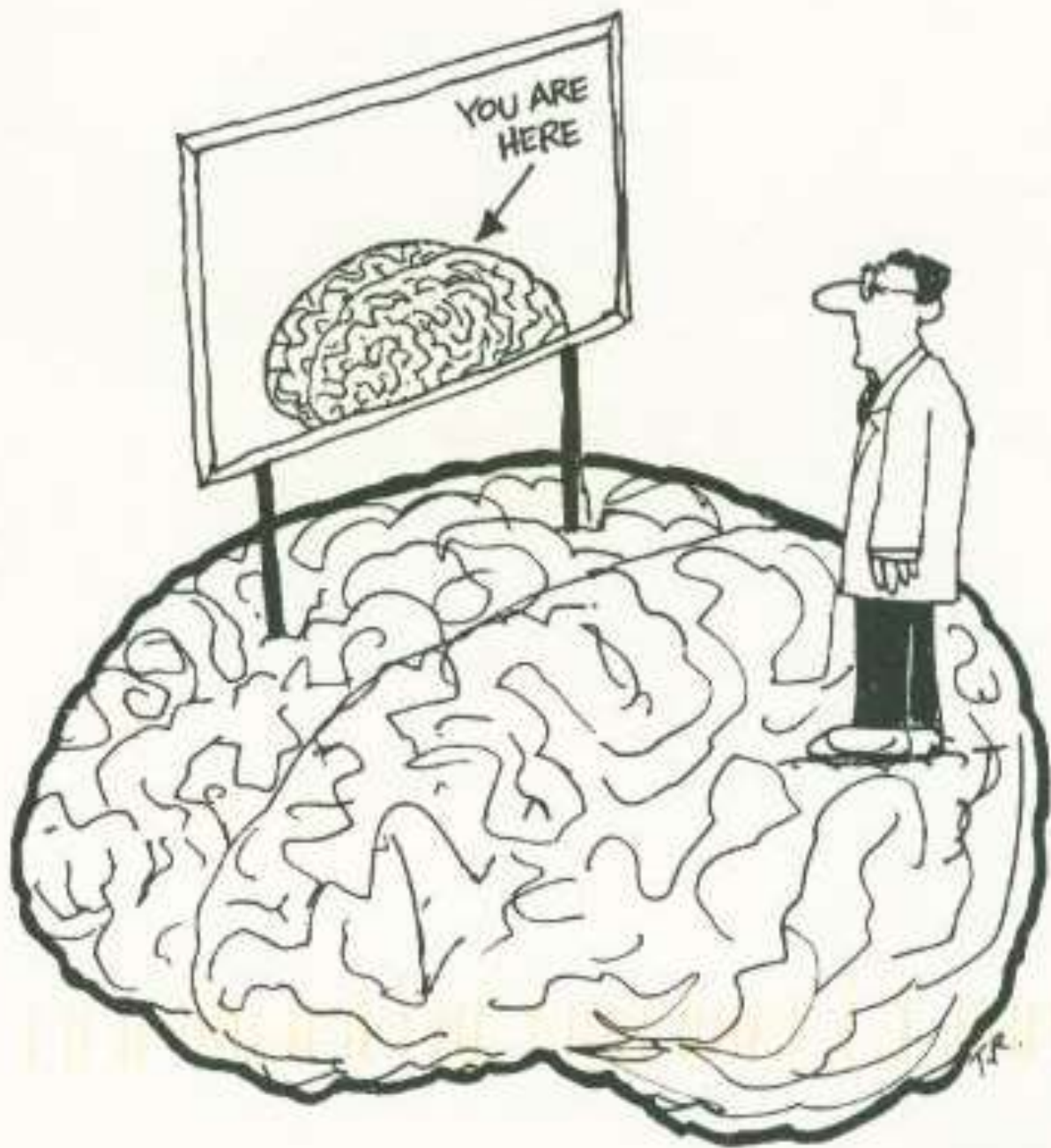
MRI



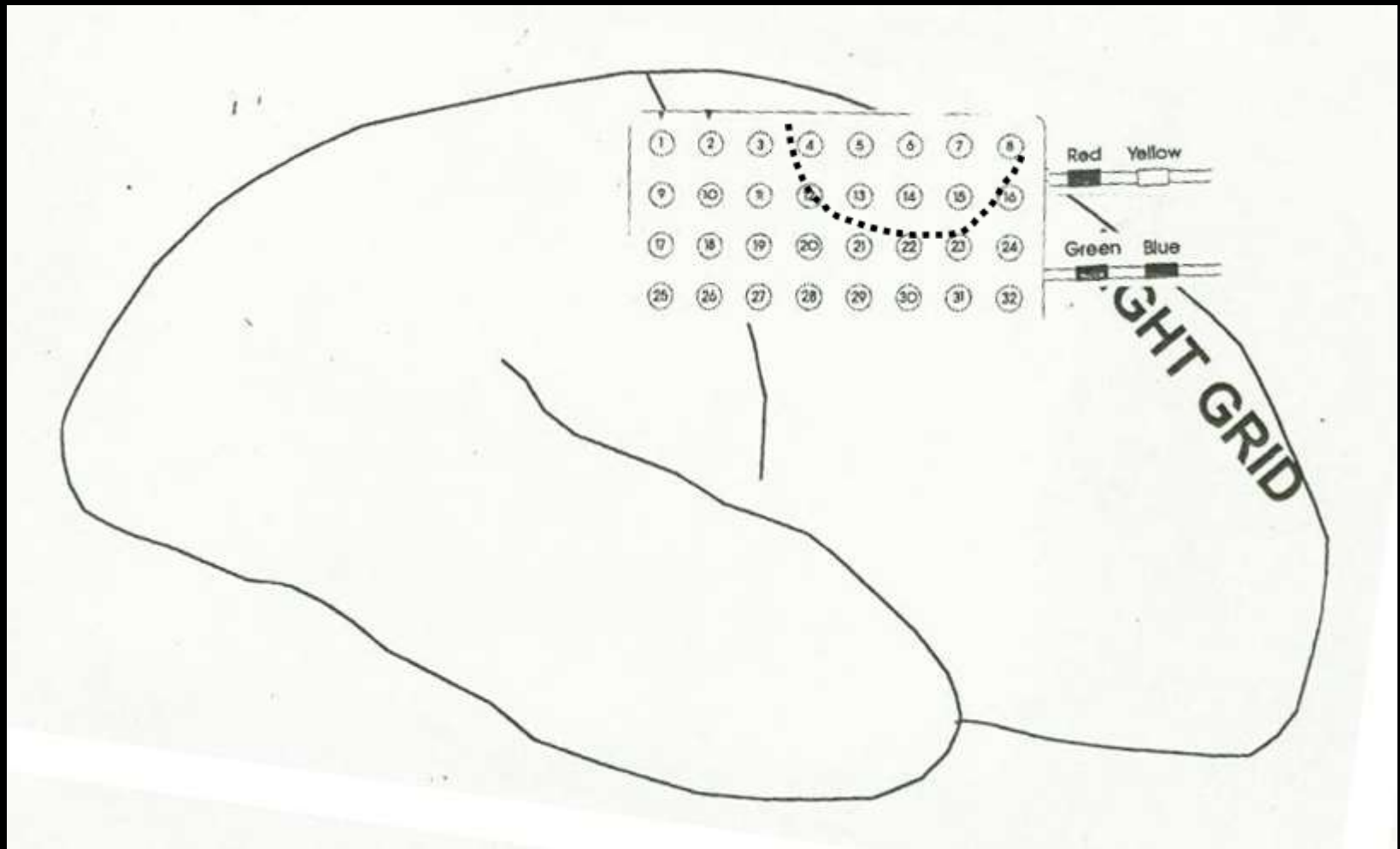
PET



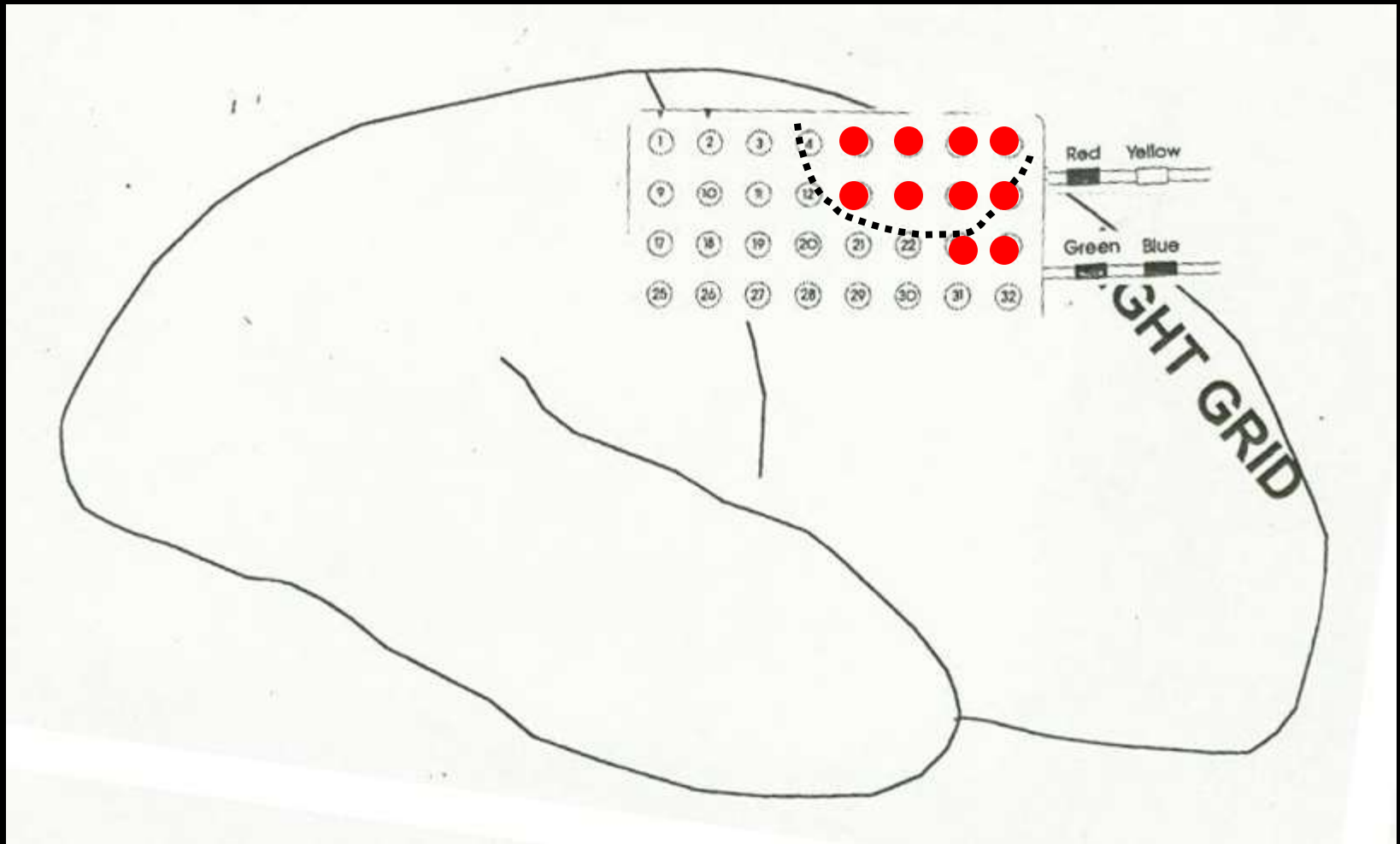
13 Year Old Boy  
Refractory Epilepsy  
Febrile Status Epilepticus During Infancy  
Left Mesial Temporal Sclerosis ?



**16 Year Old Girl**  
**Benign Tumor Right Frontal Lobe = Seizure Focus**

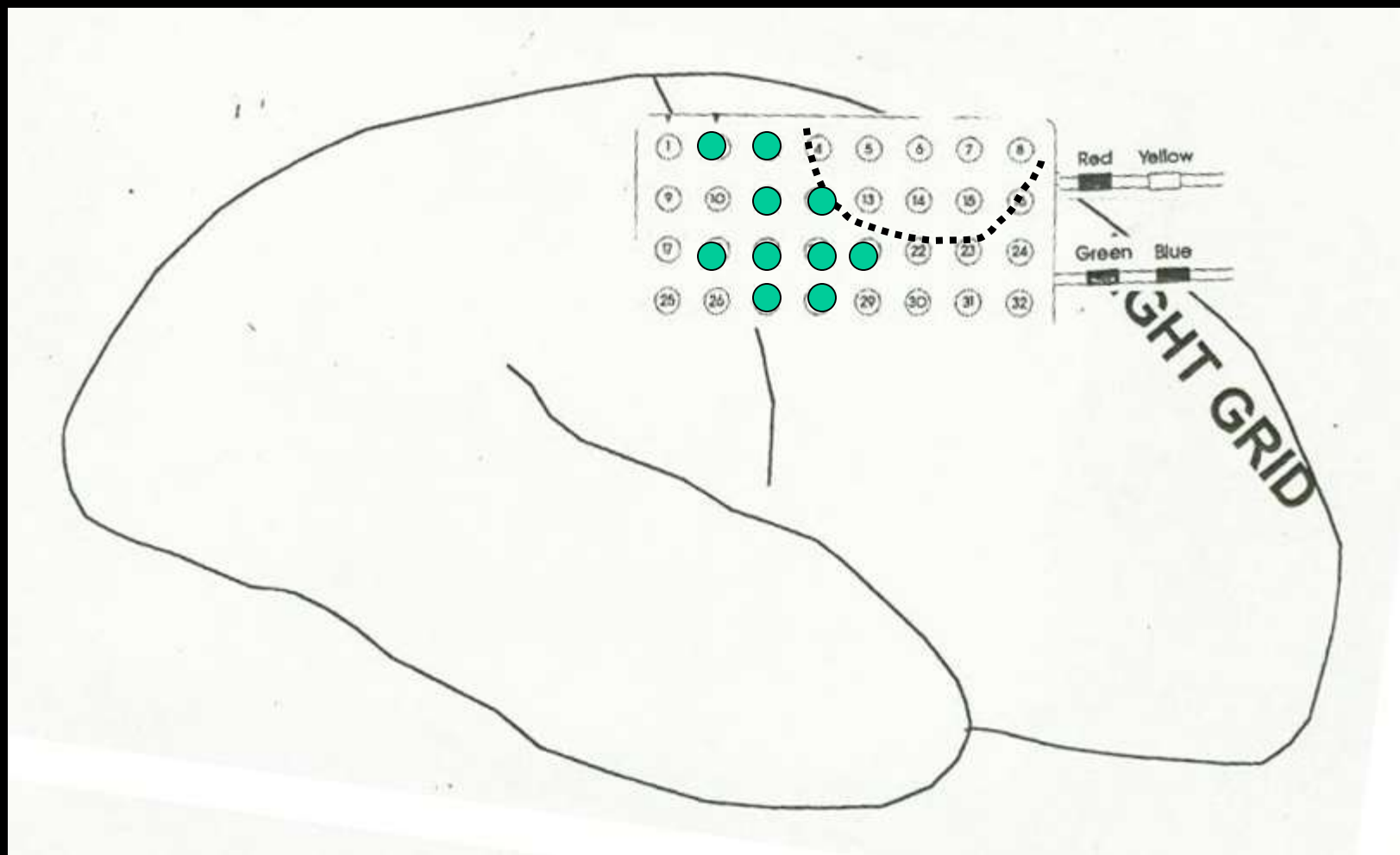


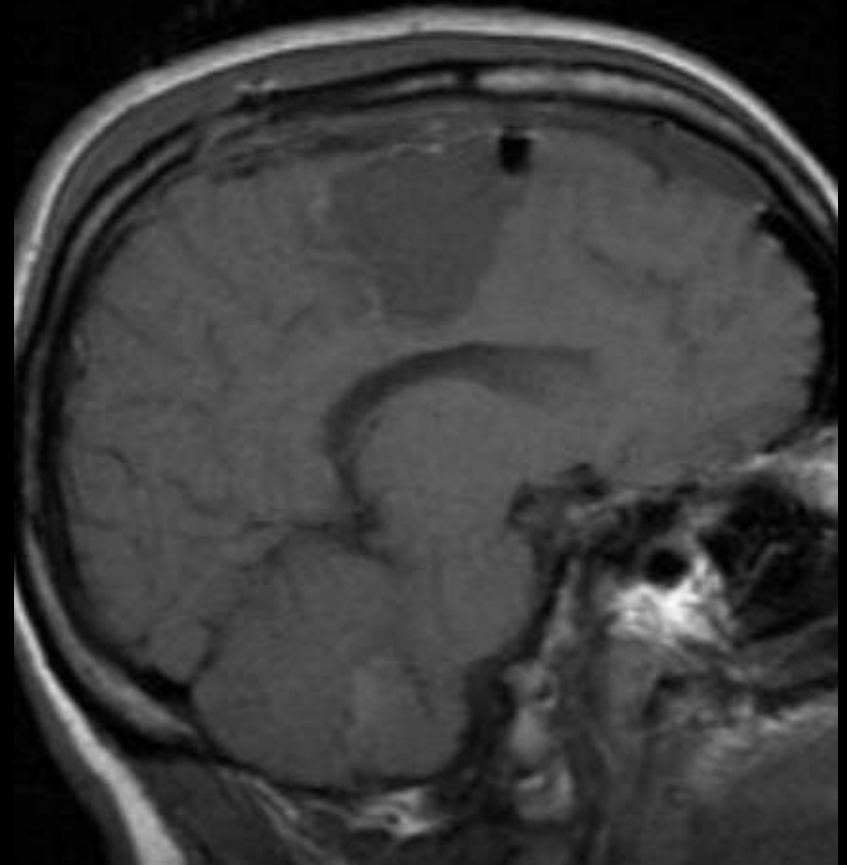
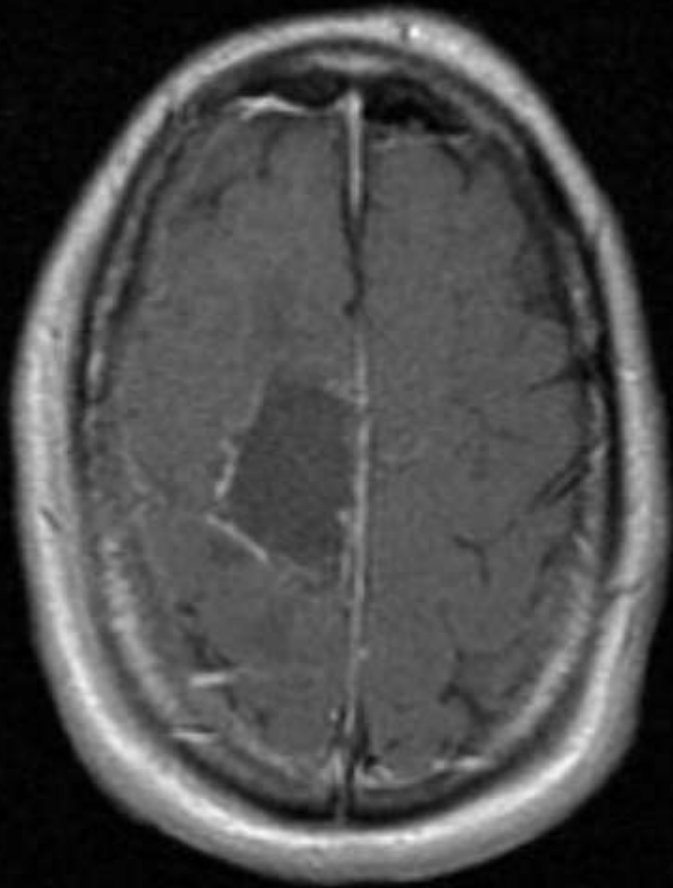
# Seizure Onset Recorded on Grid



● Seizure Onset

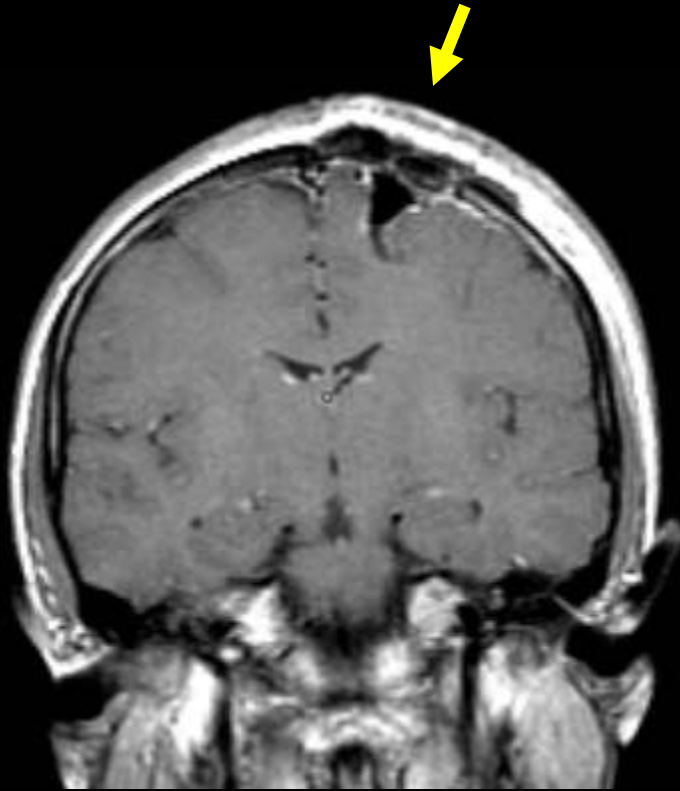
# Electrical Stimulation Mapping Positive Motor Response





**16 Year Old Girl  
Right Frontal Tumor  
After Surgical Resection**





Operation

Single Lesion Resection

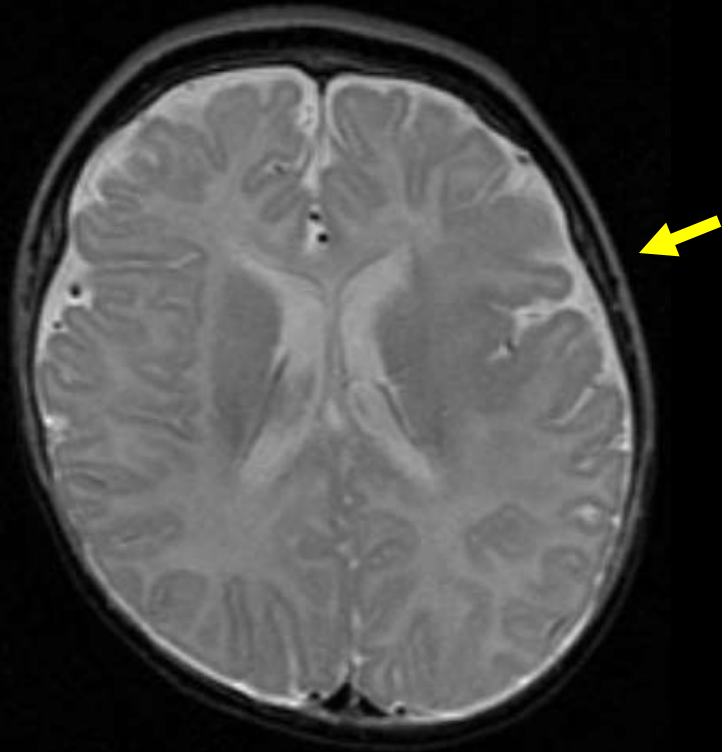
Tumor or Hemorrhage

Success

50-80%

80%

**11 Year Old Girl  
Seizure Disorder  
Resection of Ganglioglioma**



**3 Month Old Girl  
Multiple Daily Seizures  
Focal Cortical Dysplasia**

**Operation**

**Success**

**Single Lesion Resection**

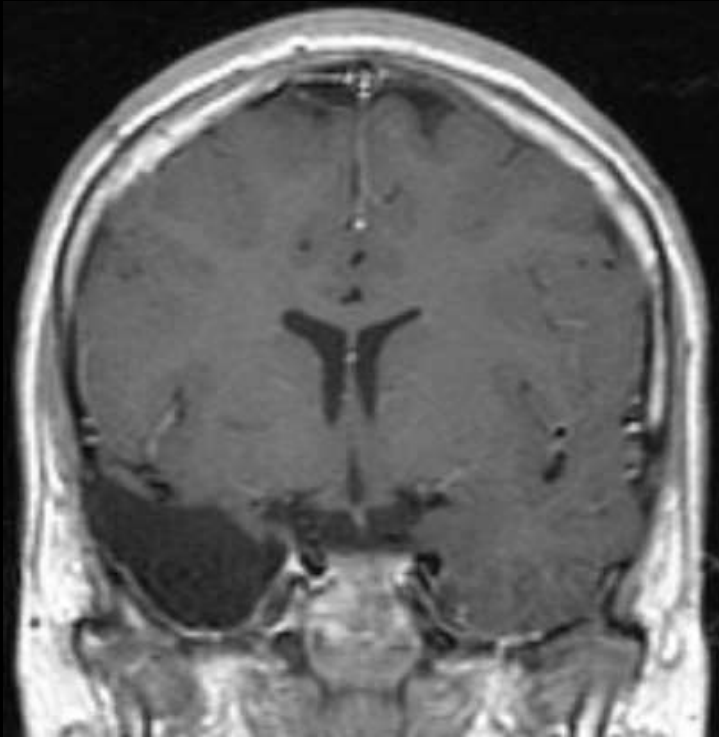
**50-80%**

**Tumor or Hemorrhage**

**80%**

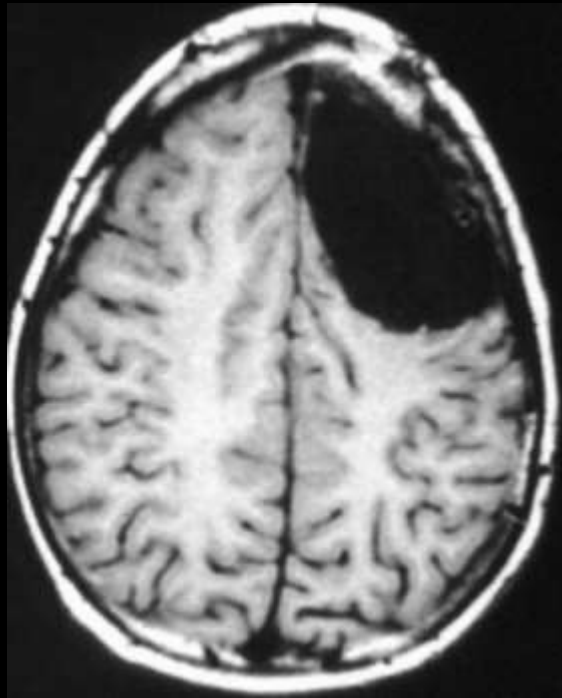
**Cortical Dysplasia**

**50%**



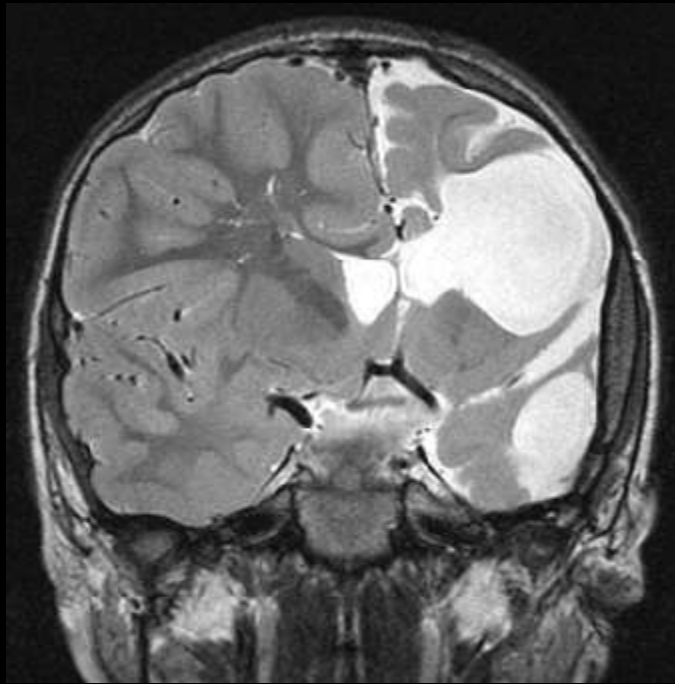
**18 Year Old Boy  
After Right Temporal Lobectomy**

<u>Operation</u>	<u>Success</u>
Single Lesion Resection	50-80%
Tumor or Hemorrhage	80%
Cortical Dysplasia	50%
Temporal Lobectomy	70-80%



<u>Operation</u>	<u>Success</u>
Single Lesion Resection	50-80%
Tumor or Hemorrhage	80%
Cortical Dysplasia	50%
Temporal Lobectomy	70-80%
Neocortical Resection Non-Lesional	40-50%

**8 Year Old Boy  
Non-Lesional  
After Partial L Frontal Lobectomy x 3**



## Operation

## Success

Single Lesion Resection

50-80%

Tumor or Hemorrhage

80%

Cortical Dysplasia

50%

Temporal Lobectomy

70-80%

Neocortical Resection  
Non-Lesional

40-50%

Hemispherectomy

80%

**4 Year Old Boy  
After Left Functional Hemispherectomy**

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