

癲癇手術後3年追蹤—長庚醫院之經驗 3 years follow up of seizure surgery_ CGMH experience



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Abstract

Object

Review of clinical outcome after seizure surgery in Chang Gung Memorial hospital

Method

Retrospectively review of patient from 2001-2004 who receive seizure surgery and with at least 3 years follow up. All patients presented with medical intractable disabled seizure. Patients received MRI, MRS, EEG video EEG and SPECT before seizure surgery. All patients received seizure surgery including one stage ECoG assisted operation or staged cortical mapping seizure surgery with. The mean follow up duration was 81.91 ± 27.22 months.

Result

23 patients received seizure surgery in our institute from 2001-2004. The pre operation seizure pattern were mostly secondary general seizure (78.26%) followed by complex partial seizure and one absence seizure. Most patients received temporal lobectomy (65.12%) with or without hippocampectomy or amygdaloectomy. The seizure frequency decreased from 14.35 ± 30.95 / months to 0.43 ± 0.95 / months after seizure surgery with 17 patients achieved Engel's class one seizure free (8 class Ia and 9 class Ib) and 6 patients achieved Engels class 2 (1 class IIa, 4 class IIb, and another class IIc). The incompatibility of the pre OP EEG or video EEG with the surgical site may be an unfavorable factor to the clinical outcome ($p=0.041$).

Conclusion

Seizure surgery plays an important role in medical intractable seizure, with comprehensive pre operative evaluation, there may have promising result and improving quality of life.

Introduction

Epilepsy is a chronic neurologic disease with the prevalence of 3.3~7.8 per 1000 population worldwide³. It may cause serious problems not only in the health but also in the socioeconomic status. The treatment of the epilepsy can be divided into medical control or surgical intervention. Despite of the optimal antiepileptic drugs usage, about 20-25% of the epilepsy patients remain medical refractory. Therefore surgical intervention provides another treatment option. Moreover, studies have shown that in temporal lobe epilepsy, surgery is superior to prolong medical therapy⁶.

The outcome of epilepsy surgery had been reported and studies showed median proportion of long-term seizure-free patients was 66% with temporal lobe resections, 46% with occipital and parietal resections, and 27% with frontal lobe resections and 35% with callosotomy, and 16% with multiple subpial transections⁴. Here, we demonstrate the 3 years follow up of epilepsy surgery in Chang Gung Memorial hospital.

Table 1: Engels' Classification of Post Operative Outcome		
Class I Free of disabling seizure		
A	Completely seizure free since surgery	
B	Non disabling simple partial seizure only	
C	Some disabling seizure after surgery, but free of disabling seizure for at least 2 years	
D	Generalized seizure when stop AED	
Class II Rare disabling seizure		
A	Initial disabling seizure, rare seizure now	
B	Rare disabling seizure since surgery	
C	More than rare disabling seizure after surgery but rare seizure for at least 2 years	
D	Nocturnal seizure only	
Class III Worthwhile improvement		
A	Worthwhile seizure reduction	
B	Prolonged seizure-free intervals amounting to greater half of the follow up period < 2 year	
Class IV No worthwhile improvement		
A	Significant seizure reduction	
B	No appreciable change	
C	Seizure worse	

Materials and Methods

Patients inclusion criteria

1) Pre-operative diagnosis of intractable epilepsy with epileptic discharge source from neocortical temporal and/or extra temporal lobe. 2) The surgery with the aim of eliminating seizure or reducing their frequency or severity rather than diagnosis only. 4) The follow up was at least 24 months. 4 were excluded due to inadequate data and some received only diagnostic subdural grid.

Clinical Follow up

Retrospectively reviewed of patient basic data is according to the medical records. The post-operative clinical outcomes were evaluated by using Engel classification as following⁷ table 1:

Figure 1A

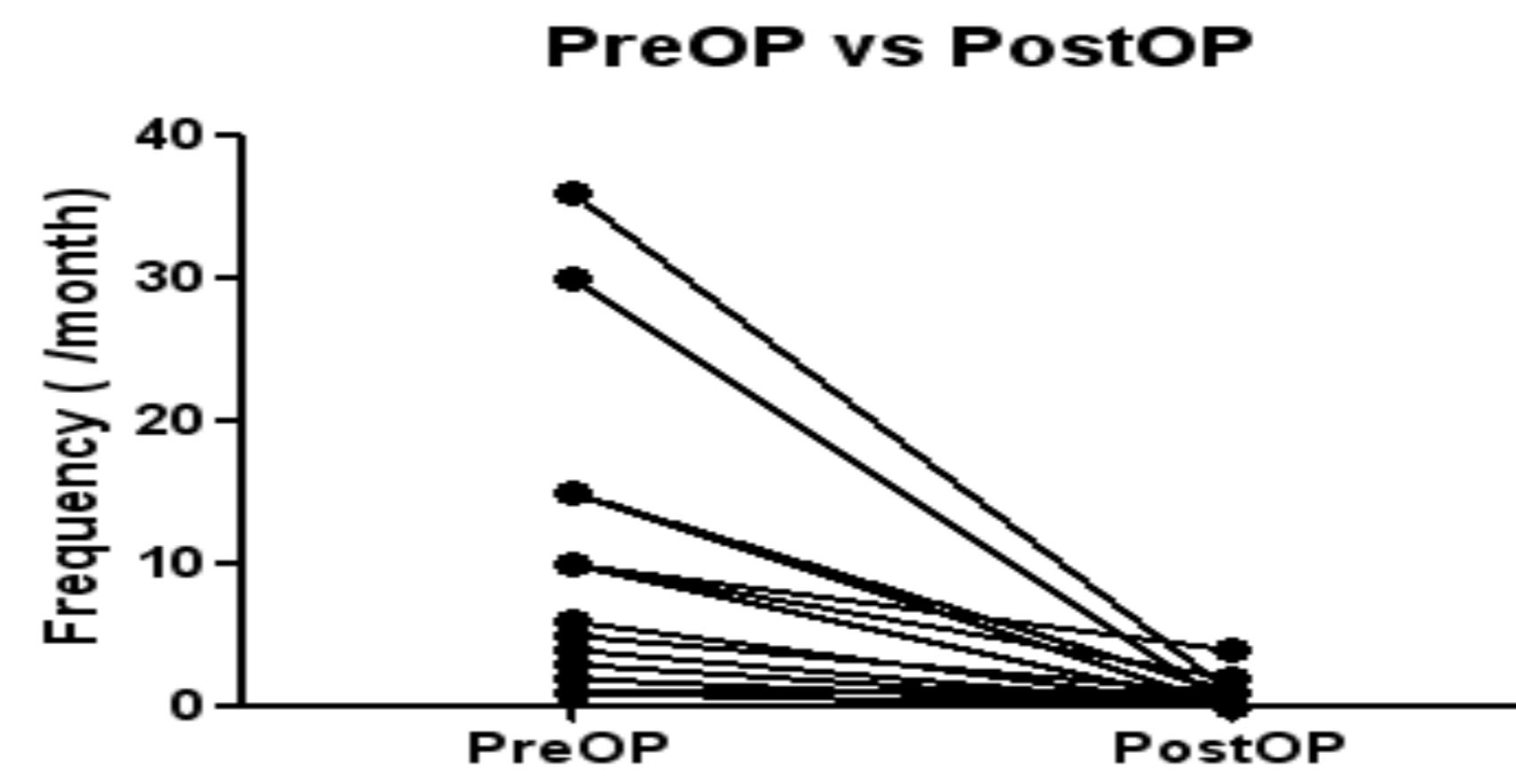


Figure 1B

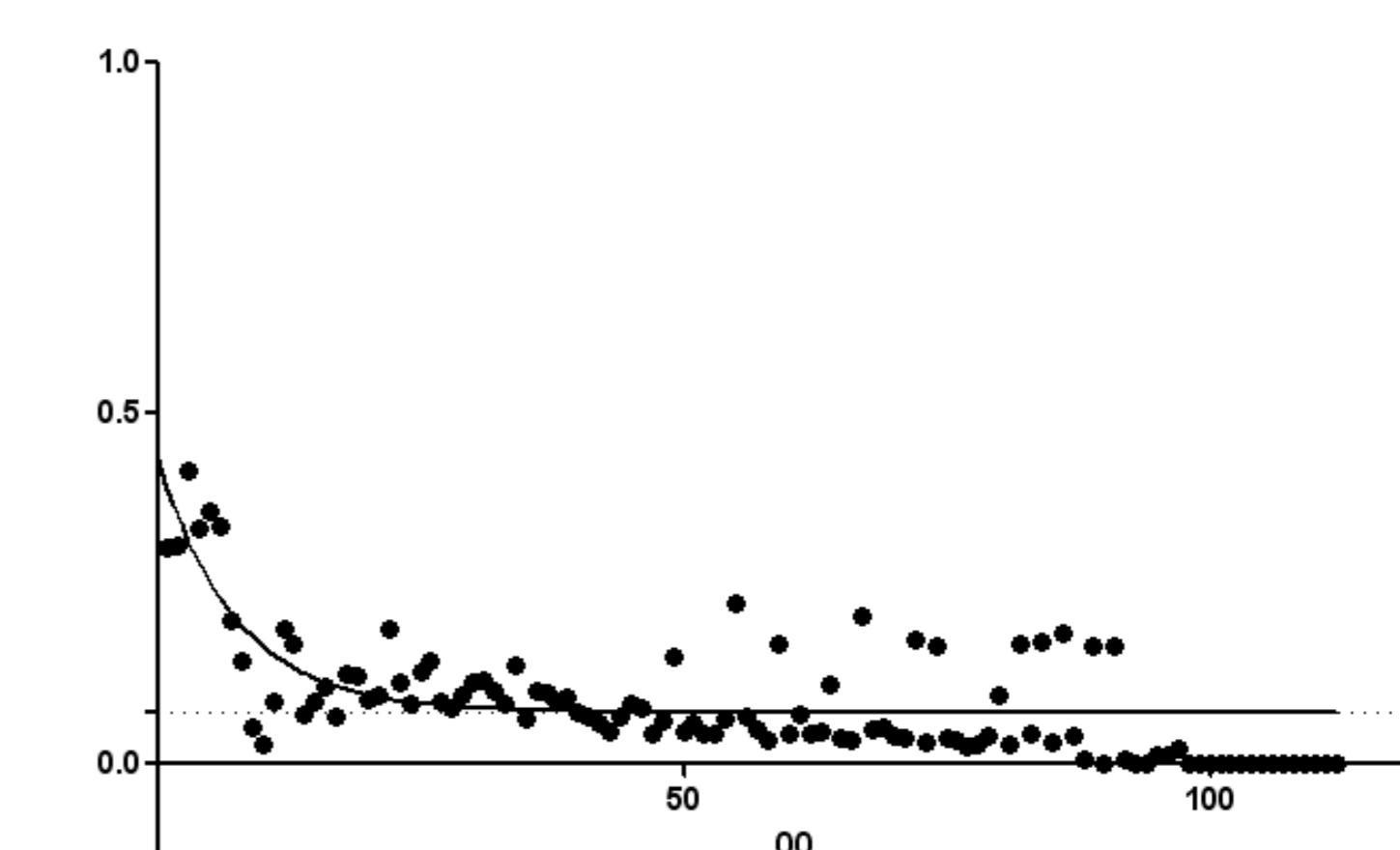


Figure 1A

The decrease of seizure frequency from 8.18 ± 9.7 / month down to 1.57 ± 5.19 / month ($p < 0.0001$)

Figure 1B

The decrease of seizure frequency as percentage showed most of the seizure improved within 2 years after the operation.

Table 2: General Characteristics

Total	23
Gender	
Male	14
Female	9
Age of initial seizure onset	12.69 ± 11.57
Age at operation	26.95 ± 8.97
Major seizure pattern	
General seizure	18
Complex partial seizure	4
Absence	1
Follow up Period (months)	81.91 ± 27.22

Table 4 surgical procedure

Temporal lobectomy	15
Lesionectomy	2
Multiple subpial transection (MST)	2
Anterior colostomy	1
Lesionectomy + MST	1
Temporal lobectomy + MST	2
total	23

Table 3 Image studies

MRI	MRS (decrease NAA/(Cho+Cr))	
Dandy-Walker Malformation	1	No change
Mesial Temporal sclerosis	6	
Hemangioma	3	No change
Cuneus lesion (Rt)	1	No change
Frontal (Lt)	1	No change
Encephalitis	1	No change
Negative	10	
total	23	

Table 5 Engels' classification

Class 1		
1a		8
1b		
1c		9
Class 2		
2a		1
2b		4
2c		1
Class 3		0
Class 4		0
Total		23

Results

23 patients were included in the study (table 2). The presurgical image finding was described in table 3. 5 patients received one stage operation with ECoG monitor and surgical intervention on one operation. And 18 of others received staged operation with subdural grid or strip implantation first followed by continuous ECoG monitoring at the neurology department. The surgical procedure was shown in table 4. The overall post surgical Engel's classification was shown in table 5. 17 of the 23 (73.9%) patients had class 1 improvement and no patient had worse condition after the surgical intervention. The decrease of seizure frequency from 8.18 ± 9.7 / month down to 1.57 ± 5.19 / month ($p < 0.0001$), figure 1A. The decrease of seizure as percentage to the presurgical condition was shown in figure 1B. The duration of decrease half of the seizure frequency was 2.08 months.

On analyze the prognostic factors, presurgical seizure frequency, age of seizure onset and age of operation, temporal lobectomy, multiple subpial transaction, lateralization of the epileptic foci and the patient received staged operation or not did not affect the clinical Engel's classification, table 6.

4 of the 23 patients had different inconclusive epileptogenic foci on presurgical VEEG evaluation and imaging studies and achieved only Engels' class 2b ($p=0.047$). The average decrease of the dosage and type of the antiepileptic medication were 11.2% and 26.1% respectively.

Conclusion

Surgical treatment for the medical intractable seizure provides an effective method for seizure control. The preoperative evaluation incompatibility of the result may indicate multiple epileptic foci which may have poor prognostic effect to the clinical outcome.

Reference

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Discussion

Surgical treatment for medical intractable seizure is now a well established regimen, especially for those with lesional single epileptogenic focus¹. In our study, 73.91% of the patients achieved Engel's class I after seizure surgery, the results are similar to the previous studies^{4,5} from 60% to 78%.

Presurgical evaluation for the patients is a crucial factor for the post operative clinical outcome. In our series, there were 4 patients had inconclusive epileptogenic focus based on the presurgical EEG or 24 hours video EEG. Although intracranial ECoG was applied for these patients, however, the post operative clinical outcome was not satisfied and none of this 4 patients achieved Engels's class I. Therefore, the inconclusive presurgical evaluation may be due to the multifocal epilepsy which could not be easily treated by resection on single area.

The lesional or non-lesional epilepsy had no different on Engel's class I or II. However, there was highly different on Engels' class Ia+Ib and all the others ($p=0.0147$). Tellez-Zenteno et al, concluded that the lesional patients and 2.5 times seizure free than those who are non-lesional⁵. This may be due to multiple or extensive epileptogenic area².