Lesson learned from early experience in pediatric epilepsy surgery

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About 1% of children population may have seizure that is recurrent and occurred without provocation, known as epilepsy. Those children with epilepsy fall into two main categories: well-controlled with drug(s) and uncontrollable with medication. The latest is now called intractable epilepsy or medically refractory epilepsy or drug resistant epilepsy.

For intractable epilepsy, pediatric epilepsy surgery has grown as a treatment of choice in carefully selected candidates. Decades ago, surgical avenue for epilepsy was considered as a last resort in medically refractory focal epilepsy after failure of numerous antiepileptic drug trials spanning many years. There have been certain key developments that have catalyzed this paradigm to change. Now, epilepsy surgery for children is considered earlier.

Sixteen cases of pediatric epilepsy surgery will be presented here along with type of pathology, features, and syndromic cases, and outcome during follow up. Cortical dysplasia was the most frequent pathology encountered including gyral, lobar and hemispheric type. Family of syndromic epilepsy such as West syndrome was also found. It is obvious that epilepsy in childhood age has many different features compared to their adult counterpart. The challenge is increasing when there is no sophisticated facilities available, and the physicians have to rely on their capacity to diagnose, analyze, and make the decision whether he/she is the best candidate for surgery or not.

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Tailored temporal lobectomy for mesial temporal lobe epilepsy: Can we minimize visual field defect? Result of a prospective study

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Background: Traditional anterior temporal lobectomy for mesial temporal epilepsy is associated with high chance of visual field (VF) defect ranged from 50% to 100%.[1–6] A review in 2008 of our own series showed 68% upper quadrant VF defect contralateral to the side of operation (unpublished). Our further study on the distance between the anterior tip of Myer's lobe and the temporal lobe pole using Diffusion Tensor Tractography (DTT) among the Southern Chinese population showed significant individual variations ranged from 15 to 17 mm.[7] We hypothesized that tailored anterior temporal lobectomy could minimize the VF defect. We have carried out a prospective study comparing with the historical series.

Materials and methods: A prospective study for all epilepsy surgery cases requiring resection of mesial temporal structure from 2009 till 2015. The Myer's loop was delineated using DTT. Navigation was used to guide the anterior temporal lobectomy. All cases had pre-operative and post-operative VF perimetry done.

Results: The prospective cohort (study group) composed of 25 cases. 3 cases were excluded from VF analysis because pre-existing VF defect. Among the 23 cases, new VF defect was found in 8 cases (32%). Comparing with the historical group, the reduction of VF defect was very close to significance ($P = 0.052$). Seizure outcome of Engel classification I were 73% and 69% for the study and historical group respectively.

Conclusion: Using DTT to delineate the Myer's loop and to operate under navigation guidance, tailored temporal lobectomy for mesial temporal resection may reduce the chance of VF defect significantly post-operatively without compromise seizure free outcome.

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Accurate surgical treatment for rolandic epilepsy

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Objective: Study the method of operative for rolandic epilepsy.

Method: We collected subjects who underwent epilepsy surgeries consecutively in southern research institute against epilepsy with the epileptogenic zone located in rolandic areas from January 2008 to March 2015. We analysed the method of location, technology of resection and follow-up result. The eplieptogenic zone located by clinical symptoms, MR,

PET, neuronavigation, stereotaxis, B ultrasonic, three dimensional positioning, video-EEG, ECoG, deep-EEG. Function areas located by embedded steel, awake surgery, electric cortical stimulation in operation. Technical of operation include resection of focus at bottom of sulus, half of gyrus resection, undermined resection of focus, hollowed-out work et al.

Result: We did operations of rolandic epilepsy, use the technologies include accurate structure location, exact functional location and fine resection operation, our operation effective in treatment of epilepsy and well favorable protect function of rolandic areas.

Conclusion: Accurate structure location, exact functional location, fine resection operation is effective surgical treatment method of rolandic epilepsy.

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Simple yet reliable pre-surgical evaluation for TLE in countries with limited resources, based on experience on 450 TLE cases

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Background: Despite the availability of modern antiepileptic drugs (AEDs), up to 30–40% of epilepsy patients continue to have seizures and half of these are potential candidates for surgery. Epilepsy surgery (ES) is recommended for temporal lobe epilepsy (TLE), which is possibly the most common form of human epilepsy and the most refractory to AEDs. In TLE, the surgical procedure is a standardized anterior temporal lobectomy (ATL) including amygdalo-hippocampectomy, or selective amygdalo-hippocampectomy (SAH). So that all pre-surgical evaluation is aimed to finding the epileptic temporal side.

Methods: Based on our experience on surgery of 450 TLE cases, pre-surgical evaluations are grouped into 1 – simple (based only on semiology and the presence of unilateral temporal or hippocampal abnormality), 2 – difficult (long-term ictal EEG and/or FDG-PET evaluation is needed), and 3 – complex (invasive subdural EEG is needed). These groups of pre-surgical work-up are evaluated in relation to the results of surgery, evaluated after at least 12 months follow-up.

Results: There were more than 50% patients in Group 1 (simple work-up), and the result showed that even based on seizure semiology and MRI only, seizure free (SF) rate reached more than 70% cases and comparable with those TLE cases needed more difficult or even complex pre-surgical work-up.

Conclusion: There are many countries with limited resources with so many intractable TLE cases which may go directly into ES after simple yet reliable pre-surgical evaluation. Understanding the limitation and good patient selection criteria are important so that Epilepsy Surgery may be started in many areas with limited resources.

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Selective amigdalo-hippocampectomy, How I do it

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Based on our experience on around 100 cases of selective amigdalo-hyppocampectomy (SAH), there are several important steps to reach good results and at the same time avoiding surgical complications.

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