The surgical treatment of epilepsy is one area of neurosurgery where patients can be conclusively cured and have their lives radically changed. Based on the epidemiology (prevalence of 1%) and natural history (20%-30% intractable) of epilepsy, there are likely at least 600,000 surgical candidates in the US1. Weibe et al.2 performed a randomized, controlled study in which patients were randomly assigned to a surgical or non-surgical arm; the one-year seizure-free rate was 58% in the surgical group and 8% in the group treated medically. In a related study, in a two-year period, 36 epilepsy surgeries were performed, including 29 temporal lobectomies. Among all patients, 30/36 were seizure-free and 5 almost seizure-free; within the temporal lobectomy subgroup, 27/29 were seizure free and 2/29 almost seizure-free.

Epilepsy surgery is standard of care when medications fail. Seizure-free rates following temporal lobectomies are consistently 65% to 70% in adults and 68% to 78% in children1. Extratemporal lobectomies, which are sometimes necessary in pediatric cases, are less successful (62% in children)1. Even where the patient fails to be seizure free, the rate of seizures is usually reduced. Failure of referral to an epilepsy center, occurs too often and commonly results in delays in treatment. On average, there is a mean duration of epilepsy of 18.8 years prior to surgical intervention. Previous investigations have demonstrated that the longer the duration of refractory epilepsy, the greater the deterioration to cognition and overall functional ability, especially in the pediatric population3.

One reason for the delay is the difficulty in identifying refractory patients. This phenomenon is interesting, as there is a generally accepted definition of medically intractable disease, refractory to two drugs, more than two seizures per month over two years. Unfortunately, with 24 FDA approved anti-epileptic drugs (AEDs), the concept of “medical intractability” has little practical meaning. A limited survey of neurologists4 found that among respondents who prescribed single drug regimens (not combinations), 52% required failure of three AEDs before declaring the case intractable, and 19% did not give up until all AEDs had been tried. Among neurologists favoring combination therapy, 77% required the patient to fail at least two combination regimens. Typically, neurologists require a six-month wait to declare the patient seizure-free2. Kwan and Brodie (2001)6 demonstrated in a prospective study that once the patient fails the first appropriate AED trial, the chance of seizure freedom is 14% with a second drug trial, and only 3% with a third drug or with combinations.

Another factor in the delay of referral to epilepsy centers lies in the fact that many neurologists are reluctant to consider epilepsy surgery as a necessary treatment option early in the course of the disease. Among surveyed neurologists4, 57% required the epilepsy to last a minimum of two years before referring for surgery. The disease also had to have reached a certain level of severity: 55% required the seizures to occur at least once a month before recommending surgery. Eleven percent did not even discuss surgery with their patients at all. In one surgical study, the authors reported8 14% of patients who had successfully undergone epilepsy surgery were specifically advised by their neurologists not to consider surgery as a treatment option.

A major stumbling block is the dissemination of information. In the aforementioned survey, the authors cited the Kwan and Brodie study, but pointed out that none of the responding neurologists seemed to base their determinations on the published Kwan and Brodie results8. Less than half of the neurologists discussed the likelihood of surgical outcomes with their patients, and in that fraction there was a uniform split between optimistic and pessimistic expectations. It should be pointed out that this split may reflect the distribution of patients seen by each neurologist. Also, 47% of the surveyed neurologists who did refer patients to specialized epilepsy centers reported a lack of appropriate clinical feedback from the surgical center, which had an understandable effect on their willingness to collaborate with the center in the future.

However, guidelines have been published on the web by both the American Epilepsy Society and the American Association of Neurologists. According to the American Academy of Neurology Practice Parameter1, for “surgical intervention to be considered practical,” before years of uncontrollable seizures cause irreversible psychosocial consequences, “it must be offered before absolute pharmacoresistance is proven in most patients.” More specific published guidelines state that referral to a specialized epilepsy center is appropriate if seizure control is not achieved within 9 months by the general neurologist. The Cochrane Collaboration also has a group dedicated to evidence-based medicine in epilepsy, and the Agency for Healthcare Research and Quality has a public-domain text, Management of Treatment-Resistant Epilepsy. Links to all four of them are in Table 1.

The treatment of medically intractable epilepsy is very complicated. There are many opinions and “recipes” available for success and care has to be individualized to each

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**Table 1: Online references for epilepsy guidelines and clinical evidence**

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<th>Agency</th>
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<td>Agency for Healthcare Research and Quality</td>
<td><a href="http://www.aesnet.org/go/practice/guidelines">http://www.aesnet.org/go/practice/guidelines</a></td>
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patient and their specific diseases. It does seem prudent to have patients referred to epilepsy centers periodically in order to explore developing treatment options in the future.

References