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Another Good Reason to Consider Surgical Treatment for Epilepsy More Often and Sooner

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Approximately 3 million people in the United States have epilepsy,¹ and it is estimated that at least one-third of them continue to have seizures despite adequate treatment with antiseizure medication.² Unpublished data from the National Association of Epilepsy Centers indicate that somewhere between 2000 and 3000 people receive surgical treatment for epilepsy in the United States annually (R. Gumnit, MD, written communication, 2010), most of whom have temporal lobe epilepsy. It is safe to conclude, therefore, that less than 1% of patients in the United States with medically refractory epilepsy are ever referred to an epilepsy center to determine whether they might be candidates for surgical treatment.

The reasons patients with intractable epilepsy are rarely referred to specialized epilepsy centers are obscure and should be the subject of some concern.³ There appears to be something unique about epilepsy surgery that reduces the enthusiasm of physicians and patients alike to consider surgical intervention, because this is not the case for procedures such as coronary bypass and aneurysm surgery, where the risk to benefit ratio may be considerably less favorable than for epilepsy surgery.⁴ In the past, surgical treatment for epilepsy was looked down on by some as “functional” neurosurgery because the epileptogenic region was determined electrographically and specific lesions usually were not apparent until the dura was opened, or sometimes only after resected tissue was examined under the microscope.⁵ Resistance to epilepsy surgery on these grounds, however, is no longer reasonable with the advent of high-resolution, 3-dimensional structural and functional neuroimaging and repeated documentation of the safety and efficacy of surgery for epilepsy, particularly temporal lobe epilepsy.

The superiority of surgical treatment over continued drug trials for pharmacoresistant temporal lobe epilepsy, the most common form of intractable epilepsy in adults,⁶ was definitively proven in a randomized controlled trial published in 2001.⁷ As a result, the American Academy of Neurology, in association with the American Epilepsy Society and the American Society of Neurological Surgeons, published a Practice Parameter in 2003 that recommended surgery as the treatment of choice for medically refractory temporal lobe epilepsy.⁸ Yet, not only has surgery for epilepsy remained arguably the most underused of all proven effective therapies, when patients are referred for surgery, referral is delayed an

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average of 22 years after onset of epilepsy,⁹ often too late to prevent or reverse the disabling adverse psychological and social consequences of recurrent seizures. Furthermore, there is evidence indicating that the randomized controlled trial and American Academy of Neurology Practice Parameter have not influenced the timing of referral to epilepsy centers.^{10,11}

The concern most commonly voiced by patients and physicians about surgical therapy is fear of serious postoperative morbidity or mortality. Intractable epilepsy, however, is associated with significant morbidity including social and psychological disability^{12,13} and mortality rates 5 to 10 times higher than that of the general population.¹⁴ Successful surgical treatment, on the other hand, extends the lifespan for people with medically refractory epilepsy.¹⁵

In the current issue of *Archives*, McClelland and colleagues¹⁶ provide further evidence that fear of brain surgery should not be a serious deterrent to the consideration of surgical treatment for epilepsy. Using a Nationwide Inpatient Sample from 1988 to 2003, they determined that the postoperative morbidity for anterior temporal lobectomy for intractable epilepsy was 8%, and the adverse discharge disposition was 4%, for a total overall morbidity of 10.8%, while the mortality rate was 0%. Not only are these figures much lower than reported for persistent intractable disabling seizures⁹ but, because this study was only able to capture inpatient data, it did not distinguish between transient and permanent deficits. Other studies indicate that at least half of the postoperative deficits following epilepsy surgery are resolved within a year.⁸ As might be expected, morbidity was increased in older patients with medical comorbidity and, interestingly, was reduced for patients with private insurance. It is important to note that the data used for this survey are 7 to 23 years old and that considerable advances have been made in presurgical evaluation and microsurgical technique that have continued to improve safety and efficacy of surgical treatment for epilepsy in the interim. Consequently, morbidity might be expected to be even lower today than would appear from the results reported in this study.

The investigation has other limitations, the most important being the fact that it is a retrospective study of only a small percentage of patients operated on for temporal lobe epilepsy in the United States. Although the authors state that the National Inpatient Sample captures approximately 20% of hospitalized patients in the United States, the number of surgical procedures (736) during a 5-year period is fewer than 150 per year, considerably less than 20% of the patients who receive anterior temporal lobe resections in the United States annually. It would be interesting to know how representative this patient sample is of the total number of anterior temporal lobectomies performed in the United States annually.

Another issue of some concern is that the authors considered the lower limit of surgical performance for an epilepsy surgery program to be 3 operations per year, which is not a high caseload, so the analysis of outcome with respect to surgical experience may not be optimal. It would be important to carry out a similar analysis limiting the study to surgery centers that performed at least 15 surgical procedures a year, to see whether experience makes a significant difference.

In any event, the evidence is overwhelming that surgical treatment, particularly for temporal lobe epilepsy, is safe and effective, that it reduces long-term morbidity and mortality, and that it can prevent a lifetime of disability. Perhaps the greatest obstacle to timely and appropriate surgical treatment is the prevalent assumption that primary care physicians and general neurologists should refer patients to an epilepsy center for surgery, ie, that they need to determine who is a surgical candidate before referral to an epilepsy center. As a result, common misconceptions in the community, for instance, that patients with normal findings on magnetic resonance imaging or bilateral interictal electroencephalogram spikes are not surgical candidates, or that patients with memory deficits are at greater risk for further cognitive impairment, have prevented referral of many patients who could benefit greatly from surgical treatment. The most reasonable recommendation, therefore, would be that all patients who continue to have disabling seizures that interfere with work, school, or interpersonal relationships, after failure of appropriate trials with 2 antiseizure drugs, the International League against Epilepsy definition of intractability,¹⁷ should be referred to a specialized epilepsy center. Epilepsy specialists at these centers are best qualified to determine who might be a surgical candidate and might also offer alternative approaches that could be helpful for patients who are not likely to benefit from surgical treatment.

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