

Commentary on Epilepsy Surgery in Canada

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If one considers the prevalence of epilepsy to be 0.7%, a figure considered low by some authorities, there are approximately 215,000 people in the country with epilepsy. This includes only those with spontaneous recurrent seizures (ie. epilepsy) at any one point in time. Lifetime prevalence or the risk of having epilepsy sometime during life is 3%. A much larger number of Canadians will, at some point, have seizures for reasons other than epilepsy, such as febrile convulsions, alcohol withdrawal, etc. Those considered to suffer from intractable epilepsy continue to have disabling seizures despite treatment with the numerous anti-epileptic drugs which are now available. Using a conservative estimate of 20% of the epilepsy population,^{1,2} this group numbers at least 43,000 people across the country.

Epilepsy surgery, as an effective treatment for these intractable patients, was realized by a small number of medical pioneers and then established some 70 years ago by Wilder Penfield at the Montreal Neurological Institute,³ an accomplishment which has served as a basis for development of epilepsy surgery programs, not only across Canada but throughout the world. Most epilepsy surgery encompasses some type of resection of the defined seizure focus. Thus, it is carried out primarily in those patients with focal or partial epilepsy, particularly when seizures arise from the temporal lobe. Using a figure of 50%, again a conservative estimate, of intractable epilepsy being focal, there should be more than 20,000 candidates for assessment of possible surgical management across the country. Of course, for various reasons, not all of these would progress to surgery after investigation. Accurate records of the number of such patients who do not have surgery are difficult to come by. However, in a recent study from the Epilepsy Unit in London, Ontario, 29% of patients admitted for investigation for possible surgery did not have it.⁴ This figure could vary considerably in other centres depending on the nature and severity of cases admitted.

A recent supplement to this journal highlighted the multidisciplinary expertise available across Canada necessary to carry out this type of treatment.⁵ However, there have been suggestions that, despite such clinical resources, epilepsy surgery is under-utilized in the treatment of intractable epilepsy.^{6,7} For this reason, an informal survey was carried out across the country to determine how many operations are being done. Information was obtained using a one page questionnaire from 18 centres in 12 cities known to carry out at least some epilepsy surgery. Each centre was asked to indicate how many adult and pediatric epilepsy operations were done in one year between 1998 and 1999. All but one centre responded formally,

but a knowledgeable estimate could be made from that centre using other sources.

There were 15 centres actively carrying out surgery for intractable epilepsy with an additional two centres having epilepsy surgery programs under development. Of these, five exclusively operated on adults, five were pediatric and five operated on both adults and children. Nine centres had the capability to do invasive EEG telemetry recording using either depth or subdural electrodes. A total of 352 operations were carried out in the one year (see Table) including 243 adults and 109 pediatric cases. The age range of the pediatric cases was not defined.

Thus, from some 20,000 potential candidates, only 352 had epilepsy surgery in 1998/99. Why is this? There may be a few additional surgeries being carried out which were missed by this survey but it is unlikely that there has been much of an underestimate. Is it possible that the published figures on intractable epilepsy are a gross over-estimate or that there are far fewer patients in this group with focal epilepsy who are found to be good surgical candidates than is appreciated? There is no published evidence supporting either of these possibilities but there may be a need for further epidemiological studies and more detailed surveys to address these questions. Alternatively, are there patients with continuing seizures who are not sent for consideration of surgery because it is perceived to be too dangerous and not very effective? Since all epilepsy units do not have access to the same level of technology, what may be considered inappropriate for surgery in one centre (eg non-lesional focal epilepsy) is not necessarily so in another. We neurologists, particularly epileptologists and the epilepsy organizations, must do a better job in educating physicians and patients that the goal in the treatment of epilepsy is not merely a reduction, but complete cessation of seizures which for many can be achieved only by epilepsy surgery.⁶ The resulting improvement in quality of life has been documented.^{4,8}

In addition to the improvement in general health that freedom from seizures following epilepsy surgery allows, many individuals undergo dramatic changes in work, social interactions and family relationships.⁹ Unfortunately, this is not always the case, even in those who stop having seizures.¹⁰

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Table: Epilepsy operations per year in Canada

	No. of Operations	Range/Centre
Adults	243	5-90
Pediatrics	109	2-20
TOTAL	352	2-90

Recent studies have attempted to address other factors which contribute to outcome besides seizure control and which might influence the overall quality of life after epilepsy surgery.^{11,12} In this era of evidence-based medicine, the first randomized controlled trial of epilepsy surgery is being done here in Canada and is nearing completion.¹³ Other studies are in the planning stages.¹⁴ Information obtained from such studies will hopefully allow us to better select candidates for epilepsy surgery and encourage consideration of this treatment which can be so highly effective in many patients who continue to experience seizures despite medical management.

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