

ESSAY

Surgery for Epilepsy

Dr Anne McIntosh

Between 5-10% of individuals will experience a seizure at some time in their life[1] and epilepsy (defined as more than one unprovoked seizure) affects 2-5% of individuals during their lifetime[2, 3]. Today, 'epilepsy' is a blanket term used to describe what is in fact, 'the epilepsies'. Formal recognition and classification of a number of epilepsy syndromes, and seizure types has been achieved in the last few decades.

Although many individuals have seizures that are well controlled by treatment, others develop seizures that do not respond to medication. The impact of refractory seizures is wide-ranging. Education, employment, driving and social aspects of life may be affected. Mortality among those with severe epilepsy also appears to be increased. The personal cost and cost to the community can be substantial. Focal epilepsies (where seizure onset is in a localized area of the cortex) comprise the majority of cases that do not respond to medical management[4].

In a quite small but important minority of cases, focal epilepsy can be treated with surgical excision of the part of the brain responsible for seizure generation. This procedure can only be undertaken if the site of the seizure focus (i.e. a small discrete brain malformation or benign tumour) can be identified using scans and other specialized investigations. Extensive pre-operative investigations aim to preserve functional cortex. Operative complications associated with surgery are relatively uncommon.

What is at the heart of the decision for surgery? Studies show that a straightforward desire for seizure ablation is cited by the great majority of surgical candidates[5, 6]. Driving and employment were the next most commonly cited aims and social activities are also highly rated. Also reported is an aim to cease medication post-operatively. It is clear that individuals approach surgery hoping for a high degree of independence and seizure freedom.

What is the efficacy of epilepsy surgery? A randomized control trial of optimal medical management for temporal lobe epilepsy versus temporal lobectomy (resection of part of the temporal lobe) found 58% of patients who underwent surgery achieved seizure freedom compared to 8% of medically treated patients[7]. Data from other studies show a similar level of seizure freedom after temporal lobectomy[8, 9]. Surgery to areas of the brain outside the temporal lobe have a lower rate of outright seizure freedom[8]. When individual pre-operative baseline seizure frequency is compared to the post-operative seizure state, studies indicate that the majority of individuals achieve seizure freedom or a substantial decrease in seizure frequency after surgery[9].

The test of the efficacy of surgery is post-operative mental and social health and quality of life. Compared to a medically managed group, the group of patients who underwent a temporal lobectomy was found to have significantly higher full time employment, and a higher likelihood of living independently and driving[10]. They

also had higher scores on quality of life measures even when both groups were comparable for baseline pre-operative seizure, cognitive and psychosocial characteristics. A randomized controlled trial of temporal lobe surgery found 36%-51% of surgical cases compared to 7-18% of medically treated patients achieved reliable improvements on quality of life scales[7]. Other studies indicate an improvement in social outcomes (such as employment, driving, education) after surgery[11] although psychosocial success is not guaranteed[12]. Most of these studies pertain to temporal lobe surgery, the outcomes associated with surgery outside the temporal lobe are not yet as well studied.

Epilepsy surgery understandably provokes a great deal of anxiety and hope in surgical candidates and their families. In this environment, information for patient education, decision-making and post-operative care is essential. Further studies of social outcome would provide data that is important for all those involved in surgery and the aftermath, including patients, their families, and health care professionals.

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