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Patient satisfaction with temporal lobectomy/selective amygdalohippocampectomy for temporal lobe epilepsy and its relationship with Engel classification and the side of lobectomy

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ABSTRACT

Purpose: The aim of this study was to investigate not only the effectiveness of epilepsy surgery in improving seizure control but also patient satisfaction with the result of the procedure in a sample of patients operated on at a specialized epilepsy unit.
Methods: Patients with temporal lobe epilepsy who had undergone epilepsy surgery (temporal lobectomy/amygdalohippocampectomy) were interviewed in a standardized telephone survey about their satisfaction with the results of the surgery. The morbidity of the surgery was also analyzed retrospectively. The initial study population consisted of 6 amygdalohippocampectomy and 102 temporal lobectomy patients and was reduced to a final sample consisting of 4 amygdalohippocampectomy and 67 lobectomy patients, as the other patients were not available for interview. Surgical results were based on the Engel classification, and satisfaction with the surgery was assessed by asking patients to rate their result and state whether they would make the same decision (to be operated on) again.
Results: A significant number of patients classified as Engel I or II, who considered the surgical outcome good or excellent, said they would have the surgery again ($p<0.001$). Left temporal lobectomy patients whose results fell in the Engel III/IV bracket were less satisfied ($p=0.001$) than right temporal lobectomy patients with the same Engel classifications (0.048). Left temporal lobectomy patients who were classified as Engel class III and IV were less likely to have the surgery again if they had the choice ($p=0.016$).
Discussion: Patient satisfaction with the results of epilepsy surgery may depend not only on achieving seizure control but also on the temporal lobe resected. Since worse results were associated with lower satisfaction rates only for left temporal resection patients, it is possible that the cognitive consequences of this procedure compound the worse surgical result, leading to decreased satisfaction.

1. Introduction

Epilepsy is a neurological condition that affects 0.5% to 1% of the population. Medical treatment is not always sufficient to control seizures, and approximately 30% of patients with epilepsy have seizures that fail to respond to this type of therapy [1].

It is well established in the literature that chronic treatment of epilepsy has a series of social and psychosocial implications that can adversely affect patients' quality of life [2]. The use of surgery to control seizures, however, has yielded satisfactory results, the commonest and most widely studied epilepsy surgeries being standard temporal lobectomies and selective amygdalohippocampectomies [3].

Postsurgery quality of life is traditionally assessed using the Engel classification [4], which reflects the change in seizure frequency after surgery. However, in spite of the good results obtained with this type of therapy, little attention has been paid to patient satisfaction with clinical treatment and, more specifically, surgical treatment of epilepsy [5].

It is known that patients are not always satisfied with epilepsy surgery and that many factors are involved. These include surgical outcome, psychosocial function, ability to work, the presence of postsurgery neurological deficits, memory changes, presurgery expectations, and quality of life [6,7]. The absence of seizures and neurological deficits following surgery is the factor that has the greatest positive impact on patient satisfaction. In contrast, impaired memory,

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the presence of emotional disturbances, or further aggravation of these problems after surgical treatment can lead to worse subjective postoperative assessments [8]. The few studies that have investigated this aspect of epilepsy surgery show a positive correlation between the fulfillment of presurgery expectations and psychosocial function [9].

We investigated the relationship between patient satisfaction and Engel classification [10] following anterior temporal lobectomy.

2. Materials and methods

This study was retrospective, and patients were selected from a database of 135 patients who had undergone epilepsy surgery between January 1998 and December 2010 at the Curitiba Neurology Institute.

We assessed 108 patients who had had surgery for temporal lobe (TL) epilepsy. Of these, 48 had left TL epilepsy (LTLE) and 58 right TL epilepsy (RTLE). The different types of surgery carried out were as follows: 3 left temporal amygdalohippocampectomies, 3 right temporal amygdalohippocampectomies, 48 left temporal lobectomies, and 54 right temporal lobectomies.

Of the 108 patients who had had standard temporal lobectomies or selective amygdalohippocampectomies, 67 were successfully contacted by telephone in June 2011; of these, 34 had been operated on the right side and 33 on the left, and 37 were female and 30 male. Their ages varied from 19 to 67 years (Fig. 1).

Preoperative patient assessment included medical history and neurological examination by one of the neurologists; examination based on a standard EEG test; prolonged video-EEG monitoring to determine the epileptogenic zone and ictal semiology; neuropsychological assessment; and a brain MRI scan.

Depending on the etiology and location of the epileptic zone, a modified Wada test and/or functional MRI were used, as carried out in other centers [11].

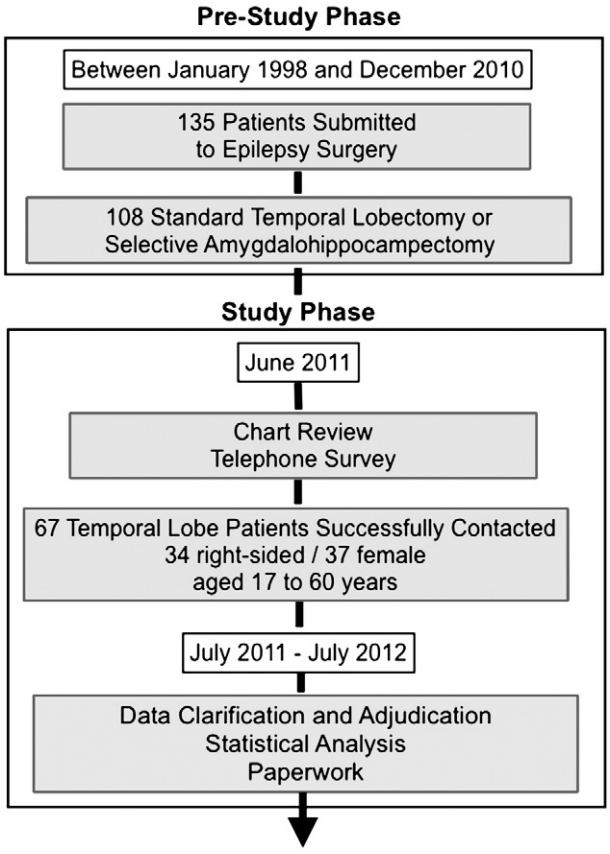

Fig. 1. Study flowchart.

Preoperative data were collected by retrospective analysis of medical records, and postoperative data on the effectiveness of the surgery and patient satisfaction were collected from telephone interviews.

Surgery was indicated if the epilepsy was refractory to medical treatment including at least two first-line and one second-line medication in the maximum recommended doses. All the patients were operated on by the same surgeon (MSM) and assessed by only two neurologists (PAK and REI).

The presence of postoperative complications was identified by asking patients whether they had been hospitalized because of the surgery in the 30 days following the procedure. During follow-up, patients were assigned an Engel classification according to whether they continued to have seizures or not and, if these were still present, seizure frequency and type. The results were then analyzed statistically to establish whether there was a correlation between surgical outcome and patient satisfaction.

Sixty-seven patients were contacted by phone in June 2011 (median follow-up time = 5 years, range: 1–13 years). They were asked the following questions: 1) How often do you have seizures?; 2) How long after epilepsy surgery did they start?; 3) In your opinion, did the seizure frequency decrease, increase, or remain the same after epilepsy surgery?; 4) In your opinion, how would you classify the outcome of your surgery: poor, fair, good, or excellent?; and 5) If you could go back in time and choose whether to have epilepsy surgery or not, would you have the surgery?

The results for the answers were recorded in tables and analyzed using various combinations. The statistical analysis was carried out with the Fisher and Mantel–Haenszel tests, and p-values of less than 0.05 were considered statistically significant. Statistica v.8.0 software was used to analyze the data.

3. Results

A significant number of patients classified as Engel I or II, who considered the surgical outcome excellent, said they would have the surgery again.

Table 1 shows the results of the study and the p-values for the statistical tests. Of the 67 patients who had a temporal lobectomy, 12 (17%) experienced some kind of complication (Table 2). The commonest complications were infection of the surgical wound (75%) and transient hemiparesis (16.6%). Only one of the patients who had complications required surgery. There was no correlation between the presence of complications and surgical outcome or dissatisfaction with the surgery, irrespective of the method used in the statistical analysis. Only four of the patients who had a right temporal lobectomy experienced complications (infection), and all four considered the surgical outcome to be excellent or good. Eight of the patients who had left temporal lobectomies experienced complications; these included infection (five patients), transient diplopia (one patient), and transitory hemiparesis (2 patients). Of the eight, only two considered the surgical outcome to be average or bad, while the other six considered it to be excellent or good.

4. Discussion

The aim of this study was to analyze patient assessment of the outcome of surgery for refractory epilepsy and to compare the findings for patients who had a left temporal lobectomy (LTL) and those who had a right temporal lobectomy (RTL).

To evaluate the degree of satisfaction, patients were asked to classify the surgical outcome as excellent, good, average, or bad and whether they would have the surgery again knowing the surgical outcome and what complications would arise.

Studies have shown that preoperative expectations about the benefits of surgery can influence patient assessment of the success or otherwise of

Table 1
Postoperative Engel classification and satisfaction with epilepsy surgery of patients who had a standard temporal lobectomy or amygdalohippocampectomy.

	Right temporal lobectomy/ amygdalohippocampectomy		Left temporal lobectomy/ amygdalohippocampectomy	
	Engel classification		Engel classification	
	I + II	III + IV	I + II	III + IV
Satisfaction				
Excellent/good	24 (96%)	6 (67%)	27 (96%)	1 (20%)
Very bad/bad	1 (4%)	3 (33%)	1 (4%)	4 (80%)
	p = 0.048		p = 0.001	
Would you have the surgery again?				
Yes	22 (88%)	5 (55%)	26 (93%)	2 (40%)
No	3 (12%)	4 (45%)	2 (7%)	3 (60%)
	p = 0.061		p = 0.016	
Total	25	9	28	5

surgery and, therefore, determine the degree of postoperative satisfaction. This may be one of the factors that influence postoperative outcome in lobectomy patients, as such patients expect the very frequent seizures they experienced before being operated on to be brought under control by the surgery.

Unrealistic preoperative expectations lead to psychosocial difficulties following surgery, even when satisfactory seizure control is achieved [6]. However, limiting any analysis to patients' expectations before surgery is far from ideal; rather, the analysis should be extended to determine whether these expectations were met and whether the patient is satisfied, assuming that positive changes in their lives make patients more satisfied [5,6]. Such positive changes could include not only reduced or controlled seizures but also changes in patients' quality of life, particularly being able to get a job or a driving license [4]. If surgery does not result in any benefits other than a reduction in seizures, patient assessment of treatment may be less favorable [12]. This may explain why a few patients nonetheless considered their Engel class I and II outcomes as unsatisfactory and therefore classified their epilepsy surgery result as average or bad. This assessment is due to the failure of the patients' quality of life to improve, corroborating the findings of Taylor et al. and indicating that seizure control alone is not the only factor that influences the assessment of surgical outcome. Unrealistic expectations that cannot be met make patients feel that they have not fully improved. However, another study showed that 75% of patients who experienced a reduction in seizure frequency reported being satisfied with the surgical outcome [5].

In our study, the satisfaction index for epilepsy surgery among Engel class I or II patients was 96%, while the corresponding figure for Engel class III or IV patients was 50% ($p<0.001$), indicating that seizure control has an important influence on this index. In a study by Barioni et al. [5], patients were asked dichotomous questions about their perception of the surgery and about the reduction in seizure frequency. The latter was assessed by means of three questions, and a further question was asked to find out whether the surgery had changed their lives. We adopted a different approach in our study, initially categorizing patients according to their Engel classification and then asking them to evaluate postoperative satisfaction based on four possible responses. Barioni et al. also mention the importance of taking patients' perception prior to surgery into consideration [5].

Because patients are known to have a different appreciation of the surgical process, as well as different expectations in relation to it, psychosocial difficulties can be expected after surgery. It is, therefore, important to deal with these potential difficulties in order to maximize postsurgery satisfaction [3].

Some factors can influence patient satisfaction following surgery [7]. These include reduction in seizures, psychosocial function, ability to work, neurological deficits following surgery, memory changes, expectations prior to surgery, and quality of life, with the factor with the greatest influence on patient satisfaction being the reduction in seizures [13], although other factors are also involved. The influence of these factors can be seen when the results for patients treated clinically for refractory epilepsy and those treated surgically are compared, with the latter reporting improved quality of life and psychosocial satisfaction [14].

Memory deficits prior to surgery can influence satisfaction with surgical outcome. Patients with a greater cognitive deficit prior to surgery tend to perceive epilepsy surgery in a more positive light than patients with high preoperative memory scores [8]. In our study, 96% of patients who had an RTL and were classified as Engel I or II reported surgical outcomes as excellent or good ($p<0.048$), a value similar to that found by Dupont et al. (91%) [9]. In their study, however, Dupont et al. only assessed Engel class I patients, whereas we assessed patient satisfaction with lobectomy for all Engel classifications. Among our patients who had an LTL and were classified as Engel class I or II, 96% ($p<0.001$) reported surgical outcomes as excellent or good, the same figure as for RTL patients.

However, among Engel class III or IV patients, satisfaction with the outcome of RTL (67%) was higher than the corresponding figure for LTL (20%) although this difference was not statistically significant. Engel class III or IV left temporal lobe patients, however, were significantly less likely to have the surgery again, while the corresponding figure for right temporal lobe patients did not reach statistical significance. A possible explanation for this result can be found in studies reporting reduced quality of life after epilepsy surgery, whether because of continuing seizures, memory impairment, or both [15].

As the impact on memory is considered more important when this implies impaired verbal memory [16], this effect would be expected to be more pronounced in the left temporal lobe group, regardless of any change in seizure control. However, our findings showed that satisfaction with epilepsy surgery was the same in both groups and that the side operated on only had a significant impact on patient satisfaction when it was associated with failure to achieve seizure control. Hence, seizure control is not the only factor that influences

Table 2
Postoperative complications (n = 67) among patients who had a standard temporal lobectomy/amygdalohippocampectomy.

Surgery	Complication	N	Engel classification	Patient assessment
Left temporal lobectomy	Transient hemiparesis	2	IA	Good
			IIA	Good
	Transient diplopia	1	IVB	Good
	Infection of the surgical wound	5	IA	Good
			IIA	Excellent
			IB (2)	Good
			IVA	Bad
Right temporal lobectomy	Infection of the surgical wound	4	IA	Good
			ID	Good
			IIIA (2)	Excellent, good

postsurgery assessment. The presence of a cognitive deficit prior to the operation, together with continued or worsening seizures, can also influence patient assessment of treatment. Our statistical findings, nevertheless, do not allow us to conclude that the side on which the lobectomy is performed influences the relationship between patient satisfaction and willingness to have surgery again.

According to some authors, questionnaires with a lot of possible answers result in a lesser degree of satisfaction than those with only two possible answers [7]. Nonetheless, even though our patients had four possible answers to choose from, a large percentage of them indicated that they were satisfied with the surgical outcome.

Other studies [17] of patients' perception of epilepsy surgery found that patients who had undergone surgery had a positive perception of the treatment and that those who no longer had seizures had the best perception. Like Chin et al. [17], we asked patients if they would have the surgery again if they could go back in time, knowing what the results of the surgery would be and what complications would arise. Between 60% and 70% had a positive perception of the surgery and said they would be prepared to repeat it. Among Engel I or II patients who had an RTL, 88% ($p < 0.061$) said they would repeat the surgery, while the corresponding figure for LTL patients with the same Engel classification was 93% ($p < 0.016$). We found that a reduction in or the absence of seizures was the factor associated with more positive answers. These findings agree with those of Wilson et al. [8], although in their study, they concluded that patients with a memory deficit prior to surgery tend to have a better perception of the surgical treatment even if it does not result in ideal seizure control. We failed to find any studies analyzing and comparing the results of LTL and RTL in the literature.

In conclusion, assessment of the success of surgery depends not only on adequate seizure control, as shown by the high degree of satisfaction with the results of temporal lobectomy, but also on other factors that directly influence patient perception and assessment of surgery. The side on which the lobectomy is performed may be one such factor. Although this was not proved in our study, we did find that patients who had been operated on the left side and had worse results were less satisfied. Further research, either in the form of an extension to this study or a study with a larger sample, may confirm this trend.

Disclosure statement

Dr. Kowacs has given lectures for GlaxoSmithKline, AstraZeneca, Janssen-Cilag, Merck & Co., Abbott, and Politec Saúde/Cyberonics. He has received traveling/meeting grants from Allergan, GlaxoSmithKline, AstraZeneca, Janssen-Cilag, Abbott, Biogen/Schering, Serono, and Politec Saúde/Cyberonics. He has received honoraria for research services from GlaxoSmithKline, AstraZeneca, Pfizer, Merck & Co, Bial, Servier, and Nycomed. The other authors have nothing to disclose.

Colin Richard Bowles and Luiza Virgili Bowles have done the review of style.

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