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Introduction

Pediatric epilepsy surgery is an underutilized treatment modality for select patients with debilitating, medication-resistant seizures. Previous publications have studied seizure freedom as the main outcome of epilepsy surgery. However, there has been no systematic assessment of the postoperative life quality for these children. The objective of this research was to estimate the quality of life (QOL) long-term outcomes after surgery for intractable epilepsy in pediatric patients.

Methods

A systematic search of the PubMed and Cochrane databases was performed. Studies reporting questionnaire-assessed QOL at least twelve months postoperatively were included. QOL means and standard deviations were compared between surgically and medically managed patients, between the pre- and postoperative state of each patient, and were further stratified into patients achieving seizure freedom, and those who did not. Meta-analysis was performed using fixed effects models for weighted mean differences (WMD), 95% confidence intervals (CI) and sensitivity analyses. Funnel plots and Begg's tests were utilized to detect publication bias.

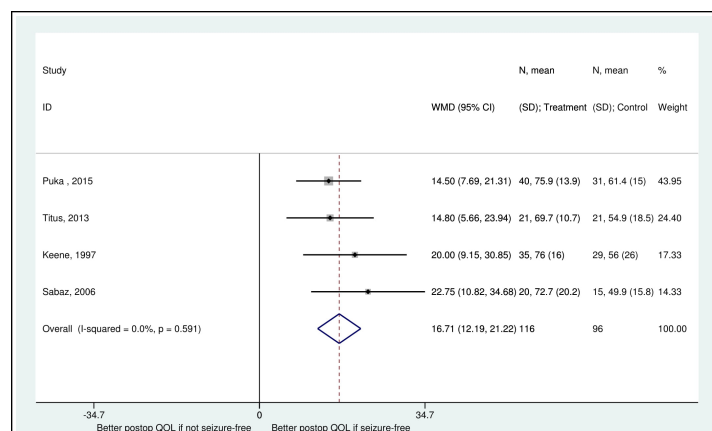


Figure 1. Meta analysis of postoperative QOL outcome in patients with postoperative seizure-free vs non-free.

Results

The search yielded 18 retrospective studies, reporting 890 surgical patients. Following epilepsy surgery, children had significant QOL improvement compared to their preoperative state (WMD: 16.71, 95% CI: 12.19-21.22, P<.001) (fig.1) and better QOL than matched medically-treated controls (WMD: 12.42, 95% CI: 6.25-18.58, P<.001) (fig.2). Patients achieving total seizure freedom after surgery had significant postoperative QOL improvement (WMD: 16.12, 95% CI: 7.98-24.25, P<.001), but patients not achieving seizure freedom did not achieve statistical significance (P=.79) (fig.3). In table 1 there is a meta-analysis of secondary outcomes following surgical treatment.

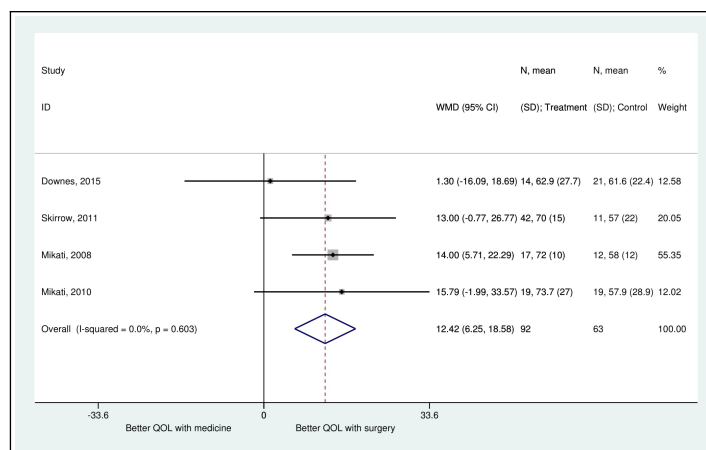


Figure 2. Meta analysis of QOL outcomes in patients medically vs surgically treated

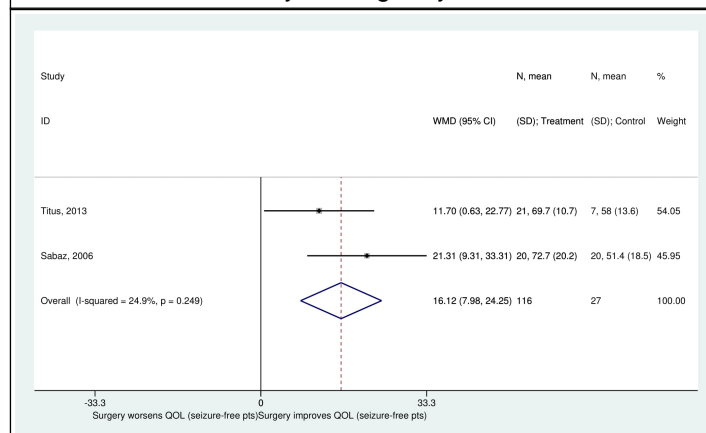


Figure 3. Meta analysis of the QOL outcome in patients underwent epilepsy surgery.

Variables	Effect Estimate	No. of Articles	95% CI	I ²	P value
Mean IQ difference					
Surgery vs Medicine	+10.61	3	+4.10 to +17.12	0%	0.001
Postoperative vs Preoperative	+2.26	4	-3.70 to +8.21	0%	0.46
Odds Ratio for IQ improvement					
Surgery vs Medicine	9.51	2	2.51 to 36.07	0%	<0.001
Odds Ratio for Seizure Freedom					
Surgery vs Medicine	6.17*	4	1.65 to 23.08	64%	0.007
Temporal vs Extratemporal Lobectomy	1.50	5	0.90 to 2.51	0%	0.12
Temporal Lobectomy vs Hemispherectomy	0.23	3	0.10 to 0.53	41%	<0.001
Extratemporal Lobectomy vs Hemispherectomy	0.16	3	0.06 to 0.40	52%	<0.001

Meta-analysis of secondary outcomes. A positive effect estimate for continuous variables is in favor of the surgical treatment. An odds ratio larger than one is in favor of the first of the compared items (e.g. surgical treatment). Random effects model used due to high heterogeneity. Abbreviations: IQ: intelligence quotient, CI: confidence interval, vs: versus.

Conclusions

Epilepsy surgery can effectively improve QOL in children with medication-resistant seizures. Seizure freedom was associated with the greatest improvement in life quality.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Describe the importance of pediatric epilepsy surgery for quality of life improvement.
- 2) Discuss, in small groups how practice can be changed to provide improvements in quality of life through surgery.

References

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