

Considerations of Corpus Callosotomy in Children with Medically Intractable Epilepsy

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Introduction

This study retrospectively assessed the efficacy of corpus callosotomy (CC) for seizure control in children with medically intractable epilepsy who underwent surgery at Children's National Medical Center, Washington D.C.

Methods

Demographic and clinical data were collected on 24 children with early onset epilepsy who had undergone anterior twothirds (partial) or complete corpus callosotomy. All patients were postoperatively evaluated for seizure control based on the Engel Classification, seizure type, medication outcome, parental assessment of daily function and seizure improvement, as well as surgical complications.



A: Preoperative sagittal T1-weighted magnetic resonance imaging (MRI).

B: Postoperative MRI showing a complete corpus callosotomy.

Twelve patients underwent an anterior two -thirds or posterior CC and 12 patients received complete CC. Worthwhile seizure improvement (Engel Class I-III) was more prevalent in the anterior two-thirds CC group (75%) versus complete CC (66.7%). Generalized tonic-clonic and atonic seizures types were most responsive to CC, showing reduction rates of 56.3% and 85.7%, respectively. Simple -partial seizures were also reduced by 66.7% and complex-partial seizures decreased by 44.4%. Our series showed no statistically significant correlation between seizure outcome and age at seizure onset, age at initial surgery, seizure duration, or type of callosotomy (partial versus complete). Of our 12 patients with Vagal Nerve Stimulator (VNS) implantation, nine pre-CC and three post-CC, eight (67.0%) experienced seizure improvement versus nine (75.0%) with no VNS placement, a non-statistically significant difference. Regardless of the surgical approach, the number of complications was equivalent and they were mild and transient with no mortalities.

Results



corpus callosotomy.

Conclusions

While generalized tonic-clonic and atonic seizures show the greatest improvement, CC is also effective for simple-partial and complex-partial seizures. Postoperative presence of various generalized seizures and reduction in partial seizures suggest that extracallosal interhemispheric pathways may play a role in the spread of generalized seizure. The technical simplicity and reversible nature of VNS make it an attractive initial option, but its efficacy relative to CC remains questionable.

Learning Objectives

 Describe the role of CC as a palliative surgical procedure in patients with medically intractable epilepsy.
 Identify the most responsive seizure types and its relative efficacy compared to VNS.

3) Recognize the favorable postoperative seizure control and low complication rates of CC.

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