

Good outcomes with staged surgery for epilepsy in children

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A staged approach to epilepsy surgery—with invasive brain monitoring followed by surgery in a single hospital stay—is a safe and beneficial approach to treatment for complex cases of epilepsy in children, reports the February issue of *Neurosurgery*, official journal of the Congress of Neurological Surgeons.

"Staged [epilepsy surgery](#) with invasive electrode monitoring is safe in children with poorly localized medically refractory epilepsy," write Drs. Jonathan Roth and Howard Weiner of NYU Langone Medical Center, New York City, New York. Their 13-year review suggests that complication rates decrease further as surgeons gain experience with staged epilepsy surgery.

Staged Surgery for the Most Complex Cases of Childhood Epilepsy

From 1996 to 2009, the researchers performed staged surgery in 161 children with refractory epilepsy that could not be controlled with anti-seizure medications. The children averaged about seven years old. Most had "multifocal" epilepsy originating from more than one area of the brain, often related to a genetic condition called tuberous sclerosis complex.

In the staged approach, children underwent two or more surgical procedures for epilepsy during one hospital admission. The first step was

invasive monitoring—surgery to place electrodes, which were used to map the "epileptogenic" areas of the brain from which seizure activity was originating.

Eighty percent of children subsequently underwent surgery to resect the epileptogenic brain areas. In a total of 200 hospitalizations, the children underwent nearly 500 surgical procedures for invasive monitoring, resection, and electrode removal. Dr. Roth and colleagues write, "Most children underwent only one admission, most of which included two or three surgeries."

The current study focused on the safety of staged epilepsy surgery. Complications occurred at rates expected for children undergoing neurosurgical procedures. This included serious but less-common complications, such as neurologic abnormalities and central nervous system infections; as well as minor complications such as bone absorption or noninfectious fevers. Twenty-five children had complications requiring surgery.

Benefits of Staged Surgeries Outweigh the Risks

"Notably, surgical experience appeared to lower the complication rate," Dr. Roth and coauthors write. Complications decreased from 30 percent during the first six years of the experience, to 15 percent in the last six years. Complication rates were similar in different subgroups of patients, including those with more surgeries or more hospital admissions.

Surgery is an important treatment option for epilepsy that does not respond to medications. However, in some complex cases, the epileptogenic area can't be readily identified or seizures are originating from multiple sites.

The authors' department has previously reported good outcomes with

staged surgery for children with complex epilepsy, producing large reductions in seizures for most patients. However, this approach is still not widely used, perhaps reflecting concerns that it might lead to high complication rates.

The new analysis suggests that staged epilepsy surgery in children is "relatively safe," with no higher than expected types and rates of complications. However, "When considering the risk-benefit profile in these [children](#) with severe epileptic disorders, we found that the benefits outweigh the risks," Dr. Roth and colleagues write.

They believe the staged surgical approach is especially appropriate, given the high risks of severe and repeated seizures in complex [childhood epilepsy](#). The researchers have no single explanation for the reduction in complications over their 13-year experience, but it may reflect close attention to key technical details and patient care routines.

Provided by Wolters Kluwer Health

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