

What is in a name? A closer look at callosotomies

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EDITOR—Because interest in corpus callosotomy is likely to be rekindled with the advent of new concepts¹ and the realization that neither medication nor vagus nerve stimulation significantly improve patients badly damaged by drop attacks, it is important to analyze surgical results from series such as that by Graham et al.² from a more detailed perspective.

We read with attention their report on the long-term outcome of callosotomy for drop attacks.² Most patients had complete sections either in one or two stages and approximately 50% had long-term remission or only rare drop attacks. With a median follow-up of 36 months, there was marked reduction in injuries, suggesting that the procedure was clearly worthwhile. Remarkably, 13% of patients had transient post-op hemiparesis.

It may be interesting to contrast these results with the lasting complete cessation or more than 90% reduction in falls in 83% of our recently published series of 36 patients who had selective posterior callosotomy – all followed for at least 4 years, with median follow up of 6 years.¹ None had transient post-op hemiparesis and there was an overall increase in functionality. Why results with selective posterior section proved better than complete sections may not be readily apparent. However, a few points deserve consideration.

First, the selective posterior callosotomy we described encompasses the splenium, the isthmus and parts of the body, sectioning between 50% and 60% of the posterior-anterior extent of the corpus callosum. This strategy

sections fibers originating from the motor and premotor areas, likely involved in the falls.³ Clearly, this is not the case with posterior sections limited to the splenium and we therefore strongly disagree with the authors' statement in their discussion that our results in 36 patients should be contrasted with the poor results with posterior sections reported by Pinard et al.⁴ Those authors reported only three patients and resection was limited to the splenium of the corpus callosum.

Second, the medication used following callosotomy may be relevant for the ultimate control of drop attacks. In an open-label study we provided preliminary evidence that a combination of valproate, lamotrigine, and a benzodiazepine (carefully monitored for side effects) is highly effective in diminishing falls,⁵ and thus may be the ideal combination following callosotomy. All our patients are on this scheme after surgery.¹

Third, the selective posterior callosotomy we described does not involve manipulation of the pericallosal arteries and the cingulate gyrus, thus minimizing the risk of hemiparesis.

Finally, it may well be that sectioning the fibers of the posterior half *while preserving the anterior callosum* may lead to better seizure control. Although this needs to be proved, it is not unlikely that sparing prefrontal connectivity may provide a clinically useful degree of inhibition of epileptic discharges.

It is high time to inaugurate a new era in callosal sections for drop attacks and other intractable generalized seizures, using new imaging technologies such as tractography and more sophisticated pre-section electroencephalography analyses. The move from retrospective to prospective approaches should address key research issues, such as the fibers that need to be sectioned and those that need to be spared to achieve the best epileptological, cognitive, and behavioral results.

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