beneficial effects within the brain following direct omental application.

Omentum was first applied to the human brain in 1978, and since then the operation has been performed with increasing frequency, especially in China. Almost all of the patients operated on had severe cerebrovascular disease, as evidenced by a previous cerebral infarction with varying degrees of post-stroke aphasia and motor disability. These Chinese surgeons have reported clinical improvement in speech and motor activity in some patients who underwent omental transplantation following stroke and the elimination of transient ischemic attacks (TIA's) in others. Recent discoveries of a lipid angiogenic factor and neurotransmitters (HS Goldsmith, et al., in preparation) in omental tissue theoretically might explain the observed neurological improvements.

It is of extreme importance that the recently reported failure of the EC-IC clinical trial should not dishearten the efforts required to find treatments for cerebrovascular insufficiency. Omental application to the brain is a new form of therapy that has been reported as being clinically beneficial, but anecdotal series are insufficient reason to continue to perform the operation without a controlled clinical study; a good example of the need for such a study is the failure of the EC-IC procedure in spite of early enthusiastic reports. North American neurosurgeons have not critically evaluated the omentum in treating cerebrovascular disease, apparently because of their preoccupation with developing and studying the effectiveness of the EC-IC bypass operation. Now that it is known that the EC-IC operation is ineffectual in preventing ischemic stroke, a prospective randomized study of omental transposition to the brain is a scientific obligation if the procedure is to be evaluated in an objective fashion. Only by such a clinical trial will it be learned whether omental transposition to the brain has the capacity to attain the unfulfilled promise of the EC-IC bypass procedure.

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Brain Damage From Boxing

To THE EDITOR: I appreciate the comments by Dr. Richards and his colleagues on my letter to the editor concerning brain damage from boxing (Aoki N: Brain damage from boxing. Letter. J Neurosurg 64:829–830,
Epilepsy Following Ventricular Shunt Placement

To The Editor: In an article published recently, Dan and Wade compared 11 patients with frontal ventricular shunt catheter placement with 168 patients with posterior placement (Dan NG, Wade MJ: The incidence of epilepsy after ventricular shunting procedures. J Neurosurg 65:19–21, July, 1986). They reported a remarkable 54% incidence of seizures in patients with frontal placement and stated that the anatomical site of cortical puncture for ventricular catheterization was a significant factor in the incidence of epilepsy. They further commented that "the frontal locus should be avoided whenever practicable." In the medicolegal climate of this country, such conclusions published in a prestigious journal need to be evaluated very carefully.

In 1984, 93 pediatric patients underwent placement of a ventricular catheter at the University of Michigan. Two of the 93 patients had a posterior approach while the remainder underwent frontal placement approximately two finger-breadths in front of the coronal suture at the mid-pupillary line. All patients were followed for at least 18 months and two-thirds were followed for 2 years. Dan and Wade noted that half of their patients who developed seizures did so in the first 2 years, so certainly we should have noted a trend in that direction in our series.

Twenty-four (25.8%) of our 93 patients had seizures prior to shunt placement. These occurred either in unshunted patients or in patients in whom an occluded posterior catheter was revised via a frontal approach. This compares with 27 (13%) among 207 cases in the study reported by Dan and Wade. Five (7.2%) of 69 children in our study who were seizure-free prior to shunting developed seizures postoperatively. Review of these cases suggests that the anatomical site of cortical puncture for ventricular catheterization had little to do with the later development of seizures. One child (Case 1) had massive hydrocephalus and an occipital encephalocele, and underwent reduction cranioplasty requiring large-volume fluid replacement. She had a single prolonged grand mal seizure in the immediate postoperative period. In Case 2, a newborn baby underwent placement of a ventricular catheter in the left frontal area, followed 6 weeks later by a right frontal craniotomy for intraventricular tumor. She developed seizures in the postoperative period, and an electroencephalogram demonstrated a right frontal focus (that is, contralateral to shunt placement). In Case 3, an infant with massive hydrocephalus and a 50-cm head circumference in the neonatal period had seizures several months after right frontal placement of a catheter. Electroencephalography showed diffuse bihemispheric dysfunction. The patient in Case 4 was a toddler with normal neurological examination and a large porencephalic cyst. This child had a prolonged seizure and postictal Todd's paralysis in the immediate postoperative period following shunt placement on the side of the porencephaly. In Case 5, an infant with a malfunctioning shunt developed herniation at a local hospital and suffered cardiorespiratory arrest. Following resuscitation he had multiple seizures but has subsequently been seizure-free on anticonvulsant therapy. His electroencephalograms revealed no specific focus.

Review of these cases has failed to demonstrate that the shunt placement was the primary cause of seizure in most instances. In one child seizures arose from the contralateral hemisphere, one had a large porencephalic cyst on the side of shunt placement, and two developed seizures immediately following severe physiological stress (that is, herniation and reduction cranioplasty). These results are at great variance with those reported...