

INTRODUCTION

(Boyer, Vogel, Green)

When a severely disabling seizure disorder has not responded satisfactorily to extensive medical management, a surgical solution is often sought. This may be possible by resection of a cortical focus. Or an attempt may be made to limit spread of seizure activity by the interruption of fiber tracts radiating from the focus. Among cerebral fiber tracts, the corpus callosum is the largest and most widely connected.

When
may be possible

not good reasoning unless a large focus

When Van Wagenen (R) introduced section of the corpus callosum as a surgical treatment for epilepsy, he referred to his observation of seizure amelioration following injury to the corpus callosum. At about the same time, Erickson's animal studies (R) provided experimental support for this approach. We do not intend to review here the extensive clinical literature on section of various fiber tracts, nor the even more extensive experimental literature on the effects of callosotomy on seizure development and spread. But we do wish to point out that experimental work since Erickson has included a number of studies showing the importance of the anterior commissure for seizure propagation, especially with temporal lobe foci (R, R).

a single one

get in anterior as seen

It is unfortunate that no published long-term followup is available on Van Wagenen's patients. Even personal investigation has failed to provide us with the data. However a review of the many papers by Akelaitis and co-workers (R,R,R,R,R) provide some information, at least in the short term. Appraisal of these results is complicated by the heterogeneity of the population, both as regards the nature of disease as well as the considerable variation in extent of callosal section. If we restrict our consideration to those patients described as having a division

of focus

(table #1?)

of the corpus callosum either complete or nearly complete (described as ~~complete~~ ^{leaving} "a few fibers of the splenium"). We can accumulate a total of twelve patients in the Van Wagenen--Akela series, of whom these, six are described as having a cessation or marked diminution in generalized convulsions. Therefore, if we suppose that patients who are not described ~~to be~~ ^{were} failures, it appears that of those patients with a complete or nearly complete callostomy, but not including the anterior commissure, approximately one-half obtained a distinct improvement.

studies had shown up to 50% in transmittal sigs. It indicates that premotes had conferred abs of sev. in cap 19 of extensive am. also in cat. further post. op. abs confined to one side. tendency. Taken together sup'd recurrent crisis of a certain in our had form using a.c. m.t.

In 1960, one of us (J. E. B.) became physician to a man whose severe convulsions had not been helped an a number of medicines, had been worsened by Dilantin, but ~~was~~ ^{were} slightly helped by Phenobarbital and to some extent by Mysoline, Diamox and Zarotin. On the latter four medicines in large doses he continued to have generalized convulsions at least one or two times per week and status epilepticus about every three months. There were, in addition, numerous less severe spells, some of which included various forms of automatic behavior . There was EEG evidence for involvement of both temporal lobes and also the left temporal parietal language zone, as well as neurological evidence of a right fronto-parietal lesion. The patient and his family were desperate for relief. No surgical treatment than in use seemed applicable. After lengthy correspondence with the National Institute of Health at Bethesda, he was admitted there for six weeks of study and discharged with an apparently hopeless prognosis. On his return in Spring of 1961, extensive discussions lead to the proposal by J.E.B. that he have an experimental operation to which to which he, his wife and his children readily assented.

publ'd 7 5-3

To insure a minimum of surgical risk P.J.V. and J.E.B. entered into a program of study including cadaver dissection. We were particularly ^{determined} concerned that the operation include all of the corpus callosum ^{in its entirety} and also the anterior commissure ^{and m.d. concern} because of our view that even a small remnant ^{inter-hemispheric comm} of fibers might vitiate the effect of the operation.

To insure a maximum of scientific data, as desired by the patient and his wife as it was by us, R.W.S. agreed to make available the facilities of his laboratory. We were joined in the Fall of 1961 by M. S. Gazzaniga, who devoted a major portion of his time for the succeeding five years to the study of this ^{several} and subsequent patients. Preoperative ~~x~~ testing continued through the remainder of 1961, during ^{up to date of surgery} which time the

Such things later in refer to final script.

patient continued to have seizures of the same frequency and severity as previously (See Figure 1). Following operation on February 6, 1962, the patient had a difficult post-operative course but ^{within} during the year was able to enter into a social life impossible before the operation.

It is difficult to describe the sense of satisfaction and delight with which we listened to his excited description of his first attendance at a baseball game in over six years (the Dodgers won). In the first two months after surgery there were two episodes involving ~~unresponsiveness~~ unresponsiveness together with some motor activity. There were also numerous brief episodes of stiffening of the left arm or inability to talk. (See Figure 2). But since that operation six years ago he has not had a generalized convulsion.

less specific

when

^{During past 5 years he has had no other med. or surg. complications not troubled}
^{any} recurrence of seizure activity.

A year and a-half after the operation on W. J., M. G. entered the ^{White Memorial} Hospital in status epilepticus. Medical treatment had been unavailing for the preceding eight years. A left temporal EEG focus had been demonstrated some years before, but by 1963 the EEG

abnormalities were generalized ^{and} diffuse. There was in addition a right central calcification associated with an occasional pre-convulsive aura of left-sided numbness. This patient was operated on September 5th, 1963. Following her discharge from the hospital nearly five years ago she has not had a generalized convulsion nor any other type of spell involving unconsciousness.

She manages her household, does the marketing, travels, ^{with her husband} goes socially, & in general leads a moderately normal existence.

The gratifying results in our first two patients has encouraged us to offer the procedure to subsequent patients. The operation has been performed fifteen times to date and has included three deaths. Of the other twelve patients, only ^{one} has not obtained a definite ~~improvement~~ improvement in seizure status. In each case, our scientific interest was discussed with the patient before operation and they have without exception been most helpful ~~and~~ in cooperating in the psychological studies.

no subsequent complications as on brain

this leads into a discussion of the neuro-psychological defects.

*most def. = vascular neoplastic
 Von Wagenseil
normal*