RESULTS OF DIRECT ATTACK ON INTRACRANIAL ANEURYSM*

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Our current management of subarachnoid hemorrhage is based on two postulates. First, that if head trauma and hypertension can be excluded, most cases of subarachnoid hemorrhage are caused by leaking intracranial aneurysms. Second, that surgical treatment of such lesions results in a significantly lower mortality than any form of non-surgical treatment, thus justifying clinical and arteriographic search for aneurysm in most cases of subarachnoid hemorrhage. There is considerable evidence in the literature to support both of these beliefs (Table 1), but the final evaluation of the results of surgery must depend upon the study of increasing numbers of cases. Furthermore, the relative merits of carotid ligation in the neck and cranial operation in dealing with aneurysms have not been fully established. In an effort to contribute to the study of these problems, we have reviewed our cases of intracranial aneurysm treated by cranial exploration, with particular attention to the results obtained.


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The verified intracranial aneurysms in our series total 81—the diagnosis being based on angiography, operative findings, or autopsy. Of these, 22, or 27 per cent, were not treated surgically for various reasons; 25, or 31 per cent, were treated by ligation of one of the carotid arteries in the neck, and 34, or 42 per cent, were attacked through craniotomy. The age of the patients ranged from 24 to 60 years, with an average of 42 years. The sex distribution was essentially even. Subarachnoid hemorrhage was present in three-quarters of the cases but in 24 per cent the diagnosis was based on neurological changes—usually substantiated by angiography. The distribution of the aneurysms about the circle of Willis was considered to be average (Table 2), and all of the usual morphologic types were encountered, including saccular, lateral, berry, etc.

**OPERATION**

The timing of operative intervention in cases of intracranial aneurysm has been a subject of considerable discussion, and there is still no complete agreement as to the most favorable moment for this attack. In our series, when subarachnoid hemorrhage had occurred, operation was undertaken from 5 to 43 days later, with an average of 18 days. Recently, our practice has been to carry out arteriography about 5 days after hemorrhage and operation approximately 10 to 14 days after hemorrhage. This is somewhat at variance with the policy suggested by Norlén and Olivecrona,\textsuperscript{15,16} who favor operation during the quiescent period between hemorrhages—with at least a 3-week interval following the last hemorrhage. We have felt that while this might reduce the operative mortality, the loss of patients from recurrent hemorrhage during the second and third weeks might be greater than the loss from increased operative mortality. Admittedly, this is a difficult point and one which can be clarified only by further study and longer statistical survey.

The operative procedures used are illustrated in Table 3. The rather