

country, in which parasites are uncommon. But in their limitation and in the presence of cyst walls will be found conditions favorable for safe removal.

Of all intra-cranial growths, the one most favorable for operation is not truly a brain tumor, but a fibroma of the membranes, growing usually from the dura, and compressing the brain substance. Such an instance as Dr. W. W. Keen's remarkable case, in which a tumor weighing four ounces compressed the motor region, illustrates the most favorable growth for operation, as the symptoms are produced not by direct invasion of the brain substance, but by its gradual compression. They are not very common, but may grow anywhere from the dural surface. The common bony tumors of this membrane are usually attached to the falx, and rarely reach a size sufficient to produce symptoms.

Thus, taking a large number of brain tumors, only a limited proportion could be operated upon with a prospect of recovery. In Starr's analysis of 300 cases only nineteen cases would have warranted surgical interference, and in only sixteen might an operation have been successfully performed. In my own records, the case of glioma, to which I have referred, was the only one in which, with any probability, an operation would have been successful.

A much more hopeful field for brain surgery is offered by *abscess*. Here surgeons have already scored many brilliant results. The most frequent causes are traumatism and ear disease; occasionally diseases of the nasal bones of the frontal sinuses, or of the structures in the orbit. A few cases originate from distant causes—pulmonary disease, or liver abscess. Cases due to traumatism have for many years past been treated surgically. It has long been recognized as a justifiable procedure, when there was a definite history of a wound, with or without depression of the bone, to trephine at the seat of the injury. In many cases relief has followed the opening of the sub-dural or intra-cranial abscess. Occasionally the abscess has not been found, as it was not seen superficially, but, now that the probe is used with the utmost freedom and with such impunity, the disease is less likely to be overlooked.

In otitis media and mastoid disease, when cerebral symptoms develop and the constitutional disturbance indicates the formation of pus, the question of trephining is at once raised. The difficulties are: first, in determining the presence of abscess; and, secondly, its location. The signs are by no means positive in every instance, but in a case of middle ear disease, if the fever and constitutional disturbance increase, and there are such symptoms as hebetude, headache, vomiting, slow pulse, and particularly if optic neuritis develops, we can feel tolerably confident, even without localizing symptoms, that suppuration has occurred within the brain. The most common site of abscess is in the temporo-sphenoidal lobe, a silent region on the right side. The involvement is liable on the left side to produce word deafness, a condition, however, not likely to be elicited in the patient's serious state.

Abscess is usually solitary, though I have seen in the temporo-sphenoidal lobe two separate collections of pus. Next in frequency the cerebellum is involved, most commonly in the hemisphere of the same side. In both regions an operation is feasible, and in the former has been successful in a number of cases. Two difficulties exist: First, that the cerebral condition following mastoid disease, otitis media, is sometimes purulent meningitis, which, confined to the temporo-sphenoidal lobe, may cause symptoms simulating those of abscess; and, second, that in otitis media curious cerebral symptoms may arise, mental dulness associated perhaps with fever and drowsiness, which may simulate abscess, yet from which the patient may recover completely.

It has been suggested that *hemorrhage* could, in many instances, be relieved by surgical interference. In traumatic cases, with the depression of bone and hemorrhage upon the dura, the indications are perfectly clear; but in the instances of intra-dural bleeding, either traumatic or spontaneous, I do not see a promising field for surgery. The hemorrhage is usually extensive, and to remove all the blood-clot would be impossible. In going over my records I find but one instance in which a sub-dural clot could have been removed. This was a case of a man who had been thrown from his sleigh and sus-