OBSERVATIONS ON RESECTION OF THE SUPERIOR LONGITUDINAL SINUS AT AND POSTERIOR TO THE ROLANDIC VENOUS INFLOW

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The problem of resection of the superior sagittal sinus is an exceedingly important one if we realize that many meningiomas arise from this structure and that their complete removal is usually impossible without removing a portion of it with the tumor. These tumors are benign and, since they lie readily accessible to the surgeon, their complete extirpation with permanent cure becomes a problem of paramount concern to the neurosurgeon. With our accumulated knowledge of the postoperative reaction of the patient to the ligation of this vessel it should now be possible to completely and permanently cure these patients with a negligible operative mortality.

My first object in this discussion is to present evidence to show that under certain conditions the superior longitudinal sinus, previously unoccluded by a tumor, may be safely ligated and resected between the rolandic venous inflow and the torcular Herophili. In this location the cortical venous return to this sinus is scant in comparison to that found in the more anterior midline areas of the cortex, so that any physiological upset caused by closure of the superior longitudinal sinus at this point should be due entirely to that caused by the closure of the sinus itself and not to ligation of tributary veins.

In 1942 I reported 10 cases of resection of the superior longitudinal sinus at various points, 9 of them without serious effect. Five of these were at or posterior to the rolandic inflow but they had completely unoccluded sinuses. One patient died in whom an unoccluded sinus was ligated at the rolandic inflow. This is the only case reported in the literature of resection at or back of the rolandic inflow before occlusion had occurred. My second object is to present a second fatal outcome where an incompletely occluded superior longitudinal sinus was ligated and resected at the rolandic inflow.

From my 10 cases and 15 others reported in the literature I concluded that: “The superior longitudinal sinus can be ligated or resected safely anterior to the point where the rolandic veins enter the sinus without regard to whether or not a tumor is compressing or occluding this structure. It also appears safe to remove a portion of the sinus at or back of the rolandic veins provided the sinus has already been slowly occluded by a tumor growth. A death following resection of an unoccluded superior longitudinal sinus at the entrance of the rolandic veins would indicate that the procedure is incompatible with life.”

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No evidence existed at that time regarding the probable effect of resecting an unoccluded sinus between the rolandic inflow and the torcular.

The cases I shall present here should greatly help in solving the problem of complete removal of the parasagittal meningiomas.

Case 1. Resection of unoccluded superior longitudinal sinus posterior to rolandic venous inflow for complete removal of parasagittal meningioma.

A man of 49 years was admitted to the Jefferson Hospital neurological service of Dr. Bernard J. Alpers on July 28, 1943. His chief complaint was "pain in the back of the neck and head."

In 1912 and 1938 he suffered rather severe head blows; he was not unconscious, but had severe headaches each time for a day or so. During most of his life he had had dizzy spells, usually occurring when he arose from a sitting position. Six weeks prior to admission pain developed in the back of the neck which extended to the top of his head and into his eyes. These headaches came on in attacks lasting from several minutes to several hours, during which he perspired profusely and his face and shoulders became flushed. For a week before admission the attacks had occurred daily. For many years he had had blurring of vision which he described very inaccurately. There had been some progressive weakness in the arms and legs and on the day before coming to the hospital he had been unable to walk because of this. For several days he had vomited repeatedly and felt nauseated constantly.

Examination. He was a mildly confused, irritable, thin man with definite slowing of response and impaired memory. He walked with a wide base and slightly unsteadily. There was 5 D. choking of the right disc and 3 D. on the left. There was a left homonymous hemianopsia. The left side of the face was flattened, there were weakness and dyssynergia of the left arm and he was unable to stand alone on either leg. The left biceps was more brisk than the right. Position sense was impaired in the left great toe. The diagnosis of a right occipitoparietal tumor was made and this clinical location was verified by the roentgenographic finding of a calcified mass in this region near the midline.

1st Operation. On Aug. 8, 1943 a craniotomy was performed with the opening to within ½ inch of the midline (Fig. 1). A fairly dense meningioma, weighing 98.5 gm., was found. This was covered by a thin layer of brain and was attached to the superior longitudinal sinus by a base about ½ inch in diameter. It was removed without incident and excised from its attachment to the sinus. By palpation it was determined that a portion had infiltrated through the sinus wall into its lumen, but I could not make certain as to whether or not it had completely occluded the sinus. He was not in good condition for operation and it was thought best to thoroughly expose and explore the sinus at another operation.

Course. His immediate convalescence was uneventful and at the end of 3 months he appeared in excellent health with the exception of a homonymous hemianopsia which seemed to cause him no trouble.

2nd Operation. On Nov. 1, 1943 a supplementary bone flap was turned across the superior sagittal sinus so as to thoroughly expose it and the adjacent left cortex (Fig. 1). The sinus was isolated by cutting through the dura and entirely up to it on either side of the tumor stub. The tumor base was about ½ inch by 1 inch and had infiltrated only the right wall of the sinus. Palpation between the thumb and forefinger gave the sense of a nodule completely occluding the sinus channel. It was unnecessary to ligate any cortical veins on either side. The sinus was transfixed by silk