Chapter IX

Meningioma of the Foramen Magnum

The second most frequent location for meningiomas of the posterior fossa is on the anterior rim of the foramen magnum. These tumors may extend for a considerable distance up the clivus or down into the spinal canal. These slow-growing tumors may cause remarkable distortion and compression of the cervicomedullary region. The vertebral artery and its branches, as well as the lower cranial nerves, may be completely enveloped by the tumor (Fig. 92).

Ideally, these patients will have both vertebral arteriography as well as myelography preoperatively. Since myelographic contrast media may obscure the region for a subsequent arteriogram and since the myelogram may suggest the need for urgent operative treatment, it is preferable to do the angiogram first whenever this diagnosis is seriously entertained. Because of the intimate relationship of these firm tumors with the vertebral arteries, any preoperative information that will give the surgeon a three-dimensional concept of the extent of the lesion is important.

The patient is placed in the sitting position and all precautionary measures, as outlined in Chapter I, are observed. A midline incision, as described in Chapter II, is made from above the inion to C5. The lamina of both C1 and C2 are removed and a bilaterally suboccipital craniectomy completes the exposure (Figs. 93 and 94). The dura is incised in the shape of a Y and reflected. Fig. 95 illustrates the operative exposure after opening the arachnoid. The tumor depicted descends into the spinal canal on the right side. The highest denticulate ligament is stretched over the tumor. This ligament helps locate the level at which the vertebral artery enters the intrathecal space. In this patient it means that the tumor is covering the right vertebral artery. The dorsal root of C2 and the highest denticulate ligament are transected, separated from the tumor and reflected medially. The spinal accessory nerve is gently elevated off the tumor capsule (Fig. 96).

The tumor capsule is opened inferiorly and gutted. We prefer to use a sharp curette with constant irrigation and suction rather than risk the heat of the cautery loop in this location. The tumor is thus gradually reduced in size. The inferior cerebellum can be elevated and the tumor capsule is gently dissected free of adhesions and feeding vessels. The tumor is removed piecemeal until only the anterior dural attachment remains. This area is then curetted and cauterized using bipolar coagulation.

In large tumors with huge clival extensions, as seen in Fig. 92, this exposure is inadequate. These types of lesions should be approached with a combined foramen magnum — cerebellopontine angle exposure or even occasionally with a supratentorial exposure added to it. In dealing with meningiomas in front of the brain stem, remember that an already-distorted brain stem does not tolerate additional retraction without disastrous results. A multisided exposure will not only give more room but will also help in identifying and protecting important vascular structures and cranial nerves.
Fig. 92. Anatomico-topographical demonstration of a meningioma of the foramen magnum. The attachment of this tumor is at the anterior rim of the foramen magnum. The tumor extents halfway up the clivus. Its inferior extension reaches to the level of the arch of the atlas (see Figs. 94 and 95).