

Surgical Strategy in Midline Tumors of the Anterior Cranial Fossa

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Midline tumors of the anterior cranial fossa (ACF) are mostly represented by olfactory groove meningiomas (OGM). There are many different approaches to this complex anatomical area but only a few that allow from the beginning dural implant removal: purely endoscopic transnasal (EA), transcranial/transfrontal sinus (TFA), and combined EA-TFA (CA) approach. Despite the improvement of EA, the optimal treatment strategy for the surgical treatment of OGM is still a matter of debate. The most advocate advantages of the EA are the absence of cerebral retraction and the possibility to resect the dural implant of the tumor, thus reducing its vascularization. On the other hand, it presents several limits: an important sinonasal morbidity, the loss of olfaction as default, increased risk of postoperative CSF leakage (5-10% in referral centers), especially in anteriorly located tumors. Moreover, the EA is contraindicated in case of lateral (above the orbital floor) or anterior extension (posterior wall of frontal sinus), cerebral parenchima involvement, or in case of major nerves or artery encasement. Consequently, only little tumors extended to the tuberculum sellae or planum sphenoidalis could be safely resected through a purely EA. The TFA is performed by a bicoronal incision, creating a craniotomy on the anterior wall of the frontal sinus and drilling the posterior wall of the frontal sinus. It gives direct access to the dural attachment of the tumor and avoids any cerebral retraction. In case of bulky or far posterior tumors, the interhemispheric route is usually very effective. The TFA permits to remove OGM of any dimension, to deal with nerves of vessel encasement, and to respect meningo-hypophyseal arteries. The incidence of postoperative CSF leakage is minimal since the closure with the galea is of the utmost effectiveness (0% in our experience). In case of sinonasal involvement, a CA is usually preferred.

Key words: meningioma, anterior cranial fossa, endoscopy, transfrontal approach