Medial sphenoid wing meningioma surgery

see also Sphenoid wing meningioma surgery.

A lumbar drainage is used. The head is turned 30°o the vertical. Aggressive extradural removal of sphenoid wing is performed. An FTOZ approach may provide additional exposure. The sylvian fissure is split widely. The ICA and MCA are often encased by tumor (look for the appearance of “grooves” on the surface of the tumor on MRI, which indicates vessels, e. g. MCA). To locate the ICA, identify MCA branches and follow them proximally into the tumor. The optic nerve is best identified at the optic canal. Avoid excessive retraction of the optic apparatus. The deep portion of the tumor often has numerous small parasitic vessels from the ICA (which makes this part very bloody), and may also invade the lateral wall of the cavernous sinus (which creates risk of cranial nerve deficits with attempted removal). Therefore, the recommendation is to leave some tumor behind and use radiosurgery to deal with it.

Surgical management of giant medial sphenoid meningiomas (> or =5 cm in maximum dimension) is extremely challenging due to their intimate relationship with vital neural structures like the optic nerve, cranial nerves of the cavernous sinus and the cavernous internal carotid artery. Their surgical management is presented incorporating a radiological scoring system that predicts the grade of tumour excision.

20 patients of giant medial sphenoidal wing meningioma (maximum tumour dimension range: 5.2 to 9.5 cm; mean maximum dimension = 6.12 +/- 1.06 cm) with mainly visual and extraocular movement deficits, and raised intracranial pressure, underwent surgery. A preoperative radiological scoring system (range 1-12) was proposed considering tumour volume (using Kawamoto's method); extension into the surrounding surgical corridors; extent of cavernous sinus invasion (based on the tumour relationship to the cavernous internal carotid artery); associated hyperostosis and/or >50% calcification; and, associated brain oedema. Both the conventional frontotemporal craniotomy (n = 13) and its extension to orbitozygomatic osteotomy (n = 7) were utilized. The cavernous sinus was explored in 4 patients and the hyperostotic sphenoid ridge drilled in five patients.

Total excision was achieved in nine patients; small tumour remnants within the cavernous sinus, interpeduncular fossa or suprasellar cistern were left in eight patients; and less than 10% of tumour was left in three patients. A patient with a completely calcified meningioma died due to myocardial infarction. When the preoperative radiological score was > or =7, there was considerable difficulty in achieving total tumour excision. A mean follow of 17.58 +/- 15.05 months revealed improvement in visual acuity/field defects in three, stabilisation in 11, and deterioration of ipsilateral visual acuity in five patients. Symptoms of raised pressure, cognitive dysfunction, aphasia and proptosis showed improvement.

A relatively conservative approach to these extensive lesions resulted in good outcome in a majority of our patients. Both the standard as well as skull base approaches may be utilized for successful removal of giant medial sphenoidal wing meningiomas. A preoperative radiological score of > or =7 predicts a greater degree of difficulty in achieving complete surgical extirpation [1].

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Behari S, Giri PJ, Shukla D, Jain VK, Banerji D. Surgical strategies for giant medial sphenoid wing meningiomas: a new scoring system for predicting extent of resection. Acta Neurochir (Wien). 2008

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