J Neurosurg 111:578–589, 2009

Extended endoscopic endonasal transsphenoidal approach for residual or recurrent craniopharyngiomas

Clinical article

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Object. The management of recurrent or residual craniopharyngiomas remains controversial. Although possible, revision surgery is more challenging than primary surgery, and more often results in incomplete resection and an increased risk of death and complications. The extended (also called expanded) endoscopic endonasal transsphenoidal approach through the planum sphenoidale has been proposed over the past decade as an alternative surgical route for removal of various suprasellar tumors including craniopharyngiomas. In this study, the authors describe the feasibility and advantages of this technique in recurrent or symptomatic residual craniopharyngiomas.

Methods. Between January 2004 and June 2008, 22 patients underwent surgery via the extended endoscopic transsphenoidal approach for the treatment of recurrent or residual symptomatic craniopharyngiomas at either the University of Pittsburgh or the Universita degli Studi di Napoli. The lesions included 12 purely suprasellar craniopharyngiomas, 9 with both intra- and suprasellar extensions, and 1 arising from a remnant in the Meckel cave. To better evaluate the features of the extended endonasal approach for recurrent or residual craniopharyngiomas, each patient was assigned to 1 of 3 subgroups depending on the original surgical treatment: transcranial pterional route (13 patients), transsphenoidal approach (3 patients; 2 microsurgically and 1 with the standard endoscopic technique), or extended endonasal endoscopic approach (6 patients).

Results. Total removal was achieved in 9 patients (40.9%), and in 8 patients (36.4%) near-total removal (defined as > 95% removal) was possible. Subtotal removal (> 70%) was attained in 4 patients (18.2%), and tumor removal was partial (< 50%) in only 1 case (4.5%). There were no deaths or major complications, including behavior changes. Postoperative CSF leaks developed in 2 patients in the transcranial subgroup, and 1 in the transsphenoidal subgroup (overall rate 13.6%), requiring early successful endoscopic revision surgery for the cranial base defect.

Conclusions. Most of the advantages of the endoscopic endonasal technique were noted during tumor dissection from the inferior aspect of the chiasm, the infundibulum, the third ventricle, and/or the retro- and parasellar areas. These benefits were best appreciated in patients who had originally undergone transcranial surgery, since in such cases the authors' endoscopic endonasal approach was a virgin route. However, the extended endoscopic endonasal technique can also be safely used in patients who originally underwent transsphenoidal surgery. The endoscopic endonasal technique should be considered as a therapeutic option in selected cases of recurrent or symptomatic residual craniopharyngiomas. *(DOI: 10.3171/2009.2.JNS081026)*

Key Words • **craniopharyngioma** • **recurrent craniopharyngioma** • **pituitary surgery** • **endoscopic transsphenoidal surgery**

Craniopharyngiomas are disembryogenetic tumors that arise from squamous epithelial remnants of Rathke pouch, involving, therefore, many areas of its course, from rhinopharynx to the hypothalamus.[35,50] They arise relatively infrequently, with 2 characteristic peaks of incidence—in childhood (5–14 years of age) and late adulthood (50–74 years of age).[3,30] The lesion's consistency may be cystic, solid, or a combination of both; calcification occurs in ~ 60% of cases.

Complete surgical removal is considered the most effective treatment for craniopharyngioma,[21,32,54,64,71,75,80,83] even though it is not always possible because of the deep

Abbreviations used in this paper: EEE = expanded endoscopic endonasal; GKS = Gamma Knife surgery; HBF = Hadad-Bassagasteguy flap; RT = radiation therapy; STR = subtotal resection.