

Tuberculum sellae meningioma case series

Sakata et al., retrospectively reviewed 2 cases of primary meningiomas that arose in the inferior-medial [optic canal](#) and 4 recurrent cases from the remnant inside the medial optic canal that had previously undergone craniotomy for tuberculum sellae meningiomas, and were treated by the [endoscopic endonasal approach](#).

All tumors were detectable and could be removed without manipulation of the affected optic nerve. The average maximum diameter of the tumor was 8.4 mm (range: 5-12 mm). Two patients who had a long history of progressive visual disturbance and papillary atrophy did not recover from severe visual disturbances postoperatively. However, others showed considerable improvement, maintaining postoperative visual function during follow-up. There were no postoperative complications.

Endoscopic endonasal approach has several advantages for meningiomas in the medial optic canal and associated with progressive [visual disturbance](#). In surgery of tuberculum sellae meningiomas, [optic canal decompression](#) and exploration inside the optic canal are important procedures to avoid symptomatic recurrence, which may be facilitated by the endoscopic endonasal approach. [optic atrophy](#) and duration of visual deterioration are predictive factors for postoperative visual outcomes

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2018

Kong et al., retrospectively reviewed clinical data in 178 patients with [Tuberculum sellae meningiomas](#) (TSM) treated at 3 institutions between January 2010 and July 2016. Patients with tumors encasing the [internal carotid artery](#) or [anterior cerebral artery](#) or involving the [anterior clinoid process](#) or [cavernous sinus](#) were excluded. Tumors were classified as high-lying or low-lying based on their location, and involvement of the [optic canal](#) was evaluated. The surgical outcomes of EEA and TCA were analyzed according to the relevant anatomical features.

During the study period, 84 patients underwent EEA and 94 patients underwent TCA. Based on preoperative MR images, 43 (24.2%) meningiomas were classified as high-lying tumors, 126 (70.8%) as low-lying, and 9 (5.0%) as nonspecific. Gross-total resection (GTR) was performed in 145 patients (81.5%); the GTR rate did not differ significantly between the EEA and TCA groups. Of 157 patients with preoperative visual disturbance, 140 had improved or stable vision postoperatively. However, 17 patients (9.6%) experienced some visual deterioration after surgery. The TCA group had a worse visual outcome than the EEA group in patients with preoperative optic canal involvement (77.6% vs 93.2%, $p = 0.019$), whereas there was no significant difference in visual outcome based on whether tumors were high-lying or low-lying.

The results of this study support EEA over TCA, at least with respect to visual improvement with acceptable complications, although TCA is still an effective approach for TS meningioma ²⁾.

2017

Karsy et al. retrospectively reviewed the charts of patients with TSMs that were treated by frontotemporal or bifrontal open cranial resection. Clinical, radiographic, and surgical variables were

analyzed.

Forty-nine patients (mean age 53.2 ± 14.0 years) with a mean follow-up of 42.3 ± 45.4 months were identified. Mean tumor volume was 12.4 ± 18.0 cm³. Optic canal invasion was seen in 46.9% of patients, and 91.8% presented with visual deficits. Gross-total resection was achieved in 42 (85.7%) cases and near-total resection in 7 (14.3%) cases. Postoperatively, visual outcomes improved in 34.7% of patients (n=17), remained stable in 44.9% (n=22), were intact in 12.2% (n=6), and worsened in 2.0% (n=1). Good outcome (Glasgow Outcome Scale [GOS] ≥ 4) was achieved by 93% (46/49) of patients at discharge and by 95.1% (39/41) at six months. Sixteen manageable and self-limiting complications occurred in 16 patients.

In most patients undergoing a frontotemporal approach, a gross total/Simpson Grade I resection with manageable and self-limiting surgical complications, a good 6-month GOS in most patients, as well as improved to stable vision were seen at follow-up. Various treatment approaches can be considered for TSM resection, but the ability to decompress the optic canal and achieve a gross-total resection makes the frontotemporal approach attractive in many cases ³⁾.

Song et al. compared the surgical outcomes of each approach for TSMs from 44 patients receiving EEA and 40 patients receiving TCA in 2 institutions between 2004 and 2015. We analyzed the surgical outcomes and affecting factors for the relapse of tumor and visual outcome.

Gross total resection rates and relapse-free survival were not different between the 2 groups; however, the locations of residual or recurred tumor definitely differed. All recurrences in the TCA group were in the sella turcica, whereas residual tumors in EEA group were mainly located at lateral or superior to the clinoid process. The complete or partial improvement rate of visual function in the EEA group was 97.7%, but 9 patients (23.7%) in the TCA group experienced visual deterioration after surgery. EEA and younger age (<55 years) were associated with favorable visual outcome. Cerebrospinal fluid leakage occurred in only one case in the EEA group.

Surgical approaches do not affect the gross total resection rates, but the locations of residual tumor or recurrence differ according to surgical approaches. EEA is superior to TCA in visual outcome. At least in pure TSMs, the trend seems to be shifting in favor of EEA, considering the huge difference in visual outcome ⁴⁾.

Twenty-five consecutive TSM cases treated by EEA from 2008 to 2016 were retrospectively reviewed. Patient history, imaging, volumetric EOR, complications, and outcomes are presented. RESULTS:

Mean patient age was 53.9 yr, with female predominance (84%). Preoperatively, 84% of patients had vision impairment and 68% had optic canal tumor invasion. The tumor was abutting or partially encasing the anterior cerebral artery in 14 (56%) and 3 (12%) patients, respectively. The supraclinoid internal carotid artery (ICA) was partially or completely encased in 4 (16%) and 4 (16%) patients, respectively. Gross total resection (GTR) was achieved in 19/25 (76%) cases. Complete ICA encasement was the most common reason for subtotal resection. Among patients without complete ICA encasement, GTR was achieved in 19/20 (95%) patients. Optic canal invasion, tumor volume, intratumoral calcifications, and partial vascular encasement were not limiting factors for GTR. Eighty-eight percent of patients with preoperative visual impairment had improvement or normalization of

vision. No patient experienced permanent visual deterioration or new permanent pituitary dysfunction. Cerebrospinal fluid leakage occurred in 2 (8%) cases. CONCLUSION:

The EEA for resection of TSM provides high rates of GTR and visual improvement with a low rate of complications. Direct contact or partial encasement of the ICA and anterior cerebral artery does not limit the EOR ⁵⁾.

2012

In a retrospective study carried out from January 2004 till June 2011, patients were analyzed on the basis of clinical, radiological, and surgical factors that appeared to affect the outcome. A special scoring system (according to the guidelines of the German Ophthalmological Society) was adopted to quantify the extent of ophthalmological disturbances.

Comparison of categorical variables between the two was performed using chi-square test and a P value of ≤ 0.05 was considered significant. Logistic regression was used when multivariate analysis was required.

Vision improved in 27% and deteriorated in 7.3%. A prognostic scoring system (score 4-13) was developed depending on the degree of influence of significant prognostic factors. The patients with a score of ≤ 6 had improved vision postoperatively (44%), whereas none of those with a score > 6 improved. Completeness of visual recovery was perceived in 100% of patients within 3 months. Complete resectability was achieved in 73% of patients.

The proposed scoring system is very useful in prognosticating the visual outcome of these patients. The patients with a score of ≤ 6 have the best visual outcome postoperatively. Complete resectability is better achieved with extended bifrontal and unilateral frontal approaches. Short-term postoperative visual outcome is a strong indicator of permanent visual outcome after surgery ⁶⁾.

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