Endoscopic endonasal transclival approach for clival chondroma

- Endoscopic endonasal transclival removal of tumors of the clivus and anterior region of the posterior cranial fossa (results of surgical treatment of 140 patients)
- Extended endoscopic endonasal posterior (transclival) approach to tumors of the clival region and ventral posterior cranial fossa. Part 3. Analysis of surgical treatment outcomes in 127 patients

Until recently, tumors of the clivus and the anterior region of the posterior cranial fossa were considered extremely difficult to access and often inoperable using standard transcranial approaches. With the introduction into the neurosurgical practice of minimally invasive methods utilizing endoscopic techniques, it became possible to effectively remove hard-to-reach tumors, including central tumors of the anterior region of the posterior cranial fossa.

Methods: From 2008 to the present time, the inpatient institution has operated on 140 patients with various tumors of the base of the skull, localized to the clivus and anterior region of the posterior cranial fossa (65 men and 75 women). The age of patients ranged from 3 to 74 years. Tumor distribution according to the histopathological features was as follows: chordomas, 103 (73.57%); meningiomas, 12 (8.57%); pituitary adenomas, 9 (6.43%); fibrous dysplasia, 4 (2.86%); cholesteatoma, 3 (2.14%); craniopharyngiomas, 2 (1.43%); plasmacytomas, 2 (1.43%); and other tumors (giant cell tumor, neurohypophyseal glioma, osteoma, carcinoid, chondroma), 5 (3.57%). The tumors had the following size distribution: giant (more than 60 mm), 35 (25%); large (35-59 mm), 83 (59.3%); medium (21-35 mm), 21 (15%); and small (less than 20 mm), 1 (0.7%). In 11 cases, intraoperative monitoring of the cranial nerves was performed (21 cranial nerves were identified).

Results: Upper, middle, and lower transclival approaches provide access to the anterior surface of the upper, middle, and lower neurovascular complexes of the posterior cranial fossa. The chordoma cases were distributed as follows according to extent of removal: total removal, 68 (66.02%); subtotal removal, 25 (24.27%); and partial removal, 10 (9.71%). The adenomas of the pituitary gland were removed totally in 6 cases, subtotally in 1 case and partially in 2 cases. The meningiomas were removed totally in 1 case, subtotally in 5 cases, and partially in 5 cases, with less than 50% of the tumor removed in 1 case. Other tumors (cholesteatoma, craniopharyngioma, fibrous dysplasia, giant cell tumor, glioma of the neurohypophysis, osteoma, plasmacytoma, carcinoid, and chondroma) were removed totally in 9 cases and subtotally in 7 cases. Postoperative CSF leaks occurred in 9 cases (6.43%) and meningitis in 13 cases (9.29%). Oculomotor disorders developed in 19 patients (13.57%), 12 of which regressed during the period from 4 to 38 days after surgery, and 7 of which were permanent. In 2 cases, surgical treatment had a lethal outcome (1.43%).

The endoscopic endonasal transclival approach can be used to obtain access to the centrally located tumors of the posterior cranial fossa. It is an alternative to transcranial approaches in the surgical treatment of tumors of the clivus. The results of using this approach are comparable with the results of transcranial and transfacial approaches and, in some cases, surpass them in effectiveness. The extended endoscopic endonasal posterior (transclival) approach, considering its minimally invasive nature, allows for radical and low-risk (in terms of postoperative complications and lethality) removal of various skull base tumors of central localization with the involvement and without the involvement of the clivus, which, until recently, were considered to be almost inoperable [1)].

1)

Shkarubo AN, Koval KV, Chernov IV, Andreev DN, Kurnosov AB, Panteleyev AA. Endoscopic endonasal transclival removal of tumors of the clivus and anterior region of the posterior cranial fossa (results of surgical treatment of 140 patients). Chin Neurosurg J. 2018 Nov 15;4:36. doi: 10.1186/s41016-018-0144-5. PMID: 32922896; PMCID: PMC7398299.