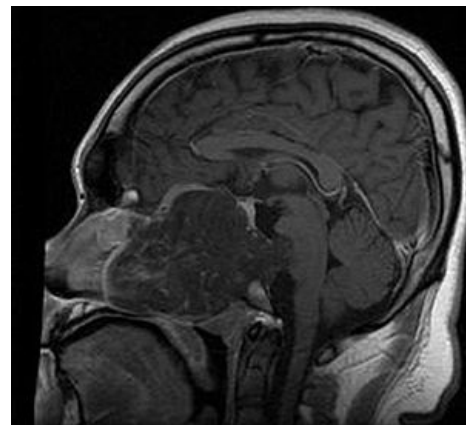


Cranial base tumors

Cranial base tumors are rare, but some of the most malignant in terms of localization. They are related to the cranial nerves and vital structures of the brainstem. The cranial base is anatomically very complex and rugged terrain and the lesions in this area were until recently considered inoperable. The interdisciplinary cooperation of neurosurgeons and ENT doctors, maxillofacial and plastic surgery is important. Depending on the location of the process, the most appropriate surgical approach is considered - craniotomy or transbasal approach. Cranial base tumors are very diverse in terms of histogenetic origin, biological behavior, and prognosis.

Cranial base tumors include:

1. tumors arising from structures under the base that grow cranially;
2. bone base tumors - chordomas, chondromas, paranasal sinus tumors;
3. intracranial tumors that are related to or infiltrate the base - meningiomas of the anterior cranial fossa, kliva, foramen occipitale magnum, invasive pituitary adenomas, craniopharyngealoma, cranial nerve schwannomas, etc.



Mezi časté nádory baze patří chordom.

The most common tumors of the cranial base are meningiomas , pituitary adenomas , acoustic neurinomas (vestibular schwannomas) and base carcinomas.

therapy

Surgical extirpation

The basic treatment modality is an effort for a causal surgical solution. In particular, benign tumors at accessible sites should be extirpated. The greatest possible radicality of performance is important. If the tumor cannot be removed completely, its residue can be irradiated postoperatively with a gamma knife . At other times, the method of choice is to wait and monitor the patient, especially for those processes that are not clinically manifest and are imposed so that the risk of surgical treatment outweighs the benefit (processes near the vital structures of the strain). In this case, the operation is performed only when neurological symptoms appear. Also, small processes can only be monitored at first and the operation can be started later. In malignant, especially radio-resistant, tumors, we strive for the greatest possible radicality.

Radiotherapy and chemotherapy

Radiotherapy and chemotherapy are adjuvant treatment methods that are indicated in patients with malignant tumors that have not been completely removed during surgery or micrometastases are expected in the surrounding tissue. However, radiotherapy has a relatively high risk of complications, especially post-radiation edema, disorders of adenohypophyseal hormone secretion, vision disorders and an increased risk of another tumor.

Choice of operational approach

The choice of surgical approach to the tumor is based not only on its type and location, but also on the knowledge of topographic anatomy and neurophysiology, so that the surgeon avoids contact with important centers if possible.

Division of accesses to the cranial base

1. According to hard diaphragm attack:
 - extradural;
 - intradural;
 - combined.
2. According to the direction of access:
 - leading media;
 - anterolateral and lateral;
 - posterior and posterolateral.

Leading media approach

The leading media approach includes several approaches through the facial part. These include the Derome subfrontal approach, the transsphenoid approach, the transoral approach, Le Fort I. maxillotomy, and various craniofacial resections. The disadvantages of this approach are the passage of bacterially contaminated spaces (paranasal sinuses , oral cavity), the depth of the tumor behind the face, the limitation of the space through the

optic nerves and internal carotid arteries and the difficult control of bleeding when entering the cavernous sinus . Another problem is the cosmetic impact and the difficulty of perfectly closing the base and dura mater, as a prevention of cerebrospinal fluid leakage and infectious complications.

Lateral approaches

Lateral approaches are accesses through the rock bone . This space is very anatomically complex and often requires the cooperation of otorhinolaryngologists. From the lateral approach, we get caudally into the infratemporal landscape, rostrally into the tip of the orbit , the infratemporal fossa and the cavernous canal. The advantage of this approach is the proximity to the base and the possibility of aseptic performance, because the instruments do not pass through the potentially infectious environment of the paranasal sinuses. However, they are difficult to navigate and the neurosurgeon must be careful in contact with the auditory and vestibular apparatus and V. to XII. cranial nerve . The front and posterior petrosectomies (or combined approaches) are further distinguished according to the direction from which the pyramid is approached.

Anterior petrosectomy

Anterior petrosectomy is an approach from a preauricular incision, from a subtemporal craniotomy (possibly with zygomaticotomy and resection of the mandibular condyle) to the apex of the pyramid and the upper half of the ciliun. The ceiling of the pyramid is drilled and the facial nerve is exposed. The inner meatus remains intact. A variant of anterior prosectomy is **access through the middle pit** , where the internal meatus is also exposed. It is a hearing-saving performance, but retraction of the temporal lobe is necessary.

Posterior petrosectomy

The posterior petrosectomy is accessed through the posterior part of the pyramid. The craniectomy is located on both sides of the transverse sinus and the sigmoid sinus. The milling of the mastoid alveoli is continued . We get to the upper part of the cliché, the anterior surface of the cerebellum and the anterior part of the brainstem from the level of the trigeminal nerve to the foramen occipitale magnum. The risk is damage to the labyrinth .

Retrolabyrinth approach

The retrolabyrinth approach is access through the mastoid cavities. It is suitable for the removal of small acoustic neurinomas and the advantage is the ability to maintain hearing.

Translabyrinth approach

The trans-labyrinth approach means milling the back of the pyramid and the labyrinth. Hearing loss occurs, but the facial nerve remains intact.

Transcochlear approach

The transcochlear approach is a variant of the translabyrinth approach, which is further extended forward and, in addition, the hard diaphragm above the pyramid is exposed. This method requires transposition of the facial nerve.

Extreme lateral transcondylar approach

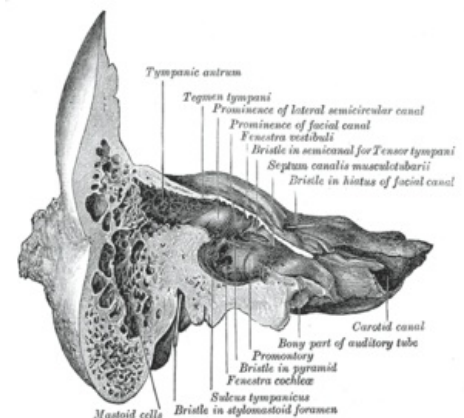
The extreme lateral transcondylar approach is performed from a so-called "U" incision. which leads from the mandible angle up to the superior nuchae lineage and then in the midline caudally to the C2 and vertebral arteries. This is followed by suboccipital craniectomy with mastoidectomy, the sigmoidal sinus is released and part of the occipital condyle and lateral mass C1 is milled.

Posterior (posterolateral) approaches

The posterior approaches allow to operate processes in the posterior pit, on the cleft, craniocervical junction or on the foramen magnum. Posterior approaches include **suboccipital craniectomy** (acoustic neurinoma treatment) and **transcondylar far lateral** , in which part of the occipital bone condyle is removed, the C1 arch and the vertebral artery is mobilized. This ensures access to the trunk and the front surface of the foramen magnum.

On the one hand, the number of approaches to the cranial base testifies to the extensive possibilities of eliminating pathological processes. On the other hand, it is sometimes difficult to choose the right method so that the radicality and benefit of the operation is as large as possible while minimizing risks and consequences. Radical removal of the tumor must not be performed at any cost, and the risk of severe complications increases disproportionately. The process should be eliminated as soon as possible, with a maximum of one reoperation.

Complications of transbasal approaches



Petrosektomie jsou přístupy k lebni bazi přes kost skalní

To some extent, complications can be predicted preoperatively on the basis of imaging examinations and decisions about the path of access to the tumor. The number of complications increases with the radicality of the performance.

Signs of possible complications

- - Orbital involvement - risk of optic nerve damage;
 - lamina cribrosa - possibility of cerebrospinal fistula;
 - invasion of the cavernous sinus - danger of injury to the internal carotid and cerebral nerves;
 - contact of the process with cerebral nerves with the risk of their injury;
 - invasion of the dura mater signals the possibility of cerebrospinal fluid fistula;
 - contact with main blood vessels - risk of injury to arteries or venous sinuses;
 - proximity of the Eustachian tube - danger of cerebrospinal fluid.

Links

Related articles

- - Neuroepithelial tumors (gliomas)
 - Meningiomas
 - Intracranial metastases
 - Pituitary adenoma
 - Vestibular schwannoma
 - Lymphomas of the central nervous system
 - Cerebellar tumors and IV. ventricles in adults

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