Single-Stage Neuro-rhinosurgical Operation and Management of Malignant Tumors of the Anterior Cranial Skull Base

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Introduction

The anatomical relationships in malignant tumors of the anterior cranial skull base with additional involvement of both the intracranial space and the paranasal sinuses, the orbit, and the nasal cavity has resulted in different surgical approaches to these tumors. Most authors prefer separate transcranial and transfacial approaches. We present the method and results of a single-stage transcranial–transbasal approach which permits total removal of the tumor without an additional transfacial operation. The authors' experiences with this technique in the treatment of esthesioneuroblastomas have already been reported on elsewhere [5].

Patients and Methods

Twelve patients with malignant tumors of the anterior cranial fossa were treated between 1984 and 1990. The average age of the patients was 43 years; the youngest was 6 and the oldest 76 years old. The sexes were equally affected, with 6 male and 6 female patients. The most frequent symptom was impaired nasal breathing, followed by anosmia and epistaxis (Table 1).

Table 1. Clinical symptoms of 12 patients undergoing the single-stage operation

<table>
<thead>
<tr>
<th>Symptom</th>
<th>No. of patients</th>
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<tbody>
<tr>
<td>Nasal obstruction</td>
<td>10</td>
</tr>
<tr>
<td>Anosmia</td>
<td>9</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>6</td>
</tr>
<tr>
<td>Proptosis</td>
<td>5</td>
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<tr>
<td>Signs of increased intracranial pressure</td>
<td>2</td>
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</tbody>
</table>

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Fig. 1. a Frontal and b sagittal computed tomograms of adenocystic carcinoma of the anterior skull base with some cystic intracranial growth

Diagnosis

All patients were investigated by plain radiography and computed tomography which clearly revealed the intra- and extracranial extent of tumor growth and the bony destruction of the skull base (Fig. 1). The histological diagnosis was confirmed by endoscopic biopsy.

Operative Treatment

1. The procedure starts with a bifrontal craniotomy with the patient lying supine. A large pedicled pericranial flap is preserved, later to be utilized for the closure of the skull base.
2. The intracranial part of the tumor is removed.
3. The affected basal dura and skull base are resected, giving access to the frontal, ethmoidal and sphenoidal sinuses.
4. The tumor within these sinuses is removed.
5. If the orbit is involved, it is opened from the roof and medial wall and all tumor tissue resected.
6. The tumor in the nasal cavity and maxillary sinuses is resected.
7. The skull base is closed with two layers of autologous material only: fascia lata and a pedicled pericranial flap. No bone grafts or any artificial material is used.