



Case report

Reconstruction of hard and soft palate with temporalis muscle flap – Case study



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ABSTRACT

Introduction: Malignancies of maxillo-ethmoidal massive occur rarely, they are responsible for approximately 3% of head and neck tumors, the most common histopathological type is planoepithelial cell carcinoma.

Aim: We present a case report of a 47-year-old man affected by planoepithelial cell carcinoma of maxillo-ethmoidal massive.

Case study: A 47-year-old man was admitted to our department due to the surgical treatment of left maxillo-ethmoidal massive carcinoma T4N0M0. Anamnestically, problems with nasal patency, recurrent nosebleeding from left nasal cavity for about a year. Planoepithelial cell carcinoma was diagnosed. The patient underwent radio- and chemotherapy. After the tumor's stabilization, he was qualified for surgical treatment. The right maxilla, maxillary process of zygomatic bone and orbital process of palatine bone were resected. Tissue loss, especially palate, was restored with left temporalis muscle flap.

Results and discussion: Postoperative MRI scan confirmed radicality of surgery. General condition of patient is good, however we observed loss of the left eyeball's function. The patient uses dentures – chewing and swallowing are not impaired. The patient returned to the social and occupational activities. While planning the treatment of maxilla-ethmoidal massive tumor, we should map out reconstruction method of defects arising after the tumor's removal. It is extremely important to ensure satisfactory quality of life.

Conclusions: Reconstruction of palate with temporalis muscle flap following surgical resection of maxillo-ethmoidal massive tumors is an effective method of surgical treatment, leading to satisfactory functional and cosmetic outcomes.

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1. Introduction

Malignancies of maxillo-ethmoidal massive occur rarely, they are responsible for approximately 3% of head and neck tumors, the most common histopathological type is planoepithelial cell carcinoma.¹ The main risk factor is smoking and alcoholism, as well as exposure to nickel-containing compounds.

2. Aim

We present a case report of a 47-year-old man affected by planoepithelial cell carcinoma of maxillo-ethmoidal massive.

3. Case study

A 47-year-old man, longtime smoker, was admitted to our department due to the surgical treatment of left maxillo-ethmoidal massive carcinoma T4N0M0. Anamnestically, problems with nasal patency, recurrent nosebleeding from left nasal cavity for about a year. Based on histopathological examination of biopsied specimen planoepithelial cell carcinoma was diagnosed.

Imaging tests revealed a pathological mass (size 45 × 57 × 48 mm) completely obstructing the left maxillary sinus with destruction of the upper, medial and lateral sinus wall. Medially tumor was spreading into the nasal cavity infiltrating nasal turbinates and nasal septum; superior margin was at the level of ethmoidal air cells, without intracranial extensions. Mass shifted medial and inferior rectus muscle laterally, reaching the optic nerve without infiltrating it. The tumor also extended into

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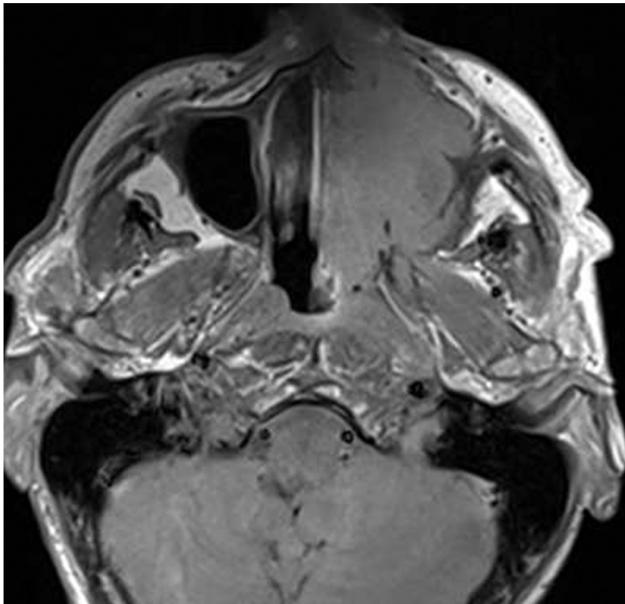


Fig. 1. MRI scan of maxillo-ethmoid tumor.

pterygopalatine fossa and infratemporal fossa. Cavernous sinus was free of pathology (Fig. 1).

Patient underwent neoadjuvant radio- and chemotherapy – total dose of 54Gy in 27 fractions combined with cisplatin. After tumor's stabilization he was qualified for surgical treatment.

The approach through Dieffenbach's modification of Weber–Fergusons incision was used. The right maxilla, maxillary process of zygomatic bone and orbital process of palatine bone were resected. The eyeball was spared, the inferior wall of orbit was reconstructed from a portion of nasal septum. Tissue loss, especially palate, was restored with left temporalis muscle flap (Fig. 2).

Semicoronal incision was used to approach the temporalis muscle, which was dissected together with temporal fascia and periosteum. This technique helped to avoid any damage to deep temporal vessels. In order to reach the zygomatic region, dissection was done under deep temporal fascia, above which temporal and frontal branches of facial nerve pass. Next, a tunnel between infratemporal fossa and oral cavity was prepared through which



Fig. 2. Tumor revealed after Dieffenbach's modification of Weber–Fergusons incision.

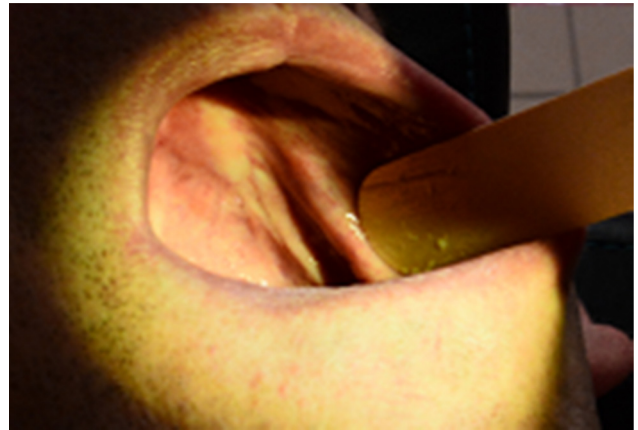


Fig. 3. Reconstructed palate 1 year after surgery.

temporalis flap was translocated. The flap was positioned in place of palate, temporal fascia facing oral cavity, whereas periosteum lined the floor of the nasal cavity.

Postoperative histopathological examination revealed planocellular keratinized cell carcinoma G-2p, T-4a, NX, MX, small foci infiltrating adjacent soft tissues and bones, surgical margin free of lesions.

Postoperative MRI confirmed radicality of the performed surgery. Follow-up was done 1, 3, 6 and 12 months after the treatment (Figs. 3–5). Neither local recurrence nor metastasis was detected. The patient remains in good condition, we observed loss of left eye function. He is using dental prosthesis – mastication and swallowing are effective. The patient returned to work and social activities.



Fig. 4. Patient 1 year after surgery – loss of left eye's function.

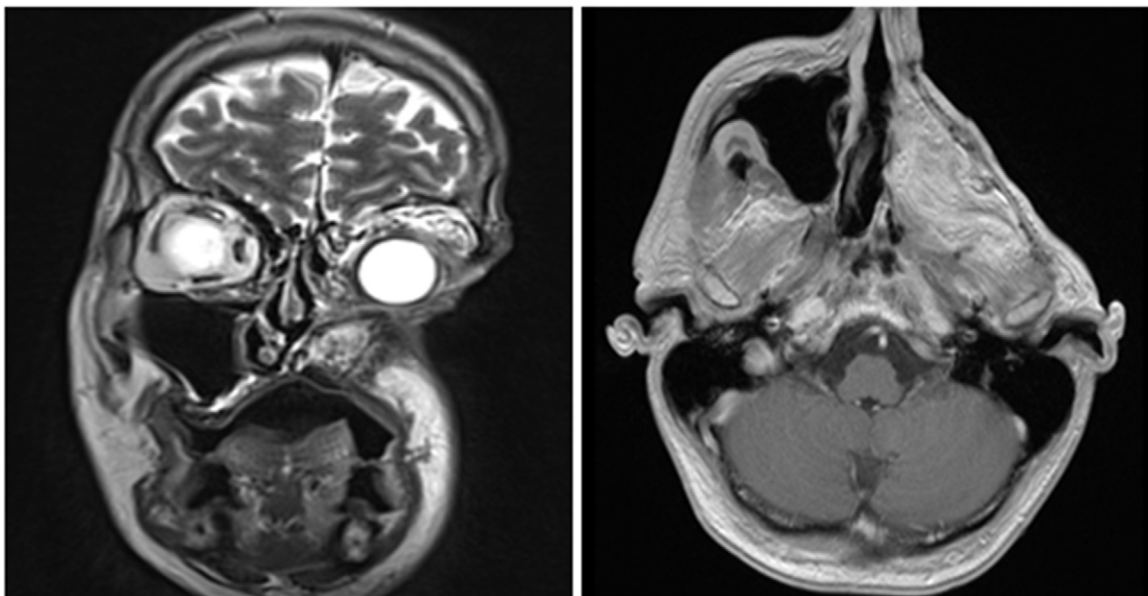


Fig. 5. MRI scans 1 year after the surgery.

4. Results and discussion

Surgery is the treatment of choice of sinus carcinomas. Surgery is considered sufficient in benign lesions or low-grade cancers. High-grade malignant tumors require surgical treatment together with adjuvant radio- and/or chemotherapy.² Tumors classified as inoperable are treated with radio- and/or chemotherapy.

Due to its localization, tumors of maxillo-ethmoidal massive are a challenge to the operating team. During procedure planning, clear resection margins and postoperative quality of life should always be taken under consideration. Therefore, the surgical plan should include reconstruction as well as resection.

The incidence of maxillo-ethmoidal massive tumors is low, therefore there is no clearly recommended course of action, the choice is between reconstruction using free flaps, pedicled local/distant flaps or dental prosthesis. Many factors are taken under consideration during therapy planning, e.g. the patient's general condition, the operation's cardiological complication risk, the extent of resected tissues, as well as the skills of the operating team.

Brown's classification might be useful during treatment planning, it evaluates the tumor's grade, the extent of the surgical procedure as well as the postoperative facial defect. It describes tissue loss in two planes: coronal and horizontal, the most important being orbit infiltration, palate and alveolar process defect.

Depending on the class in Brown's classification,³ different reconstruction techniques are recommended: for class I (defect in palatal bone without alveolar defect) – radial forearm free flap or prosthetic techniques; for class II (alveolar and antral maxillary wall defect) – radial forearm free flap or free osteocutaneous fibula flap; for class III (alveolar and antral wall defect including the orbital floor, periorbital and skull base may or may not be involved) – rectus abdominis flap or serratus anterior scapular flap.⁴ Patients with class IV and V tumors (alveolar and antral wall defect

including the orbital floor and content, skull base may or may not be involved) should be carefully evaluated, if surgery remains the best therapeutic option, rectus abdominis flap, serratus anterior scapular flap or temporalis muscle flap are recommended.

5. Conclusions

Reconstruction techniques with temporalis muscle flap enable to address extensive tissue loss within viscerocranium. They might be used to replace uni- as well as bilateral palate loss. The Temporalis muscle's rich vascularity ensures a high survival rate of flaps. Patients undergoing the described treatment recover faster than those after distal flaps reconstructions, therefore they can sooner receive adjuvant radio- and chemotherapy. The discussed technique provides the patient with a satisfactory cosmetic outcome: the scar after semicoronal cut lies behind the hairline, mastication and swallowing as well as articulation remain preserved.⁵

Conflict of interest

None declared.

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