RECONSTRUCTIVE POTENTIAL OF TEMPORAL MUSCLE FLAP AFTER EXTENSIVE RESECTIONS AT MIDFACE LEVEL

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Abstract

Oncological excision surgery in the oral and maxillofacial area often amputates important structures or open cavities (sinus, nose, mouth) which are usually “closed”. Disappearance of an eye, tongue, soft palate or cheek raises serious issues regarding the resumption of partial or total functions of that region, in terms of social reintegration of the patient. In the cephalic extremity, the reconstruction material is limited, so that specialists resort to resources located away from the defect to achieve closure or coverage. The temporal flap is not used very often, although this procedure has the advantages of lower costs and a shorter healing time.

Keywords: temporal myofascial flap, facial reconstruction, maxilla oncology.

1. INTRODUCTION

The myofascial temporal flap was first described in 1898 for the restoration of the external ear (after horse bite) and then for the lower eyelid. In 1983, Brent imagined and applied in practice the axial fascial flaps, random-pattern and free vascularized flaps in the secondary reconstruction of the external ear. 10 years later (in 1993), Cheney proposed a multitude of possible uses of temporal flaps [1].

Palate defects caused by tumor resection or other pathologies substantially affect speech and swallowing. Leaving the defect open is suboptimal, because it results in hypernasal speech and nasal regurgitation of ingested foods and liquids, among other issues [2].

Risk of aspiration is also increased. Anterior palate defects, which include the maxilla and teeth, may also have readily discernible cosmetic effects [3].

Our aim is to demonstrate the possibility of using this flap without any reserves in the oro-maxillo-facial area to protect the missing tissues left over tumor excisions.

2. CASE REPORT

A patient diagnosed with a right maxillary tumor, addressed our clinic for deformations of the right cheek and right hard palate, the symptoms beginning about 4-6 months prior to the moment of examination. Following clinical examination, tumor suspicion was confirmed by imaging investigations.

The therapeutical conduct in this case involved excision of the right half of the upper jaw, together with the tumor. The patient gave his written consent for surgery and for participating in this study. The ethical rules on the protection of personal data have been also observed.

The patient was informed about the therapeutic options for postoperative defect coverage, including the use of the temporal myofascial flap, and for which the patient voted.

For the surgery, the Weber Ferguson approach was used. After tumor excision, there remained a cavity stretched up to the nasal septum, all the way up to the eyeball, to the nasopharynx, laterally delimited by the soft tissue of the cheek, and extensive communication with the oral cavity.

In this way, the oral cavity (without half of the upper wall), the maxillary sinus (which was been basically abolished), the nasal cavity (without its sidewall) and the orbit (without its floor) have
come to communicate, becoming a very large single cavity. (Fig. 1)

Fig.1. Post-excision cavity

Temporal myofascial flap harvesting was done by a hemicoronalary approach, starting from the pretragal right area and continuing with the incision over the ear in the temporally piloted region, bypassing the temporal muscle. Fascia dissection continued to the superior temporal line beyond the edges of the temporal muscle.

There followed a manoeuvre that raises the muscular belly of the bone plane, taking care not to injure the deep temporal vessels and not to damage the structure of the deep fascia. (Fig. 2)

The flap was then tunnelled under the temporo-zygomatic arch, medially by the coronoid process, to bring it into the oral cavity. An additional elongation of the flap can be obtained by cutting the base of the coronoid process and dislocating this into the mouth.

Once brought to the resection site, the muscle belly was then sutured into the defect, initially on the midline, then on the posterior edge and, finally, to the cheek mucosa, covering the postoperative defect and closing the cavity obtained after tumor excision. (Fig. 3)

The muscle was left uncovered in the oral cavity, and its epithelialization with mucosa will follow in the coming weeks. Its closing is tight and configures a better palate.

Fig. 3. Temporal flap sutured into the defect

At the donor site, even if symmetry is affected, major aesthetic disorders can not be noticed, the skin scar and depression being masked by local hair.

3. DISCUSSION

The temporal myofascial flap is an interesting alternative in palate defect repair. First of all, its vascular network is very dense, so that the risk of necrosis is reduced to minimum and a good angiogenesis is ensured [4,5], with a minimal inflammatory response, which translates into less operative stress and rapid healing [6,7].

Another advantage of this flap is its large dimension, which makes it highly usable in covering large defects (sometimes, it can fill a bilateral palate defect) [8]. In our case, the temporal
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myofascial flap was used to fill a defect of almost 7 cm in length and 4 cm in width. Similarly, Abubaker and Abougzia reported closing palate defects up to 6 x 5 cm, with no complications [9].

Brown and Shaw showed that the temporal flap can be used for vertical maxillary defects (unless they are not encompassing orbit or nasal bones), or horizontal palatal defects (unless they are not wider than half of palate’s width) [10].

This flap offers good functional outcomes for speaking and swallowing, re-establishing patient’s functions, no complications occurring in their restoration. The literature of the field describes similar interventions, regarding patient’s phonation or mastication [11]. The maxillary reconstruction using this flap has another advantage: the two areas occur in the same surgical site, so that a single team may perform the surgery.

However, the temporal myofascial flap has certain disadvantages, the first one being that the aesthetic aspect of the donor site is deficient. Another disadvantage is that mechanical digestion cannot be achieved, due to the absence of a bone support on the restored area, permitting insertion of a dental implant at this level [12].

4. CONCLUSIONS

The temporal myofascial flap is an appropriate technique for palatal defect coverage, with a high flap survival rate and a large defect closure rate, which makes it versatile for all sizes of palate defects, in all its regions, despite the above-mentioned disadvantages.

Note. All authors contributed equally as the first author to this manuscript.

References