



PROSTHETIC REHABILITATION AFTER HEMIMAXILLECTOMY IN PARTIALLY EDENTULOUS PATIENTS: ABOUT A CLINICAL CASE

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ABSTRACT

Background: The great loss of substance in the maxillary is a delicate treatment. They are the consequence of an excisional surgery that affects bone and mucosal tissues and cause an osteo-mucosal, bucco-nasal or bucco-naso-sinusal continuity solution. They result in functional disorders (loss of sealing of the oral cavity, difficult phonation, disturbed chewing) and psychological disorders, sometimes severe, leaving patients with marked disfigurement, isolating them and stigmatizing them definitively. **Objectives:** The obturator prosthesis, regardless of the shape of the loss cavity, very often finds satisfactory retention and stabilization on the remaining teeth in order to provide an acceptable esthetic and functional result in a dentulous patient. **Conclusions:** Through this work, we propose to describe the different steps of prosthetic rehabilitation with a cast partial obturator prosthesis of a clinical case presented a hemimaxillectomy.

Keywords: Prosthetic rehabilitation, hemimaxillectomy, partially edentulous, obturator prosthesis.

1. INTRODUCTION

Patients with loss of substance in the hard and soft palate as a result of resection in tumor treatment pose special challenges in prosthetic planning and treatment due to the large variety of morphology of the structures available as a prosthetic base. The obturator prosthesis, regardless of the shape of the loss cavity, very often finds satisfactory retention and stabilization on the remaining teeth in order to provide an acceptable esthetic and functional result in a dentulous patient. The maxillary substance losses depending on the extent connect the oral cavity and the surrounding sinus cavities. The anatomical, functional, aesthetic and psychological damage caused by maxillectomy must be corrected to allow the patient to regain his orofacial functions and reintegrate into his social environment.

1.1 Effects of substance loss They generate a great functional and psychological deficit [1, 2]. Indeed, after an excision surgery on the maxillary:

- Diet is compromised due to food being pushed back into the nasal cavity and/or maxillary sinuses.
- Phonation is impaired due to air leakage into the nasal cavities;
- Chewing may be affected in case of alveolar resection.
- Swallowing is disturbed due to the absence of a lingual support point.
- Aesthetics may be impaired due to lack of labial and/or jugal support in cases of loss of substance concerning the alveolar-dental rampart. All these factors contribute to altering the psychological state of these patients, who must be treated as soon as possible in order to carry out an obturator prosthesis to palliate these complications [3].

1.2 Classification of substance loss: Several classifications of substance loss have been proposed for prosthetic or surgical purposes [4, 5, 6].

We will detail Devauchelle's classification, which is of great interest in maxillofacial prosthetics:

- Type I: Substance loss affecting the arch of the palate and respecting the alveolar-dental arch:
 - Ia: anterior localization;
 - Ib : posterior localization;
- Type II: Substance loss affecting the alveolar arch:
 - IIa: at the level of the incisivo-canine block;
 - IIb: laterally;
- Type III: Substance loss of a hemi-palate;
- Type IV: Substance total loss.

1.3 Role of the obturator prosthesis: The primary objective of prosthetic rehabilitation is to restore orofacial functions, it also has an aesthetic, psychological and social role.

According to KEYF, the main functions of the obturator prosthesis are [7]:

- To allow feeding by reducing the reflux problem;
- To improve chewing, swallowing and speech functions.

- To allow the operated site to heal in better circumstances.
- To help rebuild the palatal contour and/or soft palate
- To maintain surgical dressings and reduce postoperative bleeding, thus preventing the formation of haematoma.
- To Improve lip and cheek support.
- To benefit the patient's morale, thus prosthetic rehabilitation has a primary role in the patient's quality of life.

1.4 Imperatives of the obturator prosthesis: In order to achieve its role in restoring phonation, swallowing, chewing and soft tissue support, the obturator prosthesis must meet certain requirements to ensure proper integration: sustentation, retention, stability, weight, hygiene, breathing, salivary flow, and sealing at the level of loss substance to prevent air leakage that disrupts phonation and the flow of mucous secretions from the sinuses into the oral cavity [5,8,9].

2. CLINICAL CASE

Mr. B. M., 70 years old, was referred by the maxillofacial surgeon's department for the prosthetic rehabilitation of a maxillary substance loss. The patient was received after the removal of an epidermoid carcinoma in the left hemimaxillary. On the endobuccal examination we note that the patient was partially edentulous with the presence of a Class III of substance loss in the maxillary (Fig. 1) according to the DEVAUCHELLE classification, healthy and well-healed margins of the excision cavity and the presence of all teeth in the mandible (Fig. 2). The radiological examination shows the presence of a radioclaracter in the form substance loss of the left hemimaxillary (Fig. 3).



Figure 1: Endobuccal view of substance loss.



Figure 2: Endobuccal view of the antagonistic arch.



Figure 3: Panoramic radiograph.

2.1 Therapeutic decision: The excision margins were healthy and not inflamed the decision was made to fabricate a cast partial denture filling in the maxilla using the impression tray frame technique.

2.2 Therapeutic approach: The prosthetic procedure will be approached by taking an alginate impression (Fig. 4) with a standard impression tray after preparing the teeth for the metal frame. After the cast of the impression, the metal frame is made in the laboratory, then it is validated and adapted in the mouth (Fig. 5), an ambulatory impression (Fig. 6) of the substance loss with delayed-setting resin (Kerr's Fitt) is made using the metal frame and the patient is seen again

48 hours later, so that the material reaches its maximum elasticity stage and the patient is comfortable during speech and meals. A global impression of the metal frame in place (Fig. 7) is being taken with alginate and a commercial metal tray. The intermaxillary ratio is recorded using the occlusion models (Figs. 8) in the conventional technique, and the prosthetic teeth are selected and fitted in accordance with the aesthetic and functional requirements (Fig. 9). The assembly of the teeth is then tested and validated in the mouth. After polymerization, the prosthesis is placed in the mouth (Fig. 10). It has a obturator part that integrates into the loss of substance without interference.



Figure 4: Alginate impression



Figure 5: Testing of the metal frame in the mouth



Figure 6: Ambulatory impression with delay resin.



Figure 7: A global impression with alginate

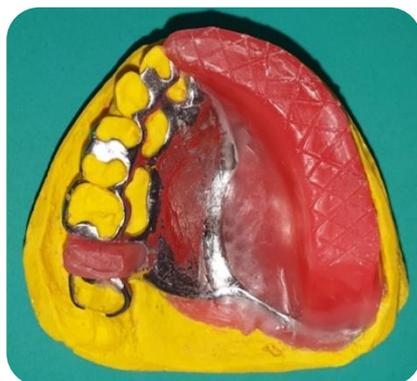


Figure 8: The intermaxillary ratio.



Figure 9: Assembly of the teeth.



Figure 10: Placement of the obturator prosthesis in the mouth



Figure 11: Relining the obturator prosthesis with Soft Liner resin.

The compression and over-extension areas have been removed and the obturator is then relined with a soft liner resin (Fig. 11). The final obturator perfectly follows the contours of the loss of substance with slight undercuts at the internal and posterior levels. The prosthesis is inserted in the conventional way by adjusting the occlusion, then the tightness of the obturator was checked by asking the patient to drink water with the head bent forward and checking the phonation by the correct pronunciation of the constrictive (S, CH) and explosive (P, B) consonants. After final placement of the obturator prosthesis (Fig. 12) and instruction of the patient on oral hygiene, clinical control sessions are scheduled twice a month for 3 months and then every 6 months for the renewal of the Soft liner resin and for the occlusal and functional control of the obturator prosthesis.



Figure 12: The patient's smile of satisfaction with the result of the treatment.

3. DISCUSSION

The rehabilitation of patients with loss substance in maxillary is relatively easier than the rehabilitation of mandibular substance loss and pleasant and accepted results can be identified at the end of treatment [10]. The prosthetic rehabilitation of acquired maxillary defects could be achieved in three treatment steps. For each step, a different type of obturator is manufactured. For example, immediate or semi-immediate obturators can be described, followed by temporary obturators and finally, the usual obturators [10, 11]. The final obturator should not be constructed until the defect site has fully healed and is dimensionally stable. This may take 3 to 6 months after surgery, depending on many factors, such as the prognosis of the tumor, the size of the defect and the progress of healing. The design of this type of obturator varies according to the classification of the substance loss [10]. The distribution of support should be maximal and is achieved by incorporating more of the remaining teeth into the frame design [10]. A sufficient number of hooks should be used as retention means [12]. In the case presented, the occlusal and cingulate supports as well as the hooks were distributed over almost all the residual teeth on the healthy side and the undercuts at the level of the substance loss were exploited by making the ambulatory impression. Since the defect was not so significant, a hollow obturator was not necessary and the prosthesis was produced conventionally. The quality of life of patients with maxillary defects could clearly be improved by the placement of a correctly designed obturator. The patients with maxillofacial defects who have benefited from rehabilitation can return to their social habits in a normal way.

4. CONCLUSION

The maxillary substance losses depending on the extent connect the oral cavity and the surrounding sinus cavities. The anatomical, functional, aesthetic and psychological damage caused by maxillectomy must be corrected to allow the patient to regain his orofacial functions and reintegrate into his social environment. The maxillofacial prosthesis is still relevant today despite the progress of reconstructive plastic surgery, in particular with the current evolution of implantology which improves the results obtained and patient comfort.

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