



Case report

Prosthetic rehabilitation of a patient after a partial mandibulectomy



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HIGHLIGHTS

- Oral Surgery oncology.
- This study investigated the esthetic of the prosthesis rehabilitation.
- Patient satisfaction after rehabilitation.

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ABSTRACT

Introduction: The treatment of orofacial tumors may cause facial deformities by losses of structures that affect basic functions, i.e. feeding, speech, and the reduction of patient self-esteem.

Presentation of case: A white male patient was diagnosed with epidermoid cancer on the mandibular alveolar ridge with infiltration staging IV A. The patient was submitted to a mandibulectomy associated with a complete extraction of mandibular teeth. For rehabilitation, a conventional denture for the mandibular arch and a removable partial denture for the maxillary arch were fabricated. A correct occlusal adjustment and a satisfactory amount of alveolar bone was favorable for conventional dentures of the prostheses bases improve their retention and stability. After one year of follow-up, the patient was adapted to the prostheses, satisfied with their retention, and reported an improvement on his feeding.

Discussion: The prosthetic rehabilitation of patients after a partial mandibulectomy is essential for their self-esteem. Conventional dentures may have their retention and stability improved if they are well fabricated, recorded and have a balanced occlusion.

Conclusion: A correct occlusal adjustment and an adequate retention of the prostheses bases may improve their retention and stability. Patients without xerostomy and with a satisfactory amount of alveolar bone may have a favorable prognosis for conventional dentures.

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1. Introduction

The incidence of orofacial tumors is constantly increasing [1] and their treatment may be the surgical resections performed to eliminate neoplasias and prevent recurrences [2,3]. However, this treatment may cause facial deformities with the removal of muscles, soft tissues, articular discs and mandibular condyles [4]. These

losses of structures affect basic functions, i.e. feeding, speech, and the reduction of patient self-esteem [5].

Osseointegrated dental implants have been proposed as an alternative to rehabilitate patients after partial mandibulectomy because they may improve prostheses retention, stability and oral function [4]. However, the majority of patients submitted to surgical resections as a consequence of orofacial tumors were treated with radiotherapy to diminish the probability of metastasis [2], and this treatment may be contra-indicated for dental implants.

Patients who underwent radiotherapy treatment are associated to low survival rates of dental implants [1]. So, the prosthetic treatment with conventional dentures is proposed as an alternative

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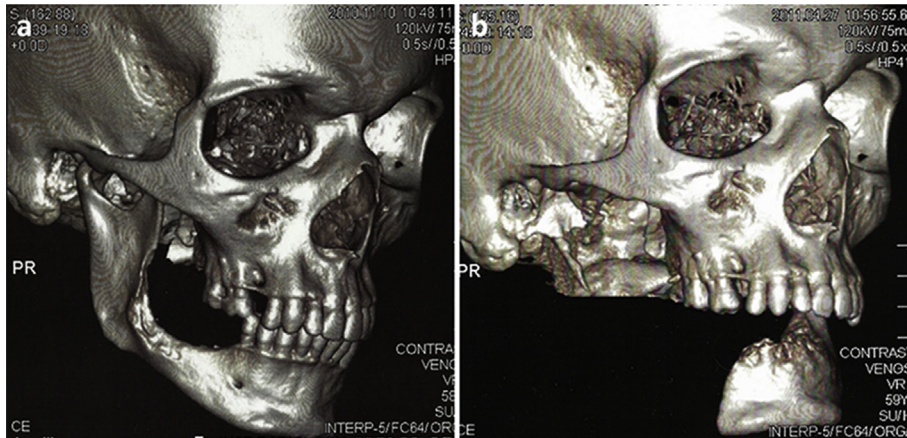


Fig. 1. (a) Pre-operative CT scan; (b) CT scan after the surgical resection.



Fig. 2. (a) Maxillary arch view after teeth extraction; (b) Mandibular arch view after partial mandibulectomy.

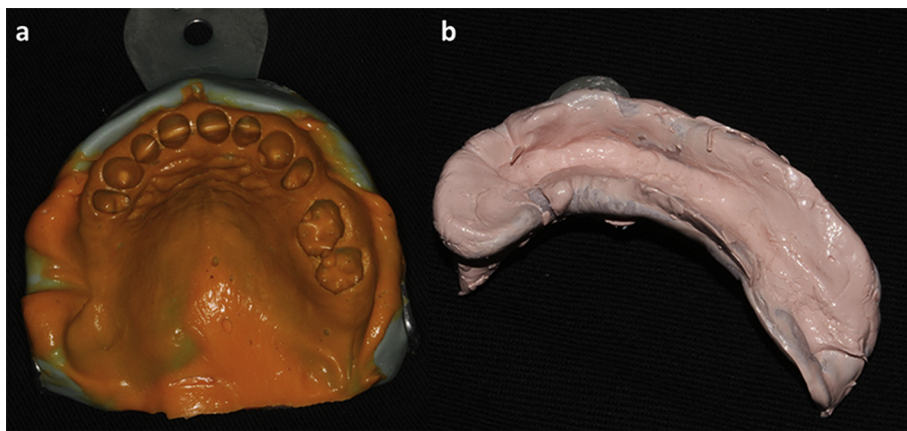


Fig. 3. (a) Definitive impressions of the maxillary and (b) mandibular arches.

to irradiated edentulous patients [6].

Thus, the aim of this study is to report a prosthetic rehabilitation of a patient after partial mandibulectomy on the right side with a conventional denture.

2. Presentation of case

A white male patient was admitted to the dental clinic (Aracatuba Dental School – UNESP, Aracatuba, Sao Paulo, Brazil) complaining about pain and dental mobility on the right side of the mandibular posterior region. After anamnesis, a computed tomography (CT) (Fig. 1) was performed, and the patient was

submitted to a biopsy. The final diagnosis was defined as epidermoid cancer on the mandibular alveolar ridge with infiltration staging IV A. This epidermoid carcinoma is uncommon malignant neoplasia in the oral cavity [7,8]. The first choice for treatment is surgery combined with radiotherapy [8]. Oral care is important when radiotherapy is performed due mucosistis, xerostomia and osteonecrosis [8].

The patient was submitted to a glosso-pelvi-mandibulectomy associated with a complete extraction of mandibular teeth, a partial extraction of maxillary teeth (Figs. 1 and 2), and unilateral cervical lymphadenectomy. After one month of surgical treatment, the radiotherapy was performed with a 5040 Gy dosage for 2

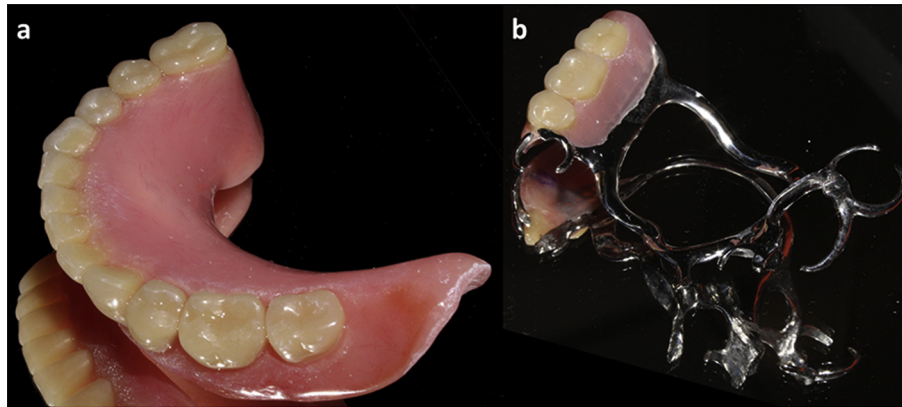


Fig. 4. Final aspect of the (a) mandibular conventional denture and (b) maxillary removable partial denture.



Fig. 5. Extraoral view of the patient with prosthesis.

months (180 Gy per day on both sides of the jaw and neck).

After one year of radiotherapy, the prosthetic rehabilitation was performed. The patient had a satisfactory salivary flow and low bone loss. This fact facilitated the prosthetic rehabilitation.

In this case, three alternatives were available: bone graft reconstruction and conventional dentures, rehabilitation with osseointegrated dental implants and implant-supported fixed dentures, and conventional dentures. The first option was discarded because its complexity and high cost. The second alternative was not performed due to the previous radiotherapy. Thus, the treatment plan was of conventional dentures was selected.

A conventional denture for the mandibular arch and a removable partial denture for the maxillary arch were fabricated.

Anatomic impressions were performed with irreversible hydrocolloids (Hydrogum, Zhermack Spa, Rovigo, Italy) on maxillary arch and with vinyl polysiloxane impression material on mandibular arch (Zetaplus, Zhermack Spa, Italy) the poured in dental stone to obtain the anatomic models.

The study of the case and surveying for the rest seats preparation of the removable partial denture was performed in the maxillary model [9]. An individual tray was fabricated for definitive impressions of mandibular arch [10].

After, the rest seats preparations were performed on maxillary teeth followed by the definitive impression with vinyl polysiloxane (Zetaplus, Zhermack, Spa, Italy) then refined with the silicon light body (Oranwash L, Zhermack Spa, Italy). The impression of the mandibular arch was performed with zinc oxide eugenol paste (Lysanda, Sao Paulo, Brazil) (Fig. 3) [11].

The framework of the removable partial denture and the evidence base of the conventional denture were fabricated. After

the vertical occlusal dimension determination and centric relation recording, the models were set in the semi-adjustable articulator (Bioart, Sao Paulo, Brazil) and the artificial acrylic teeth were mounted on the wax models (Trilux Ruthinium, Sao Paulo, Brazil) in a bilateral balanced articulation occlusal design [10,12].

The wax try-in appointment was performed and after the patient's approval the definitive prostheses were fabricated with heat-cured acrylic resin (Vipi Produtos Odondologicos, Brazil) then the polishing was performed (Fig. 4).

At the moment of the definitive prostheses insertion, denture base was adjusted with a trimming bur (Maxi-Cut, Malleifer SA, Switzerland) and occlusal adjustments were performed in bilateral balanced occlusion [13], with occlusal marking film (Detecto, Dentsply, USA) (Fig. 5), improving the interaction between complete denture and the stomatognathic system. This occlusal adjustment was performed with care in order to preserve the anatomy of artificial teeth and to improve chewing efficiency [13]. The patient was informed regarding cleaning procedures for the prostheses and the oral cavity [13].

After one year of follow-up, the patient was adapted to the prostheses, satisfied with their retention, and reported an improvement on his feeding.

3. Discussion

The prosthetic rehabilitation of patients after a partial mandibulectomy is essential for their self-esteem. Conventional dentures may have their retention and stability improved if they are well fabricated, recorded and have a balanced occlusion [2].

Irradiated patients generally have xerostomia that may reduce the vacuum effect of the prostheses base to the soft tissues diminishing their retention [14]. However, in this case report, despite the patient underwent to the radiotherapy the xerostomia was not clinically identified. This fact associated with a satisfactory amount of alveolar bone, an adequate occlusal adjustment and a good insertion of the prostheses bases improved its retention.

The soft tissues of irradiated patients undergo to rapid modifications. Thus, a frequent evaluation of the prostheses is recommended [2].

There are many articles describing very good success rates placing implants in bone irradiated [15] mainly when implants are inserted before or after 12 months after radiotherapy [16]. However, due to possibility of any complications, such as osteonecrosis, no implants was inserted in the patient.

Acknowledgments

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