

Multidisciplinary approach to occlusal reconstruction in cancer patients with large defects

Abstract

Introduction: Cancer is a serious chronic degenerative disease and a public health problem. Buccal cancer is 3% to 5% of all malignancies in western countries, and squamous cell carcinoma is the most prevalent in the head and neck.

Case report: Squamous cell carcinoma of the hard palate is relatively rare and often develops as an ulcer lesion located lateral to the midline glandular zone. The surgical intervention is the option to nearly all cancers of the buccal cavity, resulting usually large defects.

Final considerations: The reconstruction of committed anatomical structures is complex. An alternative is obturator prosthesis that has the advantage of not being an invasive technique and permit removal to facilitate local clinical examination during the monitoring of possible cancer recurrence. However, the success of rehabilitation depends on the cooperation of a multidisciplinary team.

Keywords: neoplasms, rehabilitation, dental prosthesis design

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Introduction

Cancer is a serious chronic degenerative disease and a public health problem. According to the World Health Organization¹, it is estimated that by 2030 there will be 20 million to 26 million new cases, with 13 to 17 million deaths worldwide.¹⁻³ Buccal cancer is 3% to 5% of all malignancies in western countries, and squamous cell carcinoma is the most prevalent in the head and neck.^{4,5} The buccal cancer is among the ten most common types of cancers in the Brazilian population, and the incidence shows a growing trend due to the increase in the consumption of tobacco and alcohol⁴ throughout Latin America, especially among women. Hard palate squamous cell carcinoma is relatively rare and often develops as an ulcer lesion located lateral to the midline glandular zone. The extent of tumor to the front of hard palate is not common. This injury draws attention to the high incidence of a second tumor associated with primary one, synchronous or metachronous.² The surgical intervention is the option to nearly all cancers of the buccal cavity, particularly when the tumor infiltrates the bone tissue, usually resulting in a large defect. The hard palate resection changes swallowing function at oral phase and facilitates the occurrence of nasal food reflux. When resection is anterior, voice quality does not change markedly, but the understanding of speech is compromised. Resection of the soft palate changes the swallowing on the pathway of the oral pharynx to nasopharynx occurring reflow into the nasal cavity. The reconstruction of committed anatomical structures is complex. An alternative is an obturator prosthesis that has the advantage of not being an invasive technique and permit removal to facilitate local clinical examination during the monitoring of possible cancer recurrence. However, the success of rehabilitation depends on the cooperation of a multidisciplinary team.

Proposition

This clinical report describes the multidisciplinary approach of a patient subjected to unilateral maxillectomy for treatment of squamous cell carcinoma.

Case study

A 64-year-old female patient was referred with the diagnosis of a hard palate squamous cell carcinoma. The tumor had been completely resected 03 years earlier. Resection of the maxillary defect was carried out through the midline, reaching the right dentoalveolar process, including the teeth (Figure 1). Considering the location of the primary tumor extent and condition of the cervical lymphnodes, surgical treatment was elected, associated with radiotherapy. The surgery for resection of the primary tumor included all injury-free tissue margins in all dimensions with a minimum of 1.0 cm of safety, confirmed during surgery by freezing exam. Radiotherapy included the lymphatic drainage chains, even those without clinical involvement. Although radical surgery of buccal cancer has evolved with the incorporation of immediate reconstruction techniques, the consequences are still large and difficult prognosis of functional rehabilitation (chewing, swallowing and speech). At the present case, the first attempt of treatment proceeded by a clinician, was a conventional removable prosthesis associated with a palatal obturator. But the lack of adaptation caused a deficient myofunctional activities and instability of the prosthesis (Figure 2). The goal of palatal obturator is complete the surgical defect and delimit the buccal of the nasal cavity, favoring speech and swallowing functions. To fulfill its purpose, the prosthesis should have a top that settle in intracavitary

region and a lower re-establishing the contour of the palatal vault.^{6,7} In front of a limited result, a specialized service proposed a multidisciplinary approach to reach a better occlusal equilibrium, an aesthetic harmony and an effective sealing of defect to the patient accomplish the chewing, swallowing and speech functions. The first step was aligning the teeth by orthodontic appliance to obtain a better dental contact with the occlusal surface of the prosthesis, and an efficient equilibrium. After, to construct prosthesis over the new occlusion, a record of facial relations (intercondylar distance and a condylar guide) by the facial arc was proceeded to obtain a precision of prosthesis components. An individualization of molding allowed a precise reproduction of the bone defect edges. Due to the involvement of dental and alveolar region of the right side, a silicon support was conducted to determine the occlusal height of the prosthesis, so as to obtain the best neuromuscular equilibrium (Figure 3). Prosthetic obturator can be made with silicon (more comfortable for the patient) or acrylic resin (improved durability). This part of prosthesis occupies the space of nasal cavity, and the frequent problem is related to comfort or/and stability. For this reason, an individual tray was made for a faithful reproduction of the defect edges. To properly evaluate the occlusion was necessary that the models were mounted on semi-adjustable articulator, respecting the centric relation to allow making functional analysis of occlusion (Figure 4). The aesthetic harmony was achieved by selecting the color of the teeth and gum texture, in

order to characterize the naturalness for sex, age and racial type of patient. This phase is important due low self-esteem of the individuals affected by the surgical sequelae, and the social reintegration has the same relevance of functional rehabilitation for these patients (Figure 5). With the prosthesis reestablishing the anatomy of the region, it was possible to advance in myofunctional re-education, to rehabilitate the naso-buccal functions. The phonoaudiology therapy brought great improvement to the speech, so that the pronunciation of words became more understandable, increasing socialization of the patient. Optimization of muscle tone also improved the stability of the prosthesis during mastication, reducing facial asymmetry at rest and in motion (Figure 6). Implants are suggested like solution for these situations, but the osteonecrosis is among the complications that can occur with invasive interventions in radiotherapy treatment patients. That consisting of ischemic necrosis of the bone due to decreased tissue vascularization, so, contraindicated. Anxiety and depression are common problems among cancer patients,⁷ particularly in cases of large mutilations. In addition to individual characteristics, the occurrence of different emotional reactions is related to the life history of the patient. These factors influence the success of treatment and rehabilitation. In this sense, the patient was referred for psychological assistance with the intention of maintaining your mental well-being and control the emotional factors involved in your health.⁸



Figure 1 The resection of the squamous cell carcinoma caused a maxillary defect, extending through the midline, reaching the right dent alveolar process, including the teeth.



Figure 2 Conventional removable prosthesis associated with a palatal obturator.



Figure 3 Modeling individualization to obtain a precise bone defect edges reproduction.



Figure 4 Models mounted on semi-adjustable articulator to individualize occlusal characteristics of the patient.

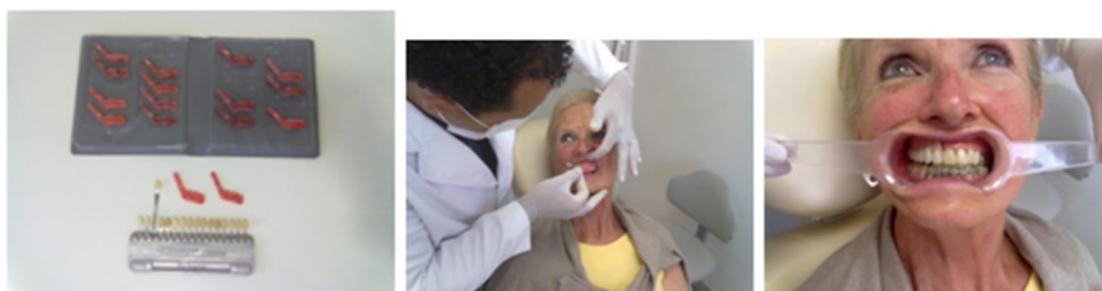


Figure 5 Prosthesis characterization (color of the teeth and gum texture) for sex, age and racial type of patient.



Figure 6 Reestablishing the anatomy with the prosthesis and my functional re-education.

Discussion

Brazil is a country that moves from a population of average age for the predominance of elderly in the coming decades. In this scenario, diseases like cancer are becoming more frequent. It is estimated that in the year 2016, 11.140 new cases of buccal cancer will occur, corresponding to a risk of 11.27 cases per 100.000 men and 4.21 cases for 100 000 women.² The concern regarding this scenario is reflected in the frequency of publications on buccal cancer in Brazil in the last five years, as shown in Medline (US National Library of Medicine) and Lilacs (Scientific Index and Technical Literature in Latin America and the Caribbean) (Table 1) The treatment of these patients require more than isolated interventions. The multidisciplinary approach is important for effective rehabilitation, and each phase must be planned in detail so that the integration of all specialties results in the best conditions aesthetic, functional and social for the patient. Among the associated professionals, the surgeon is what makes the diagnosis and proposes specific treatment (surgery, radiotherapy, chemotherapy or combined). The clinical oncologist is responsible for the periodic clinical evaluation of the patient, especially controlling their renal function, hepatic and hematopoietic. The speech therapist and physiotherapist works in postoperative rehabilitation. The dentist helps dentofacial rehabilitation; and the psychologist, the appropriate approach to the patient's relationship with their illness.⁹⁻¹¹ The described case is a typical situation of clinical intervention related

to the expected epidemiological trend for the next decades in the country (Brazil). The increased frequency of chronic, degenerative and neoplastic diseases will require progressive integration of various areas in the conduct of interventions, with particular that these are untreated patients, but controlled, so that should be kept under indefinite periodic supervision by the multidisciplinary team.

Table 1 Frequency of publications about buccal cancer at last 05 year on Brazil

Database	Search strategy	Frequency
MedLine	buccal cancer and brazil	53
MedLine	buccal cancer and brazil and treatment	24
MedLine	buccal cancer and brazil and diagnosis	40
MedLine	buccal cancer and brazil and prognosis	6
Lilacs	buccal cancer and brazil	32
Lilacs	buccal cancer and brazil and treatment	10
Lilacs	buccal cancer and brazil and diagnosis	16
Lilacs	buccal cancer and brazil and prognosis	4

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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