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RESEARCH ARTICLE

PROSTHETIC REHABILITATION OF THE TOTAL EDENTULOUS ELDERLY AFTER MAXILLECTOMY: ABOUT A CLINICAL CASE

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ABSTRACT

Prosthetic management of elderly edentulous patients after maxillectomy has the particularity of rehabilitating a patient under generally difficult conditions. The dentist must combine his skills as a prosthesis specialist and as a geriatrician to ensure successful functional, aesthetic and psychosocial treatment. In this article we discuss the subject through a clinical case

INTRODUCTION

With age, the risk of developing cancer in upper aerodigestive geese increases. In January 2017, according to the National Institute of Statistics and Economic Studies (INSEE), people over 60 years of age represent 25.3% of the French population, and those over 75% 9.1% (World HealthOrganization. Définition de la personne âgée, 2002; https://www.insee.fr/fr/statistiques/1371789). Aging affects the elderly in an integral way, at the same age some people are autonomous and others dependent. In the latter category, the decrease in reserve physiological capacities alters the mechanisms of adaptation to stress, which can manifest itself in a loss of functional autonomy (Loones, 2008; Michel, 2014). Prosthetic management after maxillectomy in the elderly total edentulous requires multidisciplinary consultation involving all stakeholders, especially since the prosthesis specialist is at the top of the pyramid and represents for the patient the hope to restore his aesthetics, his functions and allow him to find his integration in his family and social environment, while adapting to the geriatric condition he treats (Beauchamp, 1994; Englehardt, 1996).

Generalities

Specificities of the elderly patient: Aging is an evolutionary process leading to a progressive deterioration in the functioning of tissues and organs. It is the phenomenon of senescence. Changes affect the anatomical and physiological organs, thus, the composition of the body changes and the cardiovascular, pulmonary, renal, nervous, hepatic, digestive and locomotor systems are all affected to varying degrees (Dodds, 1993). In addition to physiological changes, general pathologies are not uncommon in elderly patients. Other factors, such as: undernutrition, drug use and certain harmful lifestyle habits increase their fragility (Guillere Sevestre, 2014; Guiol, 2014). Altered reserve organic and physiological abilities disrupt coping mechanisms and affect the patient's psychological context, cognitive state, sensory and motor abilities, level of cooperation and motivation. All these elements should not be wrongly considered as mere signs of senility and should be managed rigorously (Besimo, 2015). For all these reasons, the management of an elderly cancer patient must be part of a multidisciplinary framework to be able to overcome all the consequences, especially when cancer alters the integrity of his face and profoundly shakes his sense of personal identity. Prosthetic treatment must restore function and aesthetics as much as possible and reduce psychosocial suffering.

Treatment of malignant tumours in the maxillary

The maxillectomy: It is the more or less total resection of the maxilla that can be associated with the resection of neighbouring anatomical structures also affected by the tumours.

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Monoblock excision optimizes the chances of resecting the tumor completely with healthy and sufficient margins (Jegoux, 2015). This surgery causes significant functional and morphological disorders that are difficult for the patient to accept, following the alteration of his self-image. The elderly person is even more fragile than any other cancer patient, both psychologically and generally.

Radiation therapy

It intervenes

- as a complement to surgery to kill residual tumor cells
- before surgery to reduce the size of the tumor mass
- in combination with chemotherapy to treat non-operable tumours
- as palliative treatment in cases of metastases

Several consequences can appear after radiotherapy:

***Hyposialy**: causes a disruption of chewing, a gene to speech and makes removable prosthetic rehabilitation complete is also more difficult since the absence of saliva compromises its retention.

The decrease in oral pH makes the environment favourable for the development of candidiasis (Fekia, 2008).

Osteoradionecrosis: The most feared and serious complication of radiotherapy. It is the necrosis of the bone due to ionizing radiation. The risk is lower in the maxilla than in the mandible due to better vascularization (2008).

Dysgeusia: It is the loss or alteration of taste due to the irradiation of the taste buds but also to hyposialy and oral acidity (Fekia, 2008).

Limiting the mouth opening: Irradiation often includes the chewing muscles and the temporomandibular joint, which causes fibrosis responsible for trismus (Kielbassa, 2006).

Mucositis: They are called radiomucites and are characterized by desquamation of the buccal epithelium leading to ulcerations and bleeding depending on the dose received. Thus, the dental surgeon must accompany the patient before, during and after the radiotherapy (Fekia, 2008).

Chemotherapy: Its objective is to inhibit the growth of tumour cells by means of cytotoxic drugs administered intravenously (Vedrine, 2007).

Prosthetic rehabilitation of the total edentulous elderly after maxillectomy: The prosthetic rehabilitation of a loss of maxillary substance is a so-called obturator prosthesis which consists of a palatal plate and an obturator. It restores the waterproofness of the palate, improves chewing, swallowing and speaking functions and makes communication eazyer (Vigarios, 2015).

Three types of maxillofacial prostheses:

- **Immediate:** corresponds to a generally non-functional palatal plaque. It is placed on the same day as the surgery and serves as a healing guide and can be used for a maximum of 6 weeks.
- **Transient:** allows the transition to the final prosthesis of use, it prefigures it aesthetically and functionally.
- **Definitive of use:** considered once healing is complete. It must restore the hermeticity of the oral cavity, be functional, light, stable and retentive.
- Post-operative control is essential and is based on regular consultation of the surgical site and monitoring of the aesthetic and functional integrity of the obturator prosthesis (9).

Clinical case

Observation:

Interrogation: Mr. K.A., male, 77 years old and diabetic. He went to the consultation for the prosthetic rehabilitation of a loss of maxillary substance following a squamous cell carcinoma operated on 1 year earlier.

Clinical examination: The patient is fragile.

He has a slight facial asymmetry on the exeresis side. The oral opening is moderate following radiotherapy. It shows a unilateral right hemi-maxillectomy on a completely toothless arch. The loss of substance is class IIIi of Boutault (Fig. 1).

Figure 1. loss of substance - Class IIIi of Boutault

The mucous membrane is slightly inflamed at the limits of the cavity. It preserves the left arch intact with a very reduced bottom of the vestibule at the level of the left middle lateral region. The mandibular arch is completely edentulous (Fig.2)

Figure 2. Mandibular arch completely edentulous

Prosthetic treatment: We decided to treat the patient with a permanent obturator prosthesis as the healing process is completed. Thus, we have begun the actual prosthetic steps: The maxillary primary impression is taken with alginate after filling the loss of substance with a sterile compress to avoid the passage of the impression material to the depth of the cavity (Fig. 3). The primary mandibular impression is mucostatic with plaster (Fig. 4)

Figure 3. Alginate primary impression

Figure 4. mucostatic primary impression

After receiving the individual trays: To the maxillary, we adjusted the individual impression holder and eliminated all compression areas with respect to substance loss using a low viscosity developer material (Silicone Light). An anatomo functional impression with Kerr's Fitt was taken (Fig. 5), then once stable we rebased the impression with a wash of Impregum. We exploited the height of the residual toothless crest, the left tuberosity, the paratuberositary region and the undercuts of substance loss (Fig. 6). The mandibular anatomo functional secondary impression consisted of Kerr's leg recharging and Impression Past surfacing (Fig, 7).

Figure 5. Anatomofunctional impression at the Fitt de Kerr

Figure 6. Wash of Impregum

Figure 7. Secondary mandibular impression with Impression Past

The occlusion models ready for registration of the intermaxillary ratio: we took a Permlastic Regular stabilization impression to stabilize the maxillary model (Fig. 8) when adjusting the occlusion plane (Fig. 9), the vertical occlusion dimension and the intermaxillary ratio registration (Fig. 10).

The assembly of the teeth is done, then tested in the mouth in the presence of the patient's daughter. Both of them validated it.

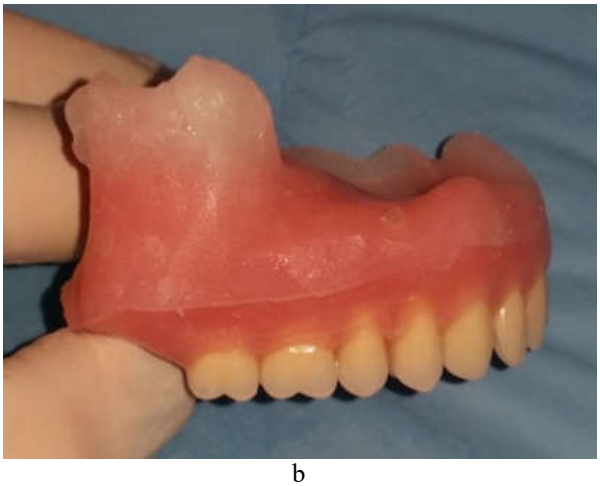
Figure 8. Maxillary stabilization impression with Permlastic Regular

Figure 9. Adjustment of the maxillary occlusion plane

Figure 10. Intermaxillary occlusion

The last step of insertion of the obturator prosthesis is done after polymerization: we have thus proceeded to eliminate the compression zones and reline the intrados with soft liner resin after creating retention wells at the plug to allow good adhesion of the flexible resin (Fig. 11).

a



b

Figure 11 . Maxillary obturator prosthesis
- **retention well at the rigid obturator**

b- relining of prosthetic intrados with soft resin n

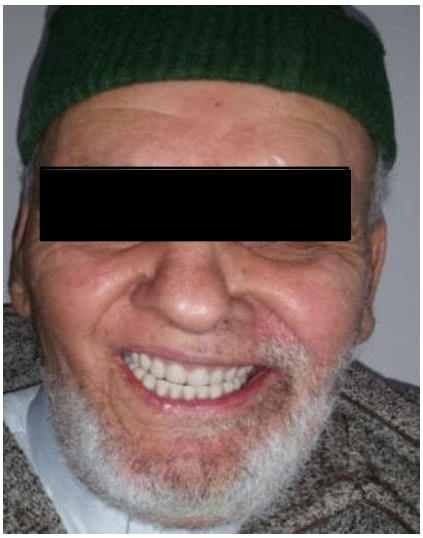


Figure 12. Patient satisfaction after treatment

Then the two maxillary and mandibulary prostheses are ready to be placed in the mouth and the patient is happy to regain his smile and normal speech (Fig. 12).

DISCUSSION

Our patient is 77 years old with insulin-dependent diabetes. We received him a year after maxillectomy. Elderly patients who have had a bad experience of surgery after losing part of their body have an inability to communicate due to the lack of self-confidence they develop. This is why the practitioner must be attentive to facial expression, voice intonation, eye contact and touch. It is sometimes easier for the patient to express a feeling through non-verbal behaviour that the caregiver must be able to identify it. And if he is unable to do so, the family, caregivers or the attending physician should be interviewed to obtain the information (Arlet, 2001). The establishment of this relationship of trust between the practitioner and the patient must be the first objective to be achieved before starting any prosthetic treatment. Age is not a contraindication to prosthetic treatment or pre-prosthetic care, but it requires the practitioner to take into account the length of the session, the complexity of the procedures and the difficulty for the patient to understand the message (Pouyssegur, 2010).

Thus, the operating sessions must be short, the acts deferred and the language used by the practitioner must be adapted to the patient's level of understanding. In the case where the level of dependence is assessed as high in the patient, the future obturator prosthesis may be difficult to make and maintain, hence the need to inform those around him to help (Veyrune, 2005). With our patient, we were both the prosthodontist who will treat his loss of substance and the geriatrician who will accompany him during and after the prosthetic treatment although we have not followed him since the beginning of his cancer management. Geriatrics is a discipline that allows the elderly person to benefit from specific care to treat their illness while adapting to their fragile state (Collège de la Haute Autorité de Santé. Tumeur maligne, 2009). The elderly total edentulous person with a loss of substance of carcinological origin is a handicapped person on two levels: total edentulism and maxillary organic loss and its prejudices. Thus, patients with facial prostheses must invent, create, take care of themselves, develop a lifestyle and a self-ethics in adequacy with the future being (Andrieu, 2008). The progressive learning of individuals with obturating prostheses, within the framework of cognitive confidentiality and intimacy, would seem to be the key to the success of prosthetic therapy. Accompanied by his family and gerontologist, the elderly patient with substance loss becomes a real actor in his behavioural rehabilitation, identity redefinition and social reintegration (Andrieu).

Conclusion

Elderly patients who have undergone maxillectomy are generally rehabilitated with a maxillofacial obturator prosthesis, but as they lack the autonomy to clean and place them, they are therefore dependent on their surroundings and the nursing staff. The gerontologist must have all the means at his disposal to support his patient and reduce the risk of failure of his therapy.

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