Case Report

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Reconstruction of Mid-facial Defects Using Facial Prostheses Supported by Dental Implants

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Abstract

Malignant tumors which affect nasal structures are uncommon. They represent about 0.2% of all cancers and are more than twice as prevalent in males. Squamous cell carcinoma is the most common type of nasal cancer. However, basal cell carcinoma, melanoma, sarcoma and inverting papilloma can involve nose and/or para-nasal sinuses too. Although rare, these pathologies are the most frequent cause for acquired defects of the nose. In this light, the need to obtain clear resection margins obliges surgeon to perform extensive nose amputations. This report describes the case of a 63 years old man affected by squamous cell carcinoma of the nose. A total nose amputation was carried out due to the extension of the tumor. Nasal reconstruction was performed with an implant-retained prosthesis. Three dental implants were used for anchoring the nasal prostheses. This technology is safe and it ensures optimum esthetic results.

Keywords: Facial reconstruction; Oncological mid-facial defects; Facial prostheses; Dental implants

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Introduction

Squamous cell and basal cell carcinoma represent the most common malignant lesions of nose and para-nasal sinuses. These pathologies can be extremely aggressive and show a poor prognosis. Thus, partial or complete amputation of the nose should be carried out in order to guarantee a complete resection of the tumor (R0) and effective cure. In this light, is important to underline that the nose represent the center of the face. Therefore, nose amputation might provoke terrible aesthetic and psychosocial consequences. The main options for reconstructing these defects are surgery and nasal prostheses [1].

In this sense, the surgical reconstruction of nasal structures may not be a simple task and several surgical procedures are required for attaining a great result. Indeed, internal coating, bone support and external cover need to be reconstructed at different times.

Nevertheless, facial prostheses might be exceedingly useful in some cases. Specifically, elderly patients with higher perioperative risks represent the perfect candidates. Indeed, nasal prostheses could prevent several surgical steps. Another advantage is the possibility of detecting cancer recurrences with major facility. In additions, patient postoperative cares are easier and aesthetic outcomes are excellent. The fixation of the prosthesis might be reached with distinct techniques such as attachment at glasses, bone anchorage or with chemical adhesives.

This report presents a case of total nose amputation for oncologic pathology. The reconstruction of the defect was performed with an implant-retained prosthesis. Interestingly, we utilized three dental implants [2] to anchor prostheses with facial skeleton. The main reason for using this technique was based on patient perioperative risks. Several studies confirmed that implant-retained prostheses ensure great aesthetics results. Furthermore, psychosocial well-being of patient is also majorly improved [3].

Case Report

A 63-year-old male patient presented to the outpatient department of our service with an ulcerated lesion which affected

ala, dorsum and tip of the nose. Histological examination of biopsy tissue revealed the presence of malignant cells. More in detail, specific diagnosis of squamous cell carcinoma was made. Furthermore, a cervical CT was carried out in order to study the extension and magnitude of pathology. CT image reported no affectation of profound structures. Notwithstanding, a total nose amputation was necessary for obtaining free resection margins **(Figure 1)**. After a careful examination of the case we decided to perform tumor extirpation and reconstruct the oncological defect using an implant-retained prosthesis at the same time **(Figure 2)**. The major reason for applying this method was based on patient perioperative risks. In fact, patient suffered serious diseases which forced us to reduce to a minimum the surgical times. Moreover, patient also needed to start radiotherapy as soon as possible. No problems were reported during surgery and the patient was discharged from the hospital few days after the procedure. Importantly, no complications related with prosthesis were evidenced during patient follow up (20 months) **(Figure 3)**.

Discussion

Nasal reconstruction has always been a challenge for head and neck surgeons. Its central position and three-dimensional form make surgical reconstruction difficult. In fact, adequate cover, lining and suitable support are required in order to ensure proper end results. These structures should be reconstructed at different times. Consequently, it could represent a major problem in cases of frail and elderly patients. In these cases, it is essential to reduce the surgical times. Moreover, the use of radiotherapy and the risk of relapse make surgery even more difficult.

Against this background, it is not risky to claim that facial prosthesis [4-6] represents a safe and effective alternative treatment for some cases of total nose amputation. Facial prosthesis presents the following benefits:

Figure 1 Nasal defect due to oncological amputation.

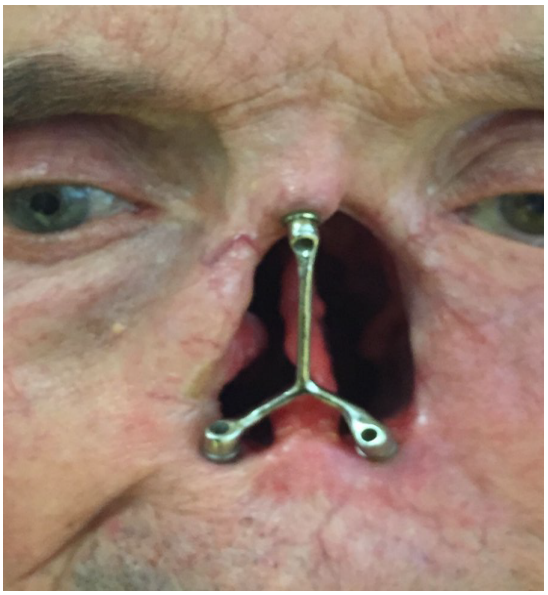

Figure 2 Implant disposition for supporting facial prosthesis.

Figure 3 Final result.

- Great aesthetic results;
- Reduction of surgical times;
- Lower morbidity;
- Easier patient postoperative cares;
- Earlier detection of cancer recurrences;
- Positive results in terms of psychological and psychosocial well-being.

Several methods exist for guaranteeing proper prosthetic attachment. Notwithstanding, the use of tissue adhesives could

provoke contact dermatitis and loss of adhesion with consequent prosthesis dislodgement. Attaching the prosthesis to glasses overcomes these limitations. However, the glasses may not be removed independently of the prosthesis.

Implant-retained [7,8] prosthesis prevents these complications and represents a comfortable and effective option for these patients. Age, gender and histology did not show any influence on implant outcomes. Moreover, the use of longer implants reduces the risk of implant loss and improves the stability of prosthesis [9]. In contrast, smoking had a detrimental effect on implant success and radiotherapy is other factor which might also provoke implants failure.

Importantly, we would like to remark that our patient was underwent radiotherapy too. We waited three weeks between the implants placement and the onset of radiation therapy. The reason for this choice was to ensure the minimum time necessary for implants Osseo-integration [10]. In view of that, no complications related with prosthesis were evidenced during 20 months of follow up.

Concluding, we would to stress that this report contains three points that are central to us: First, implant-retained prosthesis constitute an effective reconstructive option in cases of elderly patients underwent total nose amputation. In fact, this technique could shorten processing times and reduce mortality and morbidity in frails patients. Second, this methodology ensures optimum esthetic results and easy monitoring of cancer recurrence. Third, positive results in terms of psychosocial well-being were shown in patients with implant-retained prosthesis [5].

Compliance with Ethical Standards

Authors declare that they have taken into account the ethical responsibilities. Authors not received financial assistance. This article does not contain any studies with human participants or animals performed by any of the authors.

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