

CLINICAL REPORT

Single-stage osseointegrated implants for nasal prosthodontic rehabilitation: A clinical report



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A considerable number of people are affected by facial defects every year as a result of malignant tumors, trauma, or congenital deformities. Malignant skin neoplasms in the head and neck region are common in places where there is intense sunlight all the year around. In Brazil, among head and neck lesions, the incidence

of nasal tumors is 31.5%.¹ The majority of these tumors are basal cell carcinoma,¹ and if they are not diagnosed early and treated, they may be fatal.^{2,3} Cancer treatment in the nasal region usually involves surgery, either associated with radiotherapy and/or chemotherapy or neither.³⁻⁵

As a result of surgery, disabling facial defects are common in these patients, who will require follow-up appointments and rehabilitation procedures throughout their lives. Rehabilitation may be performed through plastic surgery or a nasal prosthesis.^{4,6,7} The choice of treatment depends on the size, site, etiology, and severity of the neoplasm, the patient's age, and availability. However, age, general clinical status, type and intensity of radiation therapy, morphologic or surgical complexity, and recurrence of disease affect the appearance of the rehabilitation area. Moreover, a patient's refusal to undergo surgery may lead to large residual lesions.^{3,5} In these patients, prosthetic rehabilitation will offer various advantages, including inspection of the surgical site, early

ABSTRACT

Malignant tumors in the nasal region may be treated by means of invasive surgical procedures, with large facial losses. Nasal prostheses, retained by osseointegrated facial implants, instead of plastic surgery, will, in most patients, offer good biomechanical and cosmetic results. This clinical report describes the prosthetic rehabilitation of a patient with nasal cancer who had the entire nasal vestibule removed in a single-stage surgical procedure in order to shorten the rehabilitation time. The nasal prosthesis was built on a 3-magnet bar and was made of platinum silicone with intrinsic pigmentation, thereby restoring the patient's appearance and self-esteem. The authors concluded that single-stage implants may reduce the rehabilitation time to as little as 1 month, and the correct use of materials and techniques may significantly improve the nasal prosthesis. (*J Prosthet Dent* 2015;114:293-296)

diagnosis of disease recurrence, good esthetics, simplicity of technique, and lower cost.⁶

Successful maxillofacial prostheses may be evaluated by considering esthetics, functional performance, biocompatibility, durability, and retention without compromising skin integrity, even right after surgery when a provisional prosthesis is recommended.⁸ Mechanical retention and adhesives have shown poor results as means of retention and will reduce prosthesis durability.⁹

Retention and anchorage provided by extraoral implants is the best method of support for facial prostheses.^{10,11} However, before performing the rehabilitation, meticulous reverse planning based on a diagnostic waxing of the future prosthesis is necessary. Extraoral implants must be ideally positioned to guarantee satisfactory prosthesis volume and contour.¹²⁻¹⁴ Adequate laboratory processing and silicone color selection are also important to achieve successful treatment outcomes.¹⁵ A method of prosthetic retention with the use of single-stage implants

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Figure 1. Preoperative appearance.



Figure 2. Implant surgical guide in place.

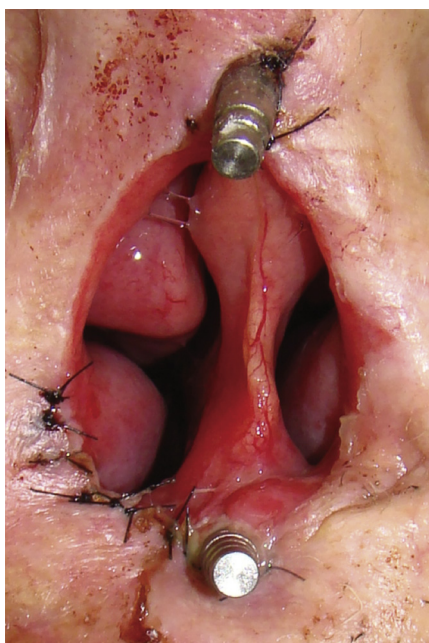


Figure 3. Standard abutments and conical impression transfers to prevent soft tissue closure.



Figure 4. Appointment for seating metal bar with magnet inserts.

and magnets is described for a patient who underwent a total rhinectomy because of a basal cell carcinoma in the nasal vestibule.

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A 75-year-old, fair-skinned man who had undergone a rhinectomy because of a basal cell carcinoma and who had been using an adhesive-retained nasal prosthesis

(Fig. 1) was referred to the NUFACE clinic (Facial Defects Rehabilitation Clinic) at the Federal University of Ceará, Brazil, with regard to the possibility of nasal reconstruction. Different treatment approaches were presented to the patient and his relatives. The approved treatment plan involved an implant-retained, removable silicone nose. The patient also reported hiding from people, mostly because of the residual lesion after the rhinectomy. A surgical guide (Fig. 2) was used to indicate



Figure 5. Magnets positioned on top of magnet inserts.



Figure 6. Magnet and acrylic resin stent to provide nose retention.



Figure 7. Definitive model and nose waxing.

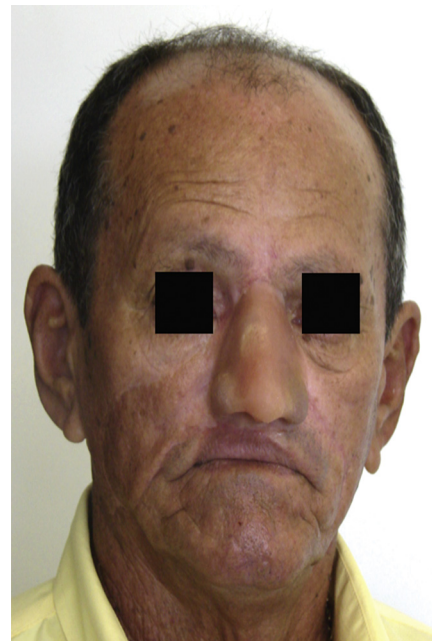


Figure 8. Definitive prosthesis insertion appointment.

the optimal implant position. Two 3.75×13-mm dental implants (Master Porous; Conexão Sistemas de Prótese) were placed in the nasal spine and areas of the glabellae. Standard abutments (Conexão Sistemas de Prótese) were screwed on the implants, and conical impression posts (Conexão Sistemas de Prótese) were placed on the standard abutments. Sutures were made arranging the skin tissue around the abutments, which remained exposed (Fig. 3). Two weeks later, the sutures were

removed, and definitive impressions were made with a polyvinyl siloxane material (Adsil; Coltène/Whaledent). Standard abutment analogs (Conexão Sistemas de Prótese) were screwed on the impression transfers and the impression was poured in Type IV stone (Durone; Dentsply Intl). Three lip magnet inserts (IK2-S; Technovent) (Fig. 4) were used to make a Co-Cr alloy bar (Fig. 5) (Starlloy; Degussa). After the bar-seating appointment, an acrylic resin (Fig. 6) stent containing 3

magnets (ML3-S; Technovent) was fabricated, and a nose was waxed over it. The waxed nose (Fig. 7) was then flaked (#6 flask; DCL). The wax was eliminated and a fine layer of separating medium (Al-Cote; Dentsply Intl) was applied to the stone mold. Afterwards, the prosthesis was fabricated from a platinum silicone (MDX4210; Dow Corning) and intrinsically colored with a coloring system (rare earth pigments; Factor II Inc). During the prosthesis insertion appointment, the patient was provided with guidance on cleaning, and maintenance (Fig. 8).

DISCUSSION

Craniofacial osseointegrated implants offer patients with a facial prosthesis a significantly improved quality of life.¹⁰ Extraoral implants have many advantages in maxillofacial prosthetic rehabilitation: they provide consistent retention and positioning of the facial prosthesis and can be placed during the primary reconstruction procedure or at any time postoperatively when the patient is able to tolerate the procedure.¹¹ In addition to predictable retention, the rehabilitation time was reduced,¹² as a single-stage osseointegrated implant surgery protocol was adapted to the craniofacial region. The patient was instructed to avoid any pressure or premature loading on the surgical area, and all post-operative care was taken because micromovement or infection could have led to implant failure.¹³

The patient did not present any soft tissue problems, which are most commonly related to poor hygiene, physical irritants, and/or excessive thickness and mobility of soft tissues around the implant. Patients with oral malignancies are often treated with surgery followed by radiation therapy. Once irradiated, the potential of the bone for implant placement may be severely compromised or even lost because of the decrease in bone osteogenic potential and microvasculature. Adjunctive therapies such as hyperbaric oxygen and subsequent implant placement in irradiated bone have been proposed to overcome this problem.⁷ In this patient, radiation therapy was not used as a part of the treatment.

The magnetic retention used was a lip magnet that restrains any lateral movement of the prostheses and enhances positioning for elderly or physically impaired patients. One disadvantage is that the cost is slightly higher than bar and clip or ball and keeper systems. It is more difficult to perform the necessary hygiene than with conventional adhesive prosthetic appliances.¹⁴

In this clinical report, an implant-retained nasal prosthesis was used in a patient who had previously had a conventional nasal prosthesis. In the first follow-up appointment, the patient reported a better relationship between the skin/prosthesis interface, stronger retention, and a better esthetic result, probably because of very thin margins. The reduction in rehabilitation time was

mostly related to the single surgical procedure, which not only reduced rehabilitation time but cost as well. This study should be seen as a possible treatment alternative and is suggested by the authors as a way to enhance maxillofacial reconstruction. Survival rates will only be known when the number of patients receiving this treatment increases and the duration of follow-up is extended.

SUMMARY

A patient who underwent rhinectomy because of a basal cell carcinoma underwent a single-stage endosseous implant surgery. After the surgical procedure, he had nasal rehabilitation through the fabrication of a nasal implant-supported and magnet-retained prosthesis.

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