

A Novel Approach to Recreate, Rehabilitate, and Restore the Facial Defect with a Partial Facial Mask – An Interesting Case Report

Abstract

Facial defects resulting from neoplasm, congenital malformation, or trauma can be restored with facial prosthesis using different materials and retention methods to achieve the life-like appearance and facilitate function. A facial prosthesis can re-establish esthetic form and anatomic contours for midfacial defects, often more effectively than by surgical reconstruction. For successful results, a lot of factors such as harmony, texture, color matching, and blending of tissue interface with the prosthesis are important. This case report describes a novel approach to rehabilitate a patient who had undergone partial rhinectomy as a result of hemangiopericytoma of the nose. This article explains the construction of partial facial mask, which restored the defect involving the left lateral aspect of the nose, medial aspect of the left eye, and the part of the cheek.

Keywords: *Maxillofacial defect, maxillofacial prosthesis, partial facial mask, prosthesis*

Introduction

Hemangiopericytoma is a locally aggressive benign tumor of vascular origin. 15% of all hemangiopericytomas are found in the head and neck with a tendency (20%) to occur in the paranasal sinuses and nasal cavity.^[1,2]

The quality of life after rhinectomy is severely compromised if an efficient surgical reconstruction or a prosthetic device is not provided immediately.^[3] There are various Maxillofacial materials such as Room temperature vulcanizing silicone (RTV) silicones, Heat temperature vulcanizing silicone (HTV) silicones, foaming silicones, and composites available, which could be used effectively in rehabilitating maxillofacial defects.^[4] This case report describes a novel approach to treat a patient with a poor economic background who suffered repeated episodes of hemangiopericytoma and was emotionally and psychologically affected. The purpose of this clinical report is to describe a custom sculpted definitive partial facial mask made of acrylic resin and retained by eyeglasses.^[5]

Case Report

A 31-year-old female reported with a history of developing a progressing mass

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7 years ago on the left lateral wall of the nose with the symptoms of epistaxis, which further lead to the unilateral nasal obstruction which was not relieved with medication. She underwent four surgical interventions in a span of 6 years in various hospitals at Bengal, Bhopal, and Kolkata due to the recurrence of the tumor to a huge size of almost resembling an elephant trunk [Figure 1a and b]. Under histopathological examination, the tumor was diagnosed as “HEMANGIOPERICYTOMA.” The lesion was surgically removed, and subsequently, the patient was made to undergo radiotherapy and chemotherapy. The extensive surgery left her with huge embarrassment and humiliation whenever she interacted.

During the examination, the patient-related dissatisfaction with her appearance and was especially concerned about her facial disfigurement [Figure 1c]. There were a large septal perforation and the bilateral absence of mucous blanket, which lead to mucosal atrophy [Figure 1d]. Thus, there was a postoperative nasal breathing dysfunction. The only provision of breathing for the patient was through the large defect after excision of the tumor.

This defect was elliptical with obliterated edges measuring about 6 cm long and 2

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**C.K. Anulekha,
Kolapally Swetha,
Sudhir. N,
Ramu Reddy. M**

*Department of Prosthodontics,
Kamineni Institute of Dental
Sciences, Nalgonda, Telangana,
India*

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Address for correspondence:

*Dr. C. K. Anulekha,
Professor Department of
Prosthodontics, Kamineni
Institute of Dental Sciences,
Narkatpally,
Nalgonda - 508 254,
Telangana, India.
E-mail: anulekhaavinash@
gmail.com*

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cm wide with a depth of more than that 3 cm along the left side of the face [Figure 1c]. The exposed structures of the defect were conchae and meatus with an intact nasal bone, lateral part of the septal cartilage, frontal process of maxilla, and medial wall of the orbit and the cribriform plate of the ethmoidal bone [Figure 1d]. With the existing situation, the patient was extremely depressed psychologically, and hence, it was important to treat with an interdisciplinary approach of psychiatry, and ENT. Once the patient was got to a confidence level, a prosthodontic approach was made.

Various prosthetic treatment modalities ranging from acrylic resin partial facial mask to an implant-retained silicone prosthesis^[6] were explained and discussed with the patient. Due to economic constraints and remoteness of her area of residence, the patient denied to come for repeated recalls and reviews. Hence, the prosthesis made of polymethyl methacrylate (PMMA) resin was chosen to be made. There was absolutely no viable bone left over to plan for implant-supported Maxillofacial prosthesis (MFP). Hence, it was decided to use a spectacle glass frame for retaining the prosthesis.

1. The patient was draped, and the petroleum jelly was applied to the patient's eyebrows and eyelashes. Moist gauze was packed to prevent the flow of material into the undesired areas of the defect, and an impression was made of the defect and adjacent tissues using an alginate in a semi-upright position to minimize tissue bed distortion [Figure 2a]
2. The impression was then poured with the type III dental stone (Kala Stone; Kala Bhai Pvt Ltd., Mumbai, India) to achieve a cast [Figure 2b]. A model of the

prosthesis was sculpted on the facial cast with No. 2 dental modeling wax (MDM Corporation; Delhi, India). Taking into account the patient's general appearance, the esthetic contours were developed. With repeated surgeries, the patient was suffering from nasal stenosis due to which she was unable to breathe through her nares instead the only possible way she could breathe was through the defect. Hence, closing the defect with the prosthesis would make her inconvenient to breathe. Therefore, it was planned to incorporate two slits on the facial prosthesis, to facilitate the passage of air to make her comfortable to breathe [Figure 2c and d]

3. In the wax pattern, two longitudinal vents were then provided on the patient's left lateral wall resembling part of the wax pattern as a provision for breathing for the patient [Figure 2e]
4. The wax pattern adaptation on the patient's face was checked, especially in the border areas for the close adaptation [Figure 2e]
5. Spectacles with a thicker frame with the power of the patient were chosen and adapted at the nasal bridge area of the wax pattern to increase the surface area and close adaptation of the spectacles to the prosthesis [Figure 2f]
6. Once the fitting and approximation have been confirmed, further laboratory procedures of dewaxing and acrylization have been followed
7. Care should be taken, that the vents should be blocked out with an elastomeric putty material. As the wax pattern to be processed had made contours and undercuts, a three-part mold pouring (multisectional



Figure 1: (a and b) Preoperative photograph showing huge elephant trunk appearance of the patient. (c and d) Postoperative photograph showing the disfigurement of the face due to repeated surgeries

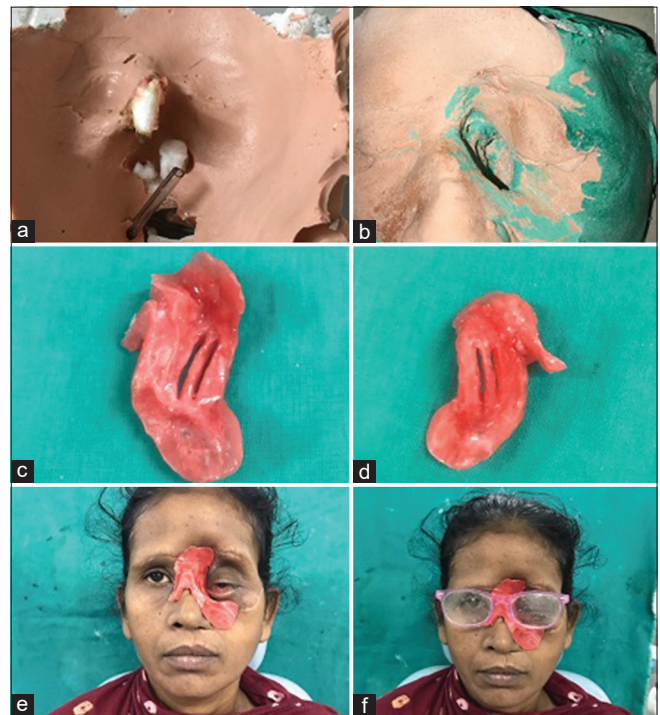


Figure 2: (a) Alginate impression. (b) Stone cast model of the face. (c and d) Wax pattern of the prosthesis. (e) Wax pattern adapted to the defect. (f) Wax pattern retained by spectacles

mold)^[7] was necessary to achieve easy placement of acrylic. Investing the wax pattern in the lower half of a large flask was the first pour. Apply separating medium to the stone surface. Invest the posterior undercut surface of the wax pattern with dental stone. The walls of this section must cover toward the center of the flask and are considered as a second pour. The dental stone should be at least 0.5 cm thick in all areas. Apply separating medium to the stone surfaces. Invest the lower half of the wax pattern with the third pour of dental stone and close the lid, and further acrylization was carried out by short curing cycles

8. Heat cure polymethyl-methacrylate material of three shades, namely tooth colored, pink, and clear acrylics were chosen. Shade matching was done by intrinsically staining the material with acrylic stains
9. Acrylization of the prosthesis was carried out by short curing cycles. The final prosthesis was been tried on the patient, and shade matching was done by extrinsic staining
10. The placement of the prosthesis was demonstrated to the patient and was then delivered. Detailed instructions regarding care and use were provided to the patient [Figure 3].

The patient was scheduled for the first postinsertion adjustments, 1 day after the insertion to ensure the health of the tissues and to relieve the prosthesis for pressure areas on the tissues.

At the follow-up evaluation after 2 weeks, the prosthesis appeared to be functioning within normal limits. The patient was then asked to come for recall visit once in every 3 months for the evaluation of prosthesis and observation of any recurrence.

Discussion

Facial defects result in multiple functional and psychosocial difficulties. Surgical reconstruction techniques, prosthetic rehabilitation, or a combination of both the methods to



Figure 3: Preprosthetic and postprosthetic pictures

restore these facial disfigurements may improve the level of function and self-confidence for patients.^[8]

Prosthetic rehabilitation can be preferred over reconstructive surgery due to the probability of recurrence, complexity, and subjecting the patient to another trying period of the surgical reconstruction procedure, radiation therapy, esthetic importance, and it is easy to reproduce the former shape, size, and color of the tissues.^[9]

Patient education is perhaps, the first step in the rehabilitation. Before surgery, it is important to familiarize the patient with the functional and cosmetic expectations and limitations of the maxillofacial prosthesis.

Providing adequate retention and airway in nasal prostheses were considered to improve the patients function and comfort. Further, the prosthesis was designed like a shim to reduce the bulk of the prosthesis and making it lightweight.^[10]

The patient was treated more likely with an interdisciplinary team approach involving an ENT, psychiatrist, ophthalmology, radiologist, and general medicine.

Mechanical devices such as eyeglass frames as used for this patient are not useful in patients with a flat residual tissue bed, and gravity may cause vertical displacement.

Conclusion

Defects resulting from diseases such as hemangiopericytoma can be rehabilitated using prosthetic rehabilitation so that the patient more comfortably and confidently resumes the regular daily activity. In countries like India, where the cost of the treatment is still a primary concern for the patient, PMMA resin can be used as the best choice of material for the definitive prosthesis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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