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Rehabilitating the Deformed Nose: Nasal Prosthesis: A Case Report

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ABSTRACT

The art of maxillofacial prosthetics restores esthetics and function in patients with gross developmental or acquired defects of face and helps them to restore hope and ambition to lead a useful life. These defects are highly unpleasing and cause a considerable psychological stress to patients. Diagnosis and treatment planning should include attention to each detail prior to rehabilitation process. This paper describes a clinical case of mid face defect due to basal cell carcinoma, rehabilitated with facial prosthesis and nasal stent following a nasal reconstruction done using forehead flap. The nasal stents were rendered to the patient for comfortable breathing by maintaining patency of the nasal passage after the surgical procedure and also improve speech and esthetics.

Key words: Basal cell carcinoma, Nasal prosthesis, Nasal stent

INTRODUCTION

Advanced tumors of the mid facial region, although slowly and locally invasive, occasionally require extensive surgical removal to eradicate the disease. Basal cell carcinoma, also known as rodent or mariner's ulcer is the most common malignancy in humans. Basal cell carcinoma is a malignant disease that arises in the basal cell layer of the epidermis. The disease is usually triggered by damage to the skin caused by sunrays .It occurs most frequently in persons in the fourth decade of life or later the male-to female ratio is approx. 3:2[1,2] .

Etiology

1. Ultraviolet radiation (most common) Chronic sun exposure is important in the development of BCC. A long patency period of 20–50 years is typical between the time of UV damage and clinical onset of BCC.
2.Chemicals
3. Immunosuppression (oncogenic types of human papilloma viruses).
4. Syndrome like xeroderma pigmentosum (due to an inability to repair UV-induced DNA damage[3].

Wide surgical excision of basal cell carcinoma is generally the treatment of choice for most lesions about the face since irradiation, especially in the vicinity of the eye, tip of the nose, or ear, often causes complication. These tumors frequently manifest an iceberg behaviour in which the skin appearance does not denote the true lateral and deep expansion. This is followed by functional and cosmetic repair to restore the patient more quickly to an acceptable role in society[3].

Treatment of basal cell carcinoma of the nasal vestibule varies depending on the size, depth, and location of the cancer. Treatment options are surgical removal, chemotherapy, and radiation[4]. Loss of structural continuity in the face can compromise speech, eating, swallowing, esthetics, and social relationship[5-8]. Esthetic reestablishment is the most important purpose in reconstruction of maxillofacial defects[9]. Patients with cured midface malignancies but no reconstruction of surgical defects with facial prostheses is not considered successfully treated[8]. Recurrence is a frequent problem with basal cell carcinoma of the skin, especially in the nose and ear regions. The nose is the most prominent feature of the face. The importance of the nose in facial harmony has been well recognized. Patient acceptance for the facial prosthesis is a challenging issue, substantially due to unrealistic patient expectations[10,11]. Prosthetic rehabilitation

of nasal defects with or without implant support is also helpful treatment therapy which allow the patients to participate actively in society. Anatomic undercuts, secondary mechanical factors, skin adhesives, and the implants are reported to enhance retention[12,13]. The materials and techniques of facial prostheses have been improved recently, yielding more satisfactory results in terms of esthetic appearance. Long-term success of a facial prosthesis mainly depends on retention. Retention of the facial prosthesis depends on providing a better edge integrity and conserving the position of the prosthesis during every movement of the head and mimic muscles[14].

Requirements for the Materials Used for Facial Prostheses:

1. Esthetics The completed facial prostheses should be unnoticeable in public, faithfully reproducing lost structures in the finest detail. Its color, texture, form and translucence must duplicate that of missing structures and adjacent skin.

2. Fabrication Materials that can be processed with readily available instrumentation, provide sufficient working time and should be adaptable to intrinsic as well as to extrinsic coloration.

3. Physical properties The prostheses should possess sufficient flexibility for comfortable use on movable tissue beds, should be dimensionally stable, light in weight, and possess suitable edge strength to permit thinning or feathering of margins.

4. Biologic and chemical properties The materials should remain stable when exposed to environmental insults such as ultraviolet rays, oxygen, secretions, and adhesives. It should not be toxic, allergic, or carcinogenic, and it must be biocompatible. Resistance to stains is a distinct advantage, for it allows use of cosmetics to camouflage margins. It is highly desirable that the prostheses be durable and has the capability of being used without significant compromise of esthetics and physical properties for at least 6 months[2].

In this report, a definitive nasal prosthesis made up of heat cured acrylic resin has been used for rehabilitation of a partial nasal defect, using anatomic retentive aids along with heat cured clear acrylic nasal stent.

CASE REPORT

A female patient (fig 1) 55-year-old underwent resection of nasal area due to basal cell carcinoma. Patient was treated at ENT department for nasal reconstruction with forehead flap and was referred to the department of prosthodontics for nasal prosthesis fabrication along with nasal stent. Nasal stents were required to prevent adhesions and to prevent collapsing of nostrils due to the weight of the graft, so as to allow proper breathing . The boundary for the impression was outlined on the face . After blocking out the undercuts by filling the nasal cavities with lubricated gauze, an impression of the nasal cavity was made with medium body silicone material and the rest of the defect was recorded using silicone putty (fig 2).

Fig 1 (frontal view, showing the nasal defect, graft and partial obliteration of left nostril due to weight of the graft)

Fig 2(impression of the nose along with the defect recorded with putty)

The impression(fig 3) was poured in die stone(Fig 4) . The wax pattern of the nose was sculpted on the stone cast with modelling wax(fig 5) . The morphology of the was pattern was corrected according to visual knowledge , older photographs of the patient , and patient's own descriptions of her preoperative appearance. After the completion of the wax pattern, in order to improve the whole morphology of the nose on the face, we verified the contour, surface texture and the position of the wax pattern, during try-in procedure. The position of the nostrils was verified with the inner canthus distance of the eyes. Nose profile matched the line between the ear's top point and bottom of tragus .

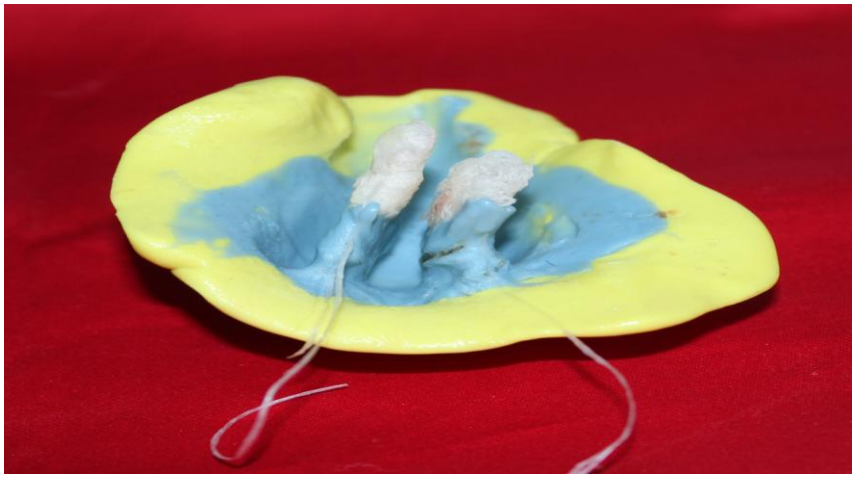

Fig 3 (putty impression along with medium body)

Fig 4(Finished cast made from die stone)

Fig. 5(wax up for try -in)

After verification of the shape, size, contour, fit, and surface texture of the corrected pattern on the face and ensuring that it is acceptable to both the patient and the practitioner, the mold(fig 6,7) was fabricated to reproduce the wax pattern in heat cure acrylic resin. The molding procedure was carried out and pigments were added on to match different shades of the patient's skin . Trace amounts of red and yellow pigments were used to achieve closer match to the skin. The material was processed according to the manufacturer's instructions. Then the prosthesis was removed carefully from the mold, excess material was trimmed and polished to make the prosthesis more esthetically acceptable(fig 8). Appearance of the prosthesis was improved with extrinsic coloring.

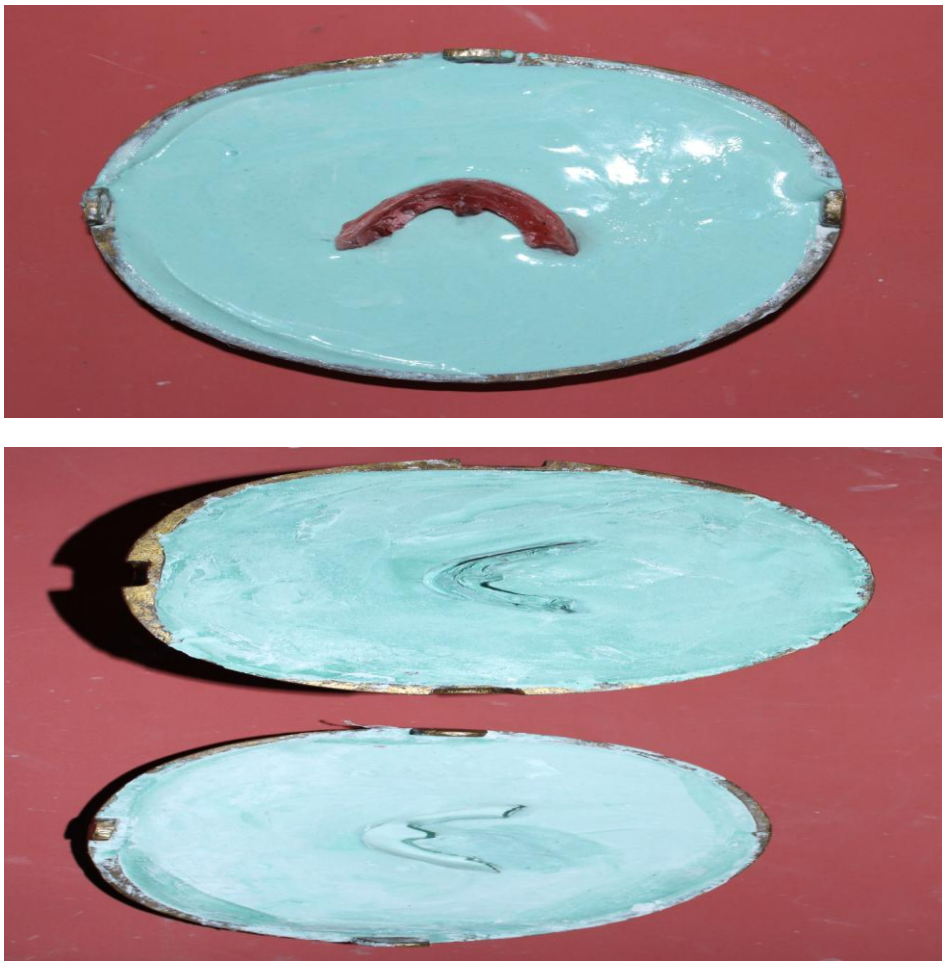

Fig 6,7 (wax pattern was invested after try -in and mold was obtained after dewaxing of the wax pattern)

Fig 8 (finished and polished nasal prosthesis tried on the stone cast)

For fabrication of nasal stents another impression was made of the nasal cavities using light body elastomeric material to fabricate hollow nasal stents(fig 9). The impression was supported inside the nasal cavities using matchsticks to allow easy retrieval of the impression. The impressions were invested in order to get the mold in which heat cured clear acrylic resin was packed. The stents were hollowed out by using 4mm diameter and 20mm length putty ropes while packing the acrylic resin. The putty ropes occupied the space which was previously occupied by the matchsticks. The material was cured according to the manufacturer's instructions. Stents were retrieved, finished and highly polished fig 10 .

Fig 9 (A separate impression of the nostrils made with light body for the fabrication of nasal stents, supported by matchsticks)

Fig 10 (finished and polished nasal stents with approximately 4mm dia. and 20mm length)

The nasal stents were first tried in the patient's nostrils(fig11). The external prosthesis junction was established at mucocutaneous junction from cosmetic standpoint and the prosthesis was self-retentive as it was slightly wider than the reconstructed nostrils of the patient.

Fig 11 (nasal stents inserted)

The nasal prosthesis was attached to the nasal stents using soft liner(fig 12) and delivered to the patient. The patient was quite happy with her prosthesis(fig 13).

Fig 12(nasal stents attached to the nasal prosthesis with soft liner)

Fig 13 (Nasal prosthesis along with nasal stents given to the patient)

DISCUSSION

To construct a satisfactory facial prosthesis, the material, retention and esthetics should be considered. Retention is one of the most important considerations in fabricating a successful facial prosthesis. Different methods based on mechanical devices or adhesives have been discussed in literature[15]. The use of anatomic undercuts for retaining a facial prosthesis reduces the need for mechanical retention such as elastic straps and in some instances adhesives may be eliminated. This is advantageous as adhesives are irritating to some patients and damage to the thin margins of the prosthesis can occur during adhesive removal. The prosthesis must be lightweight with airway space in order to be used as a functional part for breathing. The nasal prosthesis described in this article was hollow, with two nasal holes for respiration and two acrylic internal extensions as a retentive and supportive device. The extensions were made of clear acrylic resin to simplify its maintenance[2].

CONCLUSION

In this case report, a nasal prosthesis was fabricated for a patient whose nasal area had been resected due to basal cell carcinoma. Anatomic undercuts were sufficient for the retention of the prosthesis. This prosthesis was acceptable to the patient because weight of the prosthesis was low and the cost to create the prosthesis was also low.

REFERENCES

[1]. Beumer J, Curtis TA, Firtell DN (1979) Maxillofacial rehabilitation—prosthodontic and surgical considerations. Mosby, St. Louis
[2]. Rao P, Prakash H, Jain V, Raut A . Prosthetic Rehabilitation of a Patient with a Large Mid Face Defect Secondary to Basal Cell Carcinoma. J Indian Prosthodont Soc (Apr-June 2011) 11(2):137–141
[3]. Chalian VA, Drane JB, Standish SM (eds) Maxillofacial prosthesis. Multidisciplinary practice. Williams and Wilkins, Baltimore, pp 133–148
[4]. Guttal SS, Vohra P, Pillai LK, K Nadiger R. Interim prosthetic rehabilitation of a patient following partial rhinectomy: a clinical report. Eur J Dent 2010;4:482-6.
[5]. Harashina T, Nakajama H, Imai T. Reconstruction of mandibular defects with revascularized free rib grafts. Plast Reconstr Surg 1978;62:514-22.
[6]. Ballard BR. SCC of the floor of mouth. Oral Surg Oral Med Oral Pathol 1978;45:568-79.
[7]. Blair EA, Callender DL. Head and neck cancer. The problem. Clin Plast Surg 1994;21:1-7.
[8]. Broders AC. The grading of carcinoma. Minn Med 1925;8:726-30.
[9]. Beumer J, Curtis TA, Marunick MX. Maxillofacial rehabilitation: Prosthodontic and Surgical Considerations, 2nd ed. St Louis: Ishiyaku EuroAmerica, Inc; 1996. p. 404.

[10]. Burget GC, Menick FJ. Nasal support and lining: The marriage of beauty and blood supply. Plast Reconstr Surg 1989;84:189-202.
[11]. Bhat V. A close-up on obturators using magnets: part I - magnets in dentistry. J Indian Prosthodont Soc 2005;5:114-8.
[12]. Gale MA. Combination intraoral and extraoral maxillofacial prostheses retained by osseointegrated implants placed in previously irradiated bone: a clinical report. J Prosthet Dent 1990;64:403-5.
[13]. Lemon JC, Martin JV, King GE. Modified technique for preparing a polyurethatie lining for facial prosthesis. J Prosthet Dent 1992;67:228-9.
[14]. Godoy AJ, Lemon JC, Nakamura SH, King KG. A shade for acrylic facial prosthesis. J Prosthet Dent 1992;68;120-122.
[15]. Rieger J (2002) Speech outcomes in patients rehabilitated with maxillary obturator prosthesis after maxillectomy: a prospectivestudy. Int J Prosthodont 15:139–144