

Early Prosthetic Management of Maxillectomy, Hemimandibulectomy Patient with a Lateral Mid Facial Defect: A Case Report

Jayasree Komala · Dileep Nag Vinnakota ·
Tirupathi Reddy Banda · Sriharsha Babu Vadapalli

Received: 23 May 2011 / Accepted: 14 December 2012 / Published online: 25 December 2012
© Indian Prosthodontic Society 2012

Abstract Maxillofacial prostheses for acquired defects have become more complex and sophisticated with advances in surgical, physical, and rehabilitative dentistry, but before planning, orofacial structures must be analyzed as to the specific cause and the consequent objectives of rehabilitation. Also retention of facial prostheses is very much challenging. Hence, we are presenting the fabrication of an interim prosthesis obturator and cheek prosthesis to restore the speech, help in deglutition and prevent drooling of saliva.

Keywords Maxillofacial prostheses ·
Interim prosthesis obturator · Cheek prosthesis

Introduction

Management of acquired maxillary and mandibular defects is a part of comprehensive Prosthodontics. Patients with neoplastic diseases are often treated with surgical excision resulting in partial or total maxillectomy and/or mandibulectomy. Currently, there are many reconstructive techniques for these defects. But large defects that result from extirpation of neoplastic lesions require facial prosthesis to restore speech and deglutition, to reduce the associated psychological stress and to prevent drooling of saliva. The success and the failure of the prosthesis in such cases

depends on factors such as degree of malignancy, propensity of recurrence, the level of resection and other associated complications. Rehabilitation requires an immediate post surgical prosthesis, interim prosthesis and definitive prosthesis with each having its own purpose.

Hence, this case report presents early management of a patient with maxillectomy and hemimandibulectomy with a lateral mid facial defect and treatment plan for definitive prosthesis.

Case Report

A 28 year old male patient was referred to the Department of Prosthodontics; SVS institute of dental sciences; Mahbubnagar; Andhrapradesh; India after surgical excision of squamous cell carcinoma of the right buccal mucosa (Figs. 1, 2, 3, 4). Thorough examination revealed maxillectomy and hemimandibulectomy on the right. Maxillary defect was Aramany class I [1], mandibular defect according to Cantor and Curtis's classification class III [2, 3] with lateral facial defect (Fig. 5). For the present case, an interim prosthesis obturator and cheek prosthesis were planned to restore speech, help in deglutition and to prevent drooling of saliva.

Clinical Procedure

Maxillary impression and facial moulage (Figs. 6 and 7) were made with high viscosity irreversible hydrocolloid (Jeltrate, Dentsply, York, PA, USA). A conventional prosthodontic protocol of boxing and pouring both the impressions and facial moulage with Type III dental stone (Kalstone; Kalabhai karson, Mumbai, India) was done.

J. Komala · D. N. Vinnakota · T. R. Banda ·
S. B. Vadapalli (✉)
Department of Prosthodontics, SVS Institute of Dental Sciences,
Mahbubnagar 509002, Andhrapradesh, India
e-mail: sriharshavadapalli@gmail.com

D. N. Vinnakota
e-mail: dileepnagmnds@yahoo.co.in



Fig. 1 Pre-surgical frontal view of the patient



Fig. 2 Squamous cell carcinoma of *right* buccal mucosa-intraoral view



Fig. 3 CT scan image showing erosion of *right* buccal plates in molar regions

An 18 gauge hard, round, stainless steel orthodontic wire (KC Smith & Co, Mon Mouth, UK) was manipulated to make a well fitted labial bow to all the buccal and facial

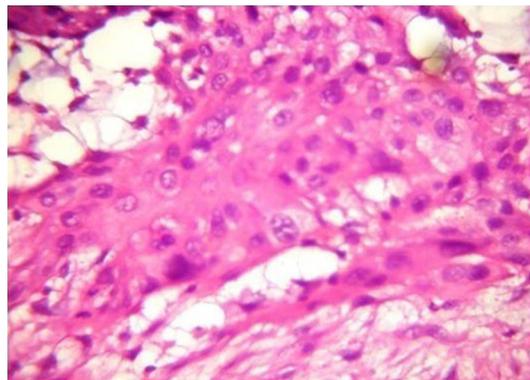


Fig. 4 Histopathology showing moderately differentiated squamous cell carcinoma



Fig. 5 Postsurgical photograph with lateral mid facial defect



Fig. 6 Maxillary impression with irreversible hydrocolloid

surfaces of maxillary teeth on the stone model, and wax up was done in the form of an obturator without teeth (Fig. 8). After flasking, and dewaxing, packing was done with heat polymerizing clear Polymethyl methacrylate (Trevalon; DENTSPLY, York, PA, USA) and polymerized according to manufacturer's instructions in a conventional manner. The prosthesis was finished and polished after deflasking (Fig. 9).

Wax pattern for cheek prostheses was built-up on the moulage (Fig. 10). After dewaxing, packing of the



Fig. 7 Impression for facial moulage



Fig. 8 Waxup for obturator with 18 gauge labial bow adapted



Fig. 9 Obturator with heat polymerizing clear polymethyl methacrylate

dewaxed mould of cheek prostheses was carried out with MDX4-4210-base silicone material (Dow Corning Corp, Midland, USA). It was intrinsic stained with KT-699 (silicone coloring kit, Factor II, Lakeside, AZ, USA) and cured for 2 h at 90° C. After curing of prosthesis, deflasking was done; excess silicone fins were removed, trimmed and cleaned.

Tryin of both the obturator and cheek prostheses was done.

Cheek prosthesis was extrinsically colored with trichloroethane (Alfa Aesar GmbH & Co. KG. Germany) and



Fig. 10 Facial moulage with waxup for cheek prosthesis

oil pigments (Factor II) to match with skin colour of the patient (Fig. 11).

Two sets of cobalt samarium magnets (Jobmasters, Randallstown, MD, USA) with opposing poles on each side were planned for retention of cheek prostheses (Fig. 12). Magnets position was marked, during try in of prostheses. Unlike poles were placed facing opposite to each other in each prostheses (Fig. 13). After embedding the magnets in two prostheses, they were covered with very thin layer of autopolymerizing clear polymethyl methacrylate (Trevalon clear; Dentsply, York, PA, USA) in obturator and with silicone in cheek prostheses respectively. (Fig. 14 and 15).

Obturator relining was done with autopolymerizing relining material (EverSoft, Dentsply, York, PA, USA), for comfort of the patient and easy insertion and removal of the obturator.



Fig. 11 Cheek prosthesis external surface



Fig. 12 Cheek prosthesis tissue surface with embedded magnets



Fig. 13 Obturator in place with embedded magnets



Fig. 14 Extraoral view of patient wearing the prostheses

Instructions were given for maintenance, removal and placement of both the prostheses.

Discussion

Prosthetic rehabilitation is the main stay of therapy for large defects acquired through the surgical excision of malignancies. Intraoral and extraoral prostheses can be constructed by various methods of auxiliary retention such as extensions



Fig. 15 Patient wearing prostheses close up view

from the denture [4], magnets [5], adhesives [6–8], osseointegrated implants [9] and combinations of the above.

For the present case, considering the psychological condition of the patient, as an interim prosthesis, obturator and cheek prosthesis were fabricated. They could restore speech, help in deglutition and also prevented drooling of saliva. Retention of cheek prostheses to the obturator which was a main challenge can be obtained by many methods but, magnets were selected, as there was sufficient space to utilize them without hindering the external appearance of the prosthesis.

As recurrence and metastasis of the lesion was suspected, cast-metal framework was not planned and the labial bow made of 18 gauge wire was used for retention of the intraoral prosthesis. Final definitive prosthesis in cast metal framework was planned once the recurrence was ruled out.

Though a definitive prosthesis was planned after radiation therapy, unfortunately the patient had metastasis to the vital organs and the general prognosis was compromised. The patient was not ready for any other intervention and he wanted to continue with the interim prostheses as they were serving the important purposes.

Conclusion

For any treatment, true outcomes are important than surrogate outcomes. In this case, with the early prosthesis alone, we could fulfill the true outcomes of the patient without using any advanced strategies and within the financial limits of the patient. In situations like these, we need to compromise on certain aspects as patient wishes are more important in such cases.

References

1. Aramany MA (1978) Basic principles of obturator design for partially edentulous patients. Part I. classification. *J Prosthet Dent* 40:554–557

2. Cantor R, Curtis TA (1971) Prosthetic management of edentulous mandibulectomy patients. Part 1: Anatomy, physiologic and psychologic consideration. *J Prosthet Dent* 25:446
3. Fonsica RJ, Davis WH (1986) Reconstruction preprosthetic oral and maxillofacial surgery, 2nd edn. WB Saunders Company, Philadelphia, pp 1063–1067
4. Fattore L, Edmonds DC (1987) A technique for the obturation of anterior maxillary defects with accompanying midfacial tissue loss. *J Prosthet Dent* 58:203–205
5. Dumbrigue HB, Fyler A (1997) Minimizing prosthesis movement in a midfacial defect: a clinical report. *J Prosthet Dent* 78:341–345
6. Amnuay SK, Khan Z, Goldsmith LJ (2000) Effect of adhesive retention on maxillofacial prostheses. Part I. Skin dressings and solvent removers. *J Prosthet Dent* 84:335–340
7. Wolfaardt JF, Tam V, Faulkner MG, Prasad N (1992) Mechanical behavior of three maxillofacial prosthetic adhesive systems: a pilot project. *J Prosthet Dent* 68:943–949
8. Parel SM (1980) Diminishing dependence on adhesives for retention of facial prosthesis. *J Prosthet Dent* 43:552–560
9. Chang TL, Garrett N, Roumanas E, Beumer J (2005) Treatment satisfaction with facial prosthesis. *J Prosthet Dent* 94:275–280