

Rehabilitation of a Patient with a Left Sided Hemi-Maxillectomy Patient with an Interim and Definitive Obturator: A Case Report

Vishwas Kharsan^{1*} Meenal Meshram² Shailesh Bhalerao³ Divya Naik⁴

¹Associate Professor, Department of Prosthodontics, Nair Hospital Dental College, Mumbai, Maharashtra, India.

²Ex Assistant Professor, Department of Prosthodontics, Government Dental College and Hospital, Mumbai, Maharashtra, India.

³Ex Assistant Professor, Department of Prosthodontics, Government Dental College and Hospital, Mumbai, Maharashtra, India.

⁴Assistant Professor, Department of Prosthodontics, Government Dental College and Hospital, Mumbai, Maharashtra, India.

ABSTRACT

Background: Hemimaxillectomy resulting in palatal defect may cause several problems including difficulties in speech, swallowing, and mastication. Change in facial appearance and loss of underlying tissues also results in emotional stress, social phobia, and psychological problems. Prosthetic rehabilitation for partial maxillectomy patients includes separation of oral and nasal cavities, primarily, to allow adequate deglutition and articulation, support of the soft tissue to restore the midfacial contour, and an acceptable aesthetic results. A palatal obturator prosthesis serves to fulfil all these purposes effectively and number of designs have been suggested over the years. This article describes a case report of systematic approach for prosthodontic rehabilitation of patient with hemi-maxillectomy defect of the left side with a definitive one piece hollow bulb obturator.

Keywords: Definitive Obturator, Hemi-Maxillectomy, Hollow Bulb, Maxillofacial Prosthesis.

INTRODUCTION

Squamous cell carcinoma Is one of the leading causes of morbidity and mortality in the world today. Squamous cell carcinoma of the oral cavity is especially prevalent in India, attributing to the rampant consumption of tobacco in its various forms. Treatment primarily involves surgical excision and partial maxillectomy is one of the most common procedures undertaken¹.

Partial maxillectomy includes removal of segments of the maxilla depending upon the extent of involvement. Aramany provided a classification of the various kinds of partial maxillectomy defects seen and their relationship to the remaining teeth ². Prosthetic rehabilitation for partial maxillectomy patients includes separation of oral and nasal cavities, primarily, to allow adequate deglutition and articulation, support of the soft tissue to restore the midfacial contour, and an acceptable aesthetic results and an obturator prosthesis serves to fulfil all these purposes effectively and number of designs

have been suggested over the years³. This article describes a case report of systematic approach for prosthodontic rehabilitation of patient with hemi-maxillectomy defect of the left side with a definitive one piece hollow bulb obturator.

CASE REPORT

A 52 years old male patient reported to the Department of Prosthodontics, Nair Hospital Dental College, with a complaint of a broken obturator. Having undergone hemimaxillectomy for the left side after being diagnosed with squamous cell carcinoma of the left alveolus 7 years back, the patient had been using an interim obturator until 8 months back when it fractured on impact.

Intraoral examination revealed a well healed left hemimaxillectomy defect lined by an apparently healthy mucosa (Fig.1). The patient presented with a well hydrated oral cavity and did not report any discomfort whatsoever. After examination of the defect both visually and by palpation to gauge the

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*Correspondence Dr. Vishwas Kharsan.

Department of Prosthodontics, Nair Hospital Dental College, Mumbai, Maharashtra, India.

Email: Not Disclosed



Fig 1: Intraoral examination of a well healed left hemimaxillectomy defect lined by an apparently healthy mucosa.

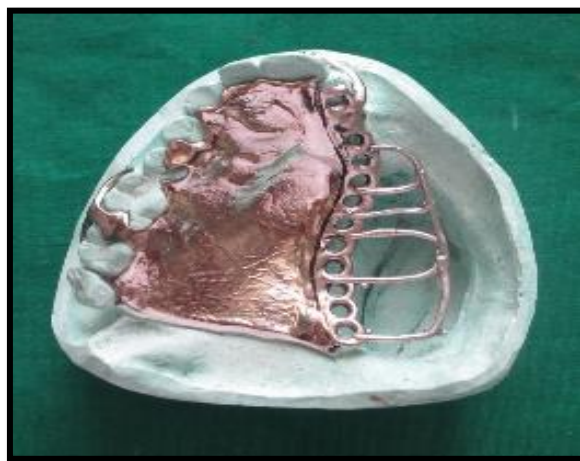


Fig 4: Metal framework obtained after casting.

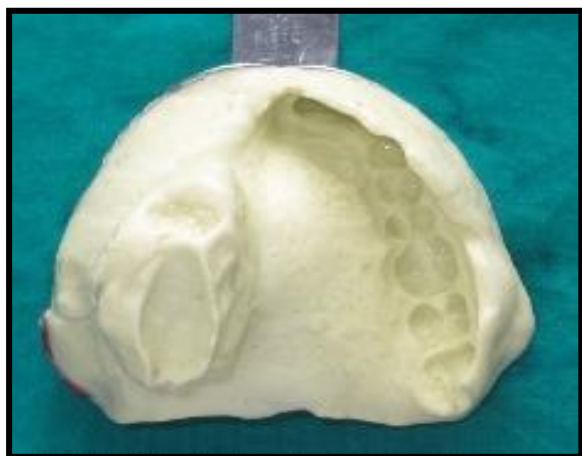


Fig 2: Preliminary impression made with irreversible hydrocolloid impression material.



Fig 5: Fabrication of a hollow bulb with the help of putty index.



Fig 3: Obturator framework was planned according to the protocol given by Aramany.



Fig 6: Final processed prosthesis (definitive one-piece hollow bulb obturator).



Fig 7: Prosthesis In-situ (definitive one-piece hollow bulb obturator).

condition of the lining mucosa and to uncover any previously undetected undercuts, the decision to provide the patient with a hollow bulb definitive obturator was reached.

Preliminary impressions were made in irreversible hydrocolloid after packing in moist gauze into the depth of the defect (Fig.2). The diagnostic cast obtained thereafter was surveyed. The survey lines obtained revealed adequate undercuts without the need to introduce any antero-posterior tilt or mouth preparations to modify the depth of the same.

The obturator framework was planned according to the protocol given by Aramany. Embrasure clasps were planned between the first and second molars and the first and second premolars, while an infrabulge clasp was planned approaching the central incisor from the defect area. Mouth preparations were performed accordingly (Fig.3).

A custom tray, fabricated over the diagnostic casts after blocking out the dentulous portion with baseplate wax, was used to make the final impression. Tissue moulding was performed using low fusing modelling compound. Layers of low fusing compound were added over the defect side of the custom tray and tissue moulding performed after each increment. Once sufficient bulk was obtained in relation to the defect size, the modelling wax in the rest of the tray was removed and the final impression was made using light body addition silicone.

The master casts were thus obtained, on which the planned designing of the metal framework was

done. After blocking out the undercuts, the master cast was duplicated to obtain a refractory cast. The wax pattern was adapted onto the refractory cast using pattern wax and after the casting, the metal framework was obtained (Fig.4).

The metal framework was tried in the patient's mouth and checked for proper adaptability, complete seating, retention and stability. Next, a hollow bulb was fabricated to engage the defect using the putty index technique (Fig.5).

After blocking the undercuts in the defect with baseplate wax, autopolymerising acrylic resin was adapted to the walls of the defect portion of the master cast, extending over onto the tissue adjacent to the defect. Next, an amount of addition silicone in putty consistency was manipulated and adapted into the defect area, stopping just a couple of millimetres short of the adjacent palate. Before the putty could cure, the metal framework was seated onto the cast and its extensions adapted onto the putty. Additional layers of autopolymerising resin were adapted onto the cast now, so as to cover the putty index as well as to incorporate the framework extensions. On complete curing, the framework along with the obturator bulb was retrieved and a vent was created on the lateral wall of the bulb which aided in removal of the putty from within. On removal, the vent was obliterated with autopolymerising acrylic resin and thus a hollow bulb was obtained.

A wax rim was adapted onto the obturator plate and a maximum intercuspation record was made. A facebow record was then made and transferred onto a semi adjustable articulator. (Hanau Wide Vue). Teeth arrangement was done. After the trial of the waxed up denture (Fig.6), the denture was processed in heat activated acrylic resin.

The resultant hollow bulb obturator was inserted, check for retention, stability, adaptation and necessary adjustments made.

DISCUSSION

Prosthetic therapy for patients with acquired surgical defects of maxilla can be divided into three phases of treatment with each phase having different objectives. A definitive obturator, given only after complete healing of the defect provides a

stable, long term solution to the maxillectomy patient ⁴.

A hollow bulb serves multiple purposes namely (i) to aid in speech resonance, (ii) to reduce the weight on the unsupported side, (iii) possibly to provide facial aesthetics and (iv) to act as a foundation for a combination of extraoral prostheses in communication with the intraoral extension ^{2,5}.

Retention of an obturator is of prime concern and considering the amount of loss of tissue present, the remaining teeth and border areas are critical factors. The teeth are the greatest asset for providing retention of the obturator prosthesis. The movement of an obturator might produce a great amount of stress intraorally and the condition of the remaining teeth may be the most critical factor in evaluating the amount of stress that remaining teeth may be able to absorb.

CONCLUSION

A proper diagnosis and a well-designed treatment plan will result in pleasant outcomes. Rehabilitation with obturator prosthesis appears to be a functional and effective treatment modality ⁶.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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