

COMPLETE DENTURE OBTURATOR PROSTHESIS WITH FUNCTIONAL SALIVA RESERVOIR

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ABSTRACT

Rehabilitation of maxillofacial defects is considered to be one of the most challenging treatment for a Prosthodontist. Rehabilitation of form, function and aesthetics is the prime objective of prosthodontic care. There are several methods for reconstruction of maxillectomy defects. Rehabilitation with obturator prosthesis is one of them. Obturator separates oral and nasal cavity and improves the phonetics, respiration, mastication, swallowing and overall improves the quality of life of the patient. Rehabilitation of completely edentulous patient is a challenge for prosthodontic rehabilitation and also adaptive capabilities of the patient. Patients who are undergoing radiotherapy or underwent radiotherapy in past develops xerostomia, complete denture prosthesis are poorly tolerated in patients with xerostomia. A salivary reservoir can be incorporated into a denture which will provide continuous, slow, sustained release of salivary substitutes. This article describes the prosthodontic rehabilitation of a completely edentulous patient who was diagnosed with squamous cell carcinoma of hard palate. Secondary to radiotherapy patient developed xerostomia. To make the prosthesis comfortable patient was given a definitive complete denture obturator prosthesis with saliva reservoir. Quality of life of the patient was improved with properly designed obturator. The obturator restored patients mastication, swallowing, aesthetics, resonance and speech.

Keywords: Mastication, Prosthodontics, Speech, Quality of Life, Denture, Complete, Xerostomia, Carcinoma, Squamous Cell

INTRODUCTION

One of the most commonly occurring malignancies in India is Oral Cancer. The primary objective of rehabilitating maxillofacial defects is to eliminate the disease and to improve the quality of life. (1) edentulous patient with large palatal defect presents a significant challenge for prosthodontic rehabilitation (2). Patients with xerostomia have difficulty in tolerating dentures and may lead to tissue irritation. Complete Dentures can be incorporated with saliva reservoir which will provide continuous release of salivary substitute.

MATERIAL AND METHOD

A completely edentulous male patient reported to the department of prosthodontics. He was diagnosed with squamous cell carcinoma of hard palate. Patient was planned for surgical resection and concomitant chemotherapy and radiotherapy. Clinical examination revealed a large granular swelling involving the left anterolateral portion of the hard palate. Prosthodontic rehabilitation of the defect was done in three phases. Firstly an immediate surgical obturator was fabricated before the surgery and was placed immediately after the surgical resection of

tumour (Figure 1). During the course of the treatment patient developed xerostomia and lost his remaining teeth .After 4 months of complete healing (figure 2) patient was given a definitive complete denture obturator prosthesis with saliva reservoir.

Treatment Procedures

Maxillary primary impression of maxillary arch was made with irreversible hydrocolloid and mandibular primary impression was made with impression compound impressions were poured with type 3 dental stone and special tray was fabricated. Maxillary border molding was carried out with green stick compound and final impression was made with polyvinyl siloxane impression material and mandibular final impression was made using functional impression technique with all green impression material. Both the impressions were disinfected and poured with Type III dental stone. Permanent denture bases were fabricated and occlusion rims were prepared. Jaw relation was done and teeth arrangement was done using monoplane teeth and try in was done.

Sprue wax was used to make space for the reservoir on the palatal aspect and was tried again to check for patient comfort while speaking. It was invested in a dental plaster; hollow bulb obturator was made using lost salt technique. A thin layer of heat cure acrylic resin was placed in the defect area of the mold and covered with salt filling the concavity completely. A second layer of heat cure acrylic resin was placed on top of the salt bag in dough stage and packed. (Figure 3). Obturator was carefully retrieved and fishing and polishing was done. Two holes were made on the sides of the hollow bulb of the obturator and the salt was removed using hot water and syringe until the bulb was completely empty. These holes were closed using self-cure acrylic resin and finally the obturator was finished and polished.

The obturator was tried in the patient's mouth. Patient was satisfied with the prosthesis as it was light in weight, retentive, comfortable and her speech was much better. Obturator prosthesis was duplicated with irreversible hydrocolloid impression material and poured with type 3 dental stone. 2mm Biostar sheet was pressed onto the duplicated model

and was trimmed to act as a lid over the reservoir space. lid was then sealed onto the obturator with auto-polymerising acrylic resin. 5ml of wet -mouth gel was injected through the sides of the lid to fill the reservoir space. (Figure-4) Patient was given instructions regarding the proper method of injecting wet mouth gel, he was happy and satisfied with the prosthesis. (Figure 5)

Patient was recalled after 24 hours, 7 days and then monthly follow up for six months and then every six monthly follow up.

DISCUSSION

Maxillofacial defects may be a result of congenital malformations, trauma or surgical resection of tumors. Primary objective of rehabilitating maxillectomy defects is to improve the quality of life for these individuals (3). Post-surgical effect usually has serious consequences because it disturbs both form and function of normal stomatognathic system. Surgical reconstructions are usually done when defects are small in size. For larger defect, prosthetic rehabilitation is a far better treatment alternative (4). Effective obturation improves the speech, phonetics (5).

Quality of life of patients with maxillary defects could obviously be improved with the supply of a properly designed obturator (6).

Several techniques and materials are described previously to fabricate a light-weight, hollow obturator. In this case, salt was used to make the hollow bulb as salt is easy to remove using hot water because of its fine granules (7).

Xerostomia is one such a standard complication after RT because salivary glands are very sensitive to radiation (8). It disturbs the normal homeostasis of the oral cavity and creates a negative impact on individuals health and overall quality-of-life (9). Moreover, as saliva acts as a skinny film between the dentures and therefore the oral mucosa, its absence decreases retention of the dentures and increases inflammation and ulceration in the oral cavity (10).

In patients suffering from severe xerostomia, salivary substitutes may suggested. In completely or

partially edentulous patients, one method of using salivary substitutes is to incorporate salivary reservoir in either upper or lower denture. This article presents a simple method of incorporating salivary reservoir in the maxillary obturator of a xerostomic patient.

RESULT

With the incorporation of saliva reservoir in the complete denture obturator prosthesis, prosthesis was well tolerated and there was improvement in masticatory ability, speech and overall improvement in the quality of life of the patient.

CONCLUSION

Patients with maxillofacial defects who are rehabilitated with obturator prosthesis can resume their social life. This modified technique of incorporating salivary reservoir resulted in denture which provided good lubrication of the oral tissue. There is marked improvement in respiration, speech, swallowing, mastication and overall improvement in equality of life of the patient.

This paper reports a technique for the construction of a maxillary obturator incorporating salivary reservoir.

Conflict of Interest: Nil

Declaration of patient consent- Obtained

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Figures:-



Figure 1- left sub total maxillectomy and immediate obturator in situ



Figure 2- four months post operatively, completely edentulous maxillary arch with left maxillectomy defect and completely edentulous mandibular arch with resorbed ridge



Figure 3- sprue wax adapted on palatal aspect for saliva reservoir and salt bag to be packed to make the prosthesis hollow

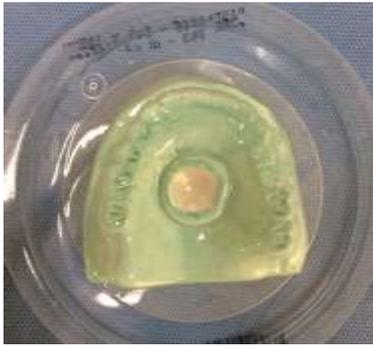


Figure 4- lid of the reservoir fabricated with 2 mm biostar sheet and reservoir space was filled with wet mouth



Figure 5 – comparison of pre-op and post -op