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Prothodontic Rehabilitation of patient treated with Squamous Cell Carcinoma of right upper alveolus: A Case Report

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Abstract:
Orofacial trauma and Orofacial Cancers are the main causes of the acquired maxillary defects. These maxillary defects affect the quality of life of patients as it leads to functional impairments such as fluid leakage, nasal twang, nasal regurgitation and compromised mastication. Obturator prosthesis establishes the functional separation between nasal and oral cavities which not only provides improvement in speech and resonance but also in masticatory capabilities.
This case reports explains the prosthodontic rehabilitation of a 63year old completely edentulous male patient who had undergone surgical resection for squamous cell carcinoma of upper right alveolus followed by radiotherapy. Modified denture insertion technique was used to accommodate reduced mouth opening following surgical resection. Fabrication of hollow bulb Functional Obturator was done using Heat cured silicone soft liner for better retention and patient compliance.

Keywords: Maxillectomy, Maxillary defect, Obturator, Permanent Soft liner, Squamous Cell Carinoma,

1. Introduction

Maxillary defects are generally caused by surgical resection of benign or malignant neoplasms, enucleation of maxillary cysts, congenital malformation and trauma[1,2] The maxillary defects create oronasal and oroantral communication impairing mastication, speech and esthetics affecting quality of life standards for the patient. [3,4,5] Early management is therefore important in maintaining the function and enhancing the patient's low self-esteem caused by the maxillary defect.[2,6] Well-constructed maxillofacial prosthesis will help them lead a normal life in terms of improved overall quality of life index. This case report describes prothodontic rehabilitation of patient who underwent surgical resection for carcinoma of right upper alveolus.

2. Case Report

A 63 yr old male patient reported the dental centre with chief complain of difficulty in mastication, altered speech and loss of fullness on the right side of face. The patient had undergone surgical resection for squamous cell carcinoma of right upper alveolus. Extraoral examination revealed gross facial asymmetry with depression on the right side of maxilla and reduced mouth opening caused by surgical resection of right upper alveolus with nasal twang **(Fig1& 2)**.

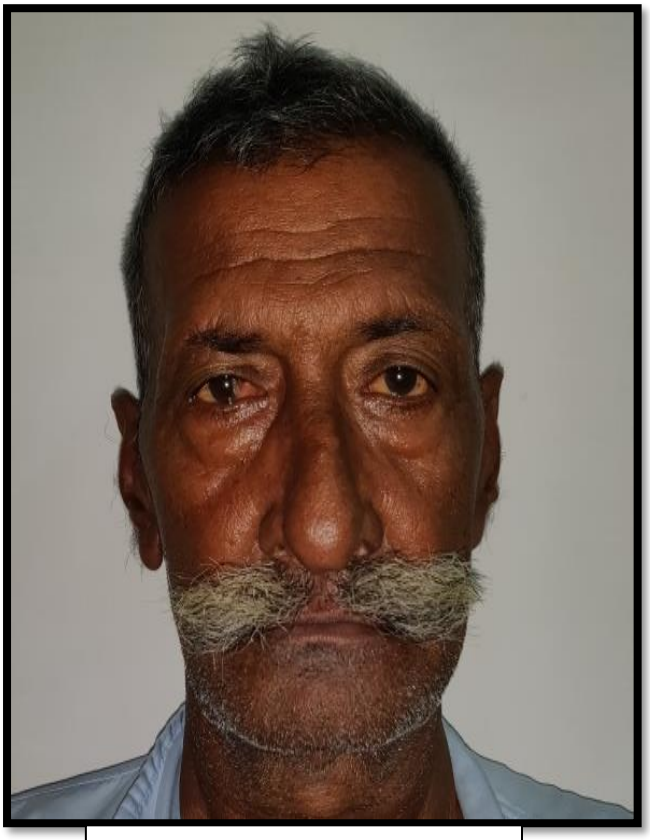


Fig 1: PRE-OP SURGERY FRONTAL

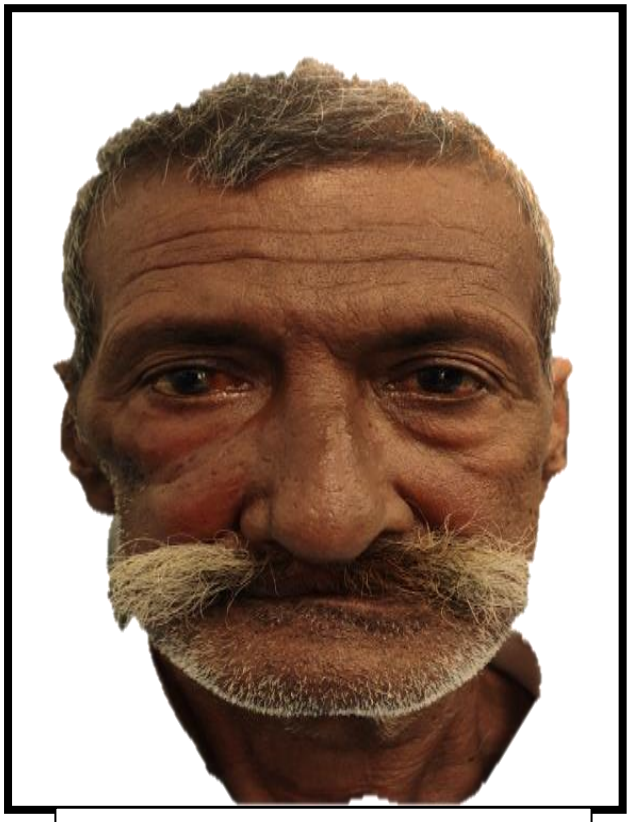


Fig 2: POST OP SURGERY MAXILLECTOMY

Intraoral examination revealed completely edentulous maxillary and mandibular arches with defect in right upper alveolus and palatal bone extending from right canine region to maxillary tuberosity denoting Brown's class 2b maxillary defect **(Fig 3).**

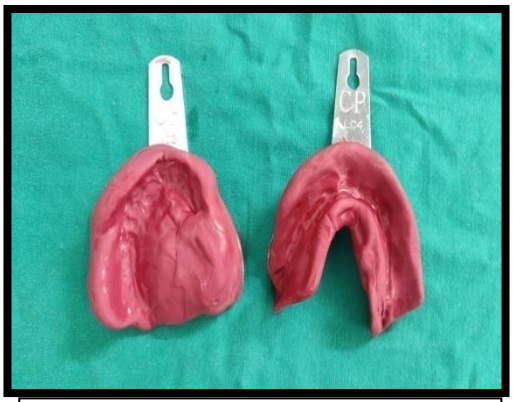


Fig 3: INITIAL IMPRESSION WITH IMPRESSION COMPOUND

To start the treatment with firstly, the defect was examined; cleaned and damp gauge was placed inside the defect to protect the tissues. As the mouth opening was limited, the path of insertion for maxillary impression tray was modified. The maxilla was approached from right side leveraging additional space created by maxillary defect. Primary impressions were made with impression compound **(Fig 4)**.

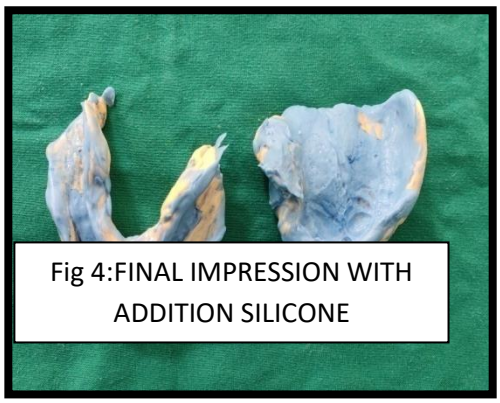


Fig 4:FINAL IMPRESSION WITH ADDITION SILICONE

Custom Special trays were fabricated using auto-polymerizing acrylic resin and border molding was done with addition silicone putty impression material. Tray adhesive was applied to the tray and allowed to dry. Light body consistency of addition silicone impression material was used to make final impression **(Fig 5).**



Fig 5: REDUCED MOUTH OPENING POST MAXILLECTOMY

The impressions were poured using Type III gypsum product (dental stone). The maxillary and mandibular casts were duplicated using laboratory based model duplicating silicones and poured again with type III dental stone. The maxillary and mandibular master casts were then waxed up and flasked followed by dewaxing. The maxillary defect region was loaded with permanent soft liner while the rest

of the maxillary and mandibular ridges were loaded with heat cure acrylic resin. Permanent denture bases were obtained after acrylisation for both the arches with Maxillary permanent denture base having a hollow bulb of permanent soft liner in areas in contact with the lesion. The denture bases were then tried intraorally for the fit and retention .Occlusal rims were fabricated and jaw relation records were made. The jaw relation records were transferred to duplicate casts which were then articulated followed by teeth arrangement. The trial denture bases were evaluated clinically for esthetics, phonetics and occlusion. The trial denture bases were flasked , dewaxed and acrylised using heat cure acrylic denture base material to obtain the final maxillary and mandibular dentures **(Fig 6).**



Fig 6: FINAL DENTURE WITH HOLLOW PERMANENT SOFT LINER BULB

Hollow denture design is used using silicone putty spacer technique during the acrylisation of the trial denture bases with bulb of permanent soft liner to reconstruct large volume of lost pertion without increasing much weight of prosthesis. A small acrylic lid is also waxed up, acrylised and sealed over the hollowed portion using auto-polymerising acrylic resin. Modified denture insertion technique was used with maxillary denture being approached first from the left side followed by the mandibular denture insertion. The final denture was checked intraorally for the fit, esthetics, phonetics and occlusion of teeth**(Fig 7).**



Fig 7: POST DENTURE INSERTION

The patient was given detailed instructions on home care prosthesis maintenance. The patient was counseled for maintaining good oral and denture hygiene to prevent bacterial and fungal colonization on the prosthesis and to protect the underlying tissues. The patient was instructed to remove any exudates over intaglio surface of prosthesis gently with soft bristle brush and nonabrasive mild liquid soap.

3. Discussion

Squamous cell carcinoma of oral cavity is one of the most prevalent malignant neoplasia found globally. The patients undergoing surgical intervention for treatment of carcinoma suffer anatomical, functional and psychological limitations. Thus, maintaining the optimum health, function and esthetics of such a patient become utmost important when surgical reconstruction of the defect not feasible. In these cases, prosthodontic rehabilitation using an Obturator not only provides physical barrier between oral and nasal cavities,thus, restoring functions of stomatognathic system of speech, mastication, swallowing and improved esthetics but also support the surgical site by sealing the defect [6,7,8]

In the present case, the Obturator was modified using silicone based permanent soft lining material (MOLLOPLAST B) for fabrication of the bulb of the defect. The material is non-irritant, non-toxic and bio-compatible. It has plasticized ethyl methacrylate polymers that bind plasticizers to methacrylate, thus, preventing plasticizers from leaching out and keeping the material resilient for significantly longer duration. This resiliency for longer duration has provided tight seal between the palatal defect and Obturator generating sufficient peripheral pressure to prevent fluid leakage. Silicone based permanent soft lining material when comes in contact with moisture becomes flexible and engages tissue undercuts to seal the defect. The retention here is obtained from the remaining residual alveolar ridge of contra lateral side and intra defect undercut present anteriomedially. The flexibility and resiliency of this material helps the patient in engaging undercuts without trauma and irritation to soft tissues in the defect, thus, leading to effortless insertion of obturator leading to better patient compliance and less weight of the final denture. [9,11,12]

4. Conclusion

Early prosthodontic management of acquired maxillary defects with Obturator help in maintaining not only the function and esthetics of the patient but also enhancing the low self esteem , thus, taking psychological well-being in consideration too. Well-constructed Obturator prosthesis in time significantly improves the oral health related quality of life of patients.

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