



DEFINITIVE OBTURATOR FABRICATION FOR A HEMI MAXILLECTOMY PATIENT: A CASE REPORT

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ABSTRACT

Brief background: This paper describes step by step clinical and laboratory procedure involved in the rehabilitation of a hemimaxillectomy patient using obturator prosthesis.

Materials and methods: A complete review of the history of the patient and clinical oral examination revealed that the patient had undergone surgical removal of part of maxilla and had multiple palatal openings. The patient was also partially edentulous both in the maxilla and mandible. An obturator with remaining teeth for the maxilla and a removable partial denture for mandible was planned for the patient.

Discussion: Discussion related to the functional restoration of the maxillectomy defect by obturators and the clinical importance and various functions of obturators.

Summary and Conclusion: Surgical removal of part of maxilla or mandible due to pathology or trauma should be associated with an appropriately contoured restoration to prevent a physically debilitating and psychologically demoralizing experience for the patient.

Key words: Rehabilitation, debilitating, demoralizing, hemimaxillectomy, obturator

INTRODUCTION

The face is the patient's contact with the world, and it forms the physical basis for personal recognition. It follows that reconstruction of the face – by whatever means – is crucial to the patient's ability to function in society, to preserve dignity, and to survive.¹ Partial maxillectomy defects present a considerable reconstructive challenge for the prosthodontist. Probably the most common of all intraoral defects are in the maxilla, in the form of an opening into the nasopharynx.² The defect frequently is complex and involves the skin, bone, muscle, cartilage and multilayers of mucosa.³ Therefore reconstruction of such defects is often challenging. Various functions like mastication, speech, olfactory and gustatory sensations get affected. Speech is usually intelligible.⁴ Patients also have seepage of nasal sections into the oral cavity, poor lip seal, xerostomia, exophthalmoses and diplopia.⁵ Therefore the primary objective in each case should be to reconstruct a prosthesis which will restore the defect, improve esthetics, and thereby benefit the morale of the patient.

The partially edentulous maxillofacial patient, in whom there is extensive loss of supporting bone, usually has had extensive surgery for a tumour or traumatic jaw injury. In many instances, the patient has such a gross jaw defect that a complete denture would be unmanageable, but an obturator stabilized by the remaining teeth would be functionally adequate.⁶ In all partial denture treatment, the health of the remaining teeth should be preserved by not subjecting them to stress exceeding their physiologic limit as the ridge tissue is more resilient and displaceable than that of even a badly resorbed ridge. The size and location of the defect, remaining dentition, and supporting surface area of the remaining palate primarily determines the stability and retention of an obturator.⁷

This clinical report describes the prosthetic rehabilitation of a patient with carcinoma of the maxilla following radiation therapy and surgery.

CASE REPORT

A 48-year old male patient with palatal perforations reported to the Department of Prosthodontics, Subharti Dental College, Meerut.

A complete review of the history of the patient was made and a clinical oral examination completed. The patient had undergone hemimaxillectomy one year back due to carcinoma of the maxilla and had also undergone radiation therapy for the same around three months back. Due to this the patient had. He was not able to take fluids or solids easily. Deglutition and speech were almost impossible. There was presence of thick exudates in patient's oral cavity through the palatal perforations. The mucosa around the perforation was very fragile and started bleeding on even slight provocation.

The patient was partially edentulous both in the maxilla and mandible. The teeth remaining were in poor periodontal health and were mostly root stumps. Cast metal crowns were present on 24 and 26.

The treatment plan comprised of an obturator with remaining teeth for the maxilla and a removable partial denture for mandible. The root stumps could not be extracted as only three months have elapsed when the radiation therapy was given to the patient. The chances of osteoradionecrosis were very high if extraction was done.

STEPS IN REHABILITATION

- 1) All the defects in the palate were blocked by using gauze pieces to which thread were tied so that the gauze piece may not go inside the defect to an extent that it becomes difficult to retrieve it.
- 2) Initial impression was made with irreversible hydrocolloid in stock tray and primary cast poured.
- 3) Custom tray was made on the primary cast and border molding was done to record the functional anatomy of buccal and labial soft tissue surrounding the defect. The gross content of the defect is recorded using soft putty material and then the final wash impression is made using medium body additional polyvinyl siloxane impression material. Secondary impression of the lower arch was also made using medium body polyvinyl siloxane after border molding using green stick compound.
- 4) Master cast was poured with Type IV dental stone. Block out of the master cast was done. Denture base was fabricated using autopolymerising acrylic resin. Jaw relations were recorded and the casts were mounted on articulator.
- 5) Teeth arrangement was done and trial taken.
- 6) To aid in retention of the obturator Adams Clasp was given on 24 and 26.
- 7) Selective grinding of maxillary and mandibular teeth was done to improve occlusion.
- 8) After curing of the denture, the extensions of the obturator that blocked the palatal defects were trimmed to a certain limit as these extensions were interfering with the path of insertion and removal of the prosthesis. This led to bleeding of the mucosa around the defects as the mucosa was already very fragile.

9) A permanent soft lining material was used to reline the fitting surface of obturator portion along with its extensions so as to provide additional retention and engage the soft tissue undercuts without causing any bleeding of the surrounding mucosa. Permanent soft lining material was also applied on the fitting surface of the mandibular denture to provide cushion-like effect to the soft tissues around the root stumps.

The prosthesis was then inserted into the patient's mouth and checked for accuracy and retention. Patient's speech and masticatory efficiency was improved. Appearance was just satisfactory.

The patient was instructed on home care and prosthesis maintenance. Patient was asked to gently remove the exudates with wet cotton. Patient was recalled after three days.

At the first recall appointment the palate of the patient was observed to ensure the health of the soft tissues surrounding the defect. Adjustment of the prosthesis was done to resolve the pressure areas on the tissue and emphasis was given on the hygiene regarding prosthesis and home care. After the first recall the patient was asked to visit after three months.

DISCUSSION

Maxillofacial defects are highly individual and require the clinician to call upon all his knowledge and experience to fabricate a functional prosthesis. As with any other successful treatment it is very important to be aware of the principles of maxillofacial prosthetics and rehabilitation and then stick to them.

The primary goal of prosthetic obturation is closure of the maxillectomy defect and separation of the oral cavity from sino-nasal cavities. A successful prosthetic design for functional restoration of the maxillectomy defect utilizes the remaining palate and dentition to maximize the support, stability and retention of an obturator bulb.

A patient undergone hemimaxillectomy can experience unique alterations in the normal oral / craniofacial environment. The patient may suffer from facial deformity because of loss of bone, malocclusion, difficulty with speech and swallowing. The available denture bearing area is diminished and biting force is lessened. In many cases there is no proper vestibular or lingual sulcus form to the mucosa.⁸

An obturator fulfills many functions. It can serve for feeding purposes. It can be used to keep the defective area clean, thereby enhances the healing of the defect. It helps to reshape and reconstruct the palatal contour and/or soft palate². It also improves speech. It improves function by restoring deglutition and mastication. It also reduces the flow of exudates in the mouth.

The design of an obturator must take into account the tooth-tissue support considerations and the impact of the altered environment on the prosthesis support, stability and retention⁶. Instability of the obturator results in air and fluid leakage and thereby compromises function. Therefore positive support and stability should be provided to prevent rotation of the prosthesis. Any anatomic structure can be utilized to provide a firm base as well as maximum extension should be achieved in all directions so that the defect itself enhances stability of the obturator prosthesis.

The use of permanent soft lining material to engage the soft tissue undercuts (by relining) is well tolerated by the patient and also added to retention⁵.

SUMMARY AND CONCLUSION

The rehabilitation of a cancer patient, regardless of the site of the original tumour, presents complicated problems. There are many challenges when providing patients with prosthesis for

palatal deficiencies. Various factors that determine the prognosis of prosthetic reconstruction are the size of defect, availability of hard and soft tissues in the defect area, proximity of vital structures, systemic conditions and most important of all, patient's attitude and temperament. For the patient to be helped by reconstructive treatment, he or she must completely accept the situation, the prognosis, and the natural course of events.

FIGURES



Fig.1 Multiple defects in the palate of the patient



Fig.2 Mandibular ridge

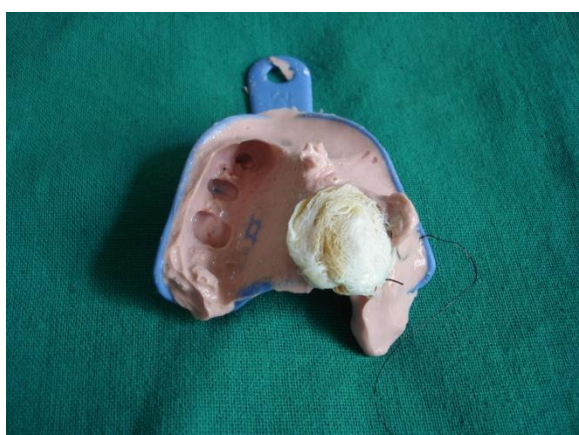


Fig. 3 Maxillary primary impression



Fig.4 Maxillary primary cast



Fig. 5 Maxillary secondary impression

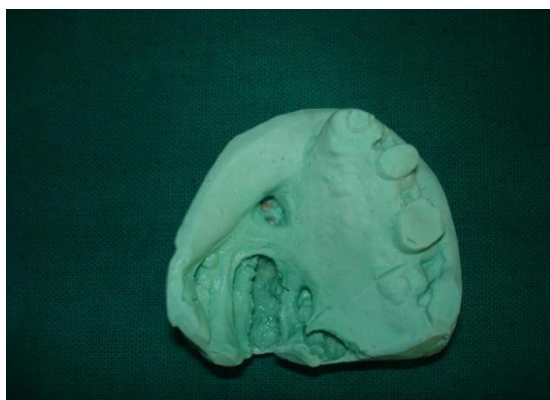


Fig.6 Maxillary secondary cast



Fig.7 Maxillary denture with Adams clasp for retention



Fig. 8 Maxillary and Mandibular denture



Fig.9 Maxillary and Mandibular denture in patient's mouth



Fig.10 Maxillary denture with permanent tissue conditioner applied to the tissue surface



Fig.11 Mandibular denture with permanent tissue conditioner applied to the tissue surface

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