



PROSTHETIC REHABILITATION OF HARD PALATE - A RECONSTRUCTIVE CASE REPORT.

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ABSTRACT

An important objective of prosthetic rehabilitation is to conserve any residual tissue. Patients undergoing resection of maxilla due to accidental casualties or benign or malignant tumor will have inadequacy in maxillary palatal area. Removable prostheses gets support, stability and retention mainly through anatomical structures such as teeth, alveolar bones and palate. When surgical intervention removes much of these structures, remaining tissue becomes too vulnerable to support the necessary prosthesis. Therefore, important considerations to be undertaken to attain extra support, retention and resistance while planning for obturator of maxillary defects.

In this case report we have advocated the application of an obturator that closes the defected cavity and also restores the masticatory functions. This obturator is retained by the stainless steel 19 gauge wire encircling the teeth in neighbouring quadrant, undercuts surrounding the defect. The prosthetic obturator was inserted in a 58-year old partially edentulous patient with an extensive maxillary defect. Subjective and objective evaluations indicated that the functional efficacy of obturator defined the quality of life of the patient. The concept of a obturator is a useful solution for the particular situation created by maxillectomy.

KEYWORDS : Maxillary palatal obturator, Bulb, Oro-nasal communication, Removable appliance.

INTRODUCTION:

Closure of oro-nasal communication and reconstruction of oral function and aesthetics in maxillectomy patients using retained and supported removable obturator prostheses is a well-established treatment modality. The overall improvement in the quality of life of the patient has been shown to be significant however still inferior to presurgical status. Trismus, xerostomia, and mucositis are well-known side effects of surgery, radiotherapy, and chemotherapy of the oral cavity. Fibrosis of the masseter and lateral pterygoid muscles can lead to a severe limitation in mouth opening, thus making prosthodontic procedures such as not only impression making is challenging for the operator but also the insertion of the obturator extremely difficult for the patient. Kinesiotherapy must be prescribed to the patient before the onset of trismus, and it should continue even after the completion of radiotherapy to prevent the late onset of trismus. [1] Obturator prostheses improve speech, mastication, and swallowing by re-establishing oronasal separation [2-4].

Aramany categorized the defect areas after maxillectomy into six classes based on the relationship of the defect to the remaining abutment teeth. [5]

Class I: The resection is performed along the midline of the maxilla; teeth are maintained on one side of the arch.

Class II: The defect is unilateral, retaining the anterior teeth on the contralateral side.

Class III: The palatal defect occurring on the central portion of the hard palate and may involve part of the soft palate. The dentition is preserved.

Class IV: The defect crosses the midline and involves both sides of the maxilla. Few teeth remain on one side.

Class V: The surgical defect is bilateral and lies posterior to the remaining abutment teeth.

Class VI: Anterior maxillary defect with abutment teeth present bilaterally in the posterior segment.

This case is a pure Class I type of defect. Removable obturator was planned to fix the oro- nasal communication.

Case Report:

A male patient aged 58 years reported to 32 Dental Bites and Implant Centre (Mumbai), with the chief complaint of inability

to chew and speak. Definitive obturator was to be made few months after the surgery. Patient complained that the surgical obturator was too loose and not stable. He came to seek dental treatment because he was not satisfied with his facial appearance as it was sagging on the left side of patient. On intra oral examination, it was observed that he had full mouth rehabilitation 3 years back, sagging of face on left side was due to inadequate alveolar support which was surgically removed due to tumor 1 year back. All teeth with prosthesis were present in 1st, 3rd, 4th quadrant. Complete 2nd quadrant along with alveolus was operated and removed surgically. Saliva and nasal secretion due oro-nasal communication was making the intraoral condition look bad [Figure 1].



Figure 1. Intraoral photos. of maxillary occlusal view and front view.

Patient also had slight defect in speech (resonant sound) while talking. The goals for the new obturator were to enhance the retention, support and stability and to better fit of the palatal closure so that patient can speak confidently as well. Vaseline was applied to the gauze piece inserted in the defected area so that alginate residue was not left inside the maxillary sinus or nose. Diagnostic cast was obtained from alginate impression (Tropocalgin, ZermakR) (Figure 2).

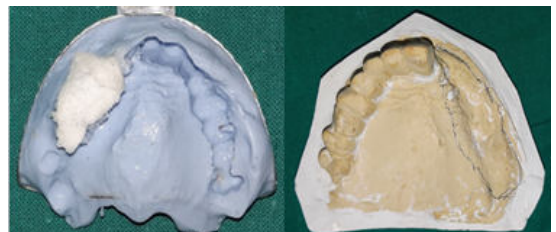


Figure 2. Diagnostic Impression and diagnostic cast of maxillary arch.

Individual tray was fabricated. Border molding was done by modeling compound in the same way as conventional partial denture fabrication. Impression was taken by silicone impression material (Express light body, 3M ESPE, St. Paul, MN, USA) (Figure 3).

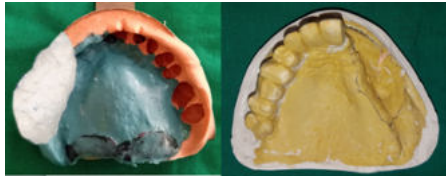


Figure 3. Border moulding and final impression and master cast of maxillary arch

A 19 gauge orthodontic wire was used to retain the removable prosthetic by encircling all the 1st quadrant teeth design of framework was made after fabrication of master cast. Record base was fabricated by sprinkle on method with self-cure acrylic resin material (DPI). Maxillary occlusal wax rim was made and adjusted. Tentative jaw relation was recorded and face bow transfer was done (Figure 4).



Figure 4. Face bow transfer.

Maxillary occlusal rim with jaw relation record was articulated with the mandibular dentulous cast and then mounted on Hanau wide view articulator. Maxillary teeth selection and shade matching was done by taking help of the remaining teeth. Teeth arrangement was done in 2nd quadrant and maximum intercuspation was achieved in relation with 3rd quadrant. Vertical stop was maintained by residual teeth. (Figure 5).



**Figure 5. Teeth arrangement
Figure 5. Articulator mounting and teeth arrangement**

Wax denture try-in was done in the mouth. Proper fit, esthetics, retention, stability and support were evaluated. Removable obturator was fabricated, polished and inserted intraorally. Minor occlusal adjustments were done inside the mouth (Figure 6).



Figure 6. Final obturator prostheses

DISCUSSION:

Patients undergone maxillectomy due to intraoral disability has complains about difficulty in swallowing, nasal fluids reflux through the nasal cavity and speech difficulties which was also observed in this case. There are many authors who claims that after installing obturator prostheses enhances the speech and reduces hypernasality, this confirmed soon after prostheses installed intraorally in described case. Hattori et al [6] credit such benefits to the blocking of air passage between the oral and nasal cavities and the facilitation of pronunciation due to the presence of artificial teeth and the prosthesis base. The case described in this article had difficulty in finding a Head and Neck Surgeon or a Plastic Surgeon that performed surgical reconstruction of the defective site therefore the prosthetic rehabilitation was chosen as treatment in this case.

Impression technique reported by Singh et al. [7] involved inserting Vaseline-embedded gauze inside the defected cavity to prevent impression material extravasation inside the nose or the maxillary sinus. In this case after the initial alginate impression for study models, the final impression was taken with light body in order to gather more anatomical detail and better adaptation of the device to the surrounding tissues. Both obturator and prosthesis were the part of each other which consisted of acrylic resin, the same material used for the prosthetic base. To reduce the weight of the prosthesis, an open or closed hollow obturator can be made. Although the closed bulb is the best option for not accumulating secretions and allowing a better cleaning and maintain good hygiene [8]. The support and retention made through long retention clasp of 19 gauge stainless steel wire encircling the 1st quadrant teeth which minimizes displacement and holds the prosthesis and improves sealing of communication. The intaglio surface of the obturator prostheses should be finished and checked for any roughness present, though buffing and polishing to done to ensure smooth and void free obturator bulb.

It is relevant to reinforce the importance of dental follow-ups, which reduces trauma to the communication area that would occur by pressure against the healing tissues by the overextended obturator and facilitated adequate positioning of the healing tissues, preventing excessive contraction and distortion of the area, which could hinder future definitive rehabilitation.

CONCLUSION:

For the success of obturator of maxillary defects excellent multidisciplinary communication between the oral surgeon and the prosthodontist to ensure adequate preoperative planning with complete understanding of the balance between oncologic resection and obturator. Communication and follow up with the patient is important which provider long time satisfaction. A successful obturator separates the oral cavity from the nasal cavity enhance speech, deglutition and cosmetic appearance.

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