

MAXILLOFACIAL PROSTHODONTIC MANAGEMENT OF AN ACQUIRED DEFECT

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INTRODUCTION

The disfigurement of face and the impairment of function for the individuals having acquired defects following surgical resection can effect the quality of life of the patient and thus preventing them from leading a normal life in society. Aramany in 1978 classified acquired maxillary defects in six classes based on the relationship of defect area to remaining abutment tooth¹. The present case report describes Aramany's class I defect with teeth present on one side of the arch as abutments and posteriorly soft palate was left intact.

Obturator (Latin: obturare, to stop up) is that component of a prosthesis which fits into and closes a defect within the oral cavity. It is basically a covering prosthesis that re-establishes the oral - nasal partition. The obturators are classified as obturators for congenital defects that can be fixed palatal, hinged palatal and meatal and that for acquired defects that are surgical, interim and definitive. The immediate or the surgical obturator shortens recovery time in the hospital and expedites the patient's return to the community as a functioning member. The obturator supports soft tissues after surgery and minimizes scar contracture and disfigurement thereby making a positive effect on the patients' psychology, prevents regurgitation of fluids and aids in speech resonance. The interim or the temporary obturator provides the patient with a comfortable and functional prosthesis until healing is complete, aids in mastication, speech, esthetics and morale. The definitive or the final obturator completely engages the defect and prevents nasal regurgitation of fluid, aids in mastication, deglutition, speech and promotes psychological upliftment of the patient. Artificial replacement of the teeth and palate aids speech, mastication, esthetics. The extension of the obturator superiorly into the defect provides the basis for retention, stability and support for the prosthesis².

This article describes a technique for the fabrication of one piece open hollow bulb obturator with drainage holes as the subject demonstrates excessive secretions.



FIG 1: Preoperative Intraoral view of the defect



FIG 2: Final Impression

CASE HISTORY

A 45 year old female patient reported to the Department of Prosthodontics with a chief complaint of defect in the left upper back region of the mouth (Fig 1). The patient had undergone surgery (hemi maxillectomy) for Adenoid Cystic Carcinoma of the maxillary sinus of the left side of maxilla, following which the patient was given a sur-

gical obturator. The problems faced by the patient were nasal regurgitation of fluids, impaired function of speech, mastication and psychological depression. Intraoral examination revealed class I defect (Aramany 1978) with oro- nasal and oro-antral communication.

The patient was planned for a Prosthodontic rehabilitation with an obturator

CLINICAL SECTION

prosthesis. Looking at the feasibility and condition of the patient, an open bulb, hollow obturator was planned and fabricated.

STEPS IN REHABILITATION

Making the primary impression- The defect was analysed and lined with sterile gauge pieces to prevent excessive flow of material into the defect. The maxillary and mandibular preliminary impression were made using irreversible hydrocolloid (Plastigin, Septodont Inc, USA) and poured using dental stone (Ultrastone, Kalabhai, India).

Special tray fabrication- The dentulous portion of the cast was lined with two thickness of base plate wax spacer (Hiflex Modelling Wax, India) and a special tray was constructed using auto polymerizing resin (Pyrax, Rapid Repair, India) that covered the teeth and the defect area.

Final impression- Medium body poly vinyl siloxane material (3m, ESPE, Impregnum, Penta, USA) and soft putty (Exaflex, Vinyl polysiloxane impression material, GC, USA Inc) was used to record the final impression after blocking the medial, anterior and unwanted portion of the lateral undercuts. The final impression was analysed and poured in die stone (Ultrastone, Kalabhai, India) (Fig. 2).

Trial denture base- The trial denture base was fabricated using autopolymerising resin (Pyrax, Rapid Repair, India) over which wax occlusal rims were fabricated. After recording the jaw relation, the casts were transferred to a semi adjustable (Hanau O₂, Whipmix Inc, USA) articulator using face bow transfer. After completing the teeth arrangement, the trial denture base was inserted onto the patients mouth and try in was completed.

Flasking- After the Try in stage, pin head clasps were prepared on the cast for adequate retention of the prosthesis. A two thickness of base plate wax was placed lining the defect on the cast (Hiflex Modelling Wax, India). Dental stone (Ultrastone, Kalabhai, India) was poured inside the wax lining to create the hollow portion of the obturator. Teeth setting was finished and the cast was invested. The flask was dewaxed and carefully retrieved and opened. After dewaxing, separating media (Separating medium, DPI, India) was placed except for the resin teeth.

Packing- Recommended monomer polymer ratio was mixed and on reaching the dough stage (DPI, Heat Cure, India), was packed into the flask.

Finishing- After curing, the prosthesis was removed and finishing and polishing



FIG 3: Finished prosthesis



FIG 4: Insertion

was done (Fig 3). Two to three escape vent holes were made at the level of the palate or the floor of the obturator to facilitate the drainage of nasal secretions directly into the oro-pharynx.

Insertion- After finishing and polishing the prosthesis was inserted into the patients mouth and the necessary adjustments were done (Fig. 4). Periodic recall of patient was carried out at regular intervals of time and scheduled for one year. The patient was satisfied with the function of prostheses and improved aesthetic look.

DISCUSSION

In patients that have undergone ablative surgical procedures for neoplasms in the oral cavity, an obturator is the treatment of choice for rehabilitation. The design considerations of an obturator should be kept in mind before starting the surgical procedure. Immediately following the surgical procedure the patient is provided with a surgical obturator which is simply a plate to cover the oro-nasal opening.

The surgical obturator is essential for the patient to prevent regurgitation of fluids, speech defects and to make the patient accustomed to future definitive prosthesis. The interim obturator is provided to the patient in a period of 3-6 months after surgery, when the patient is undergoing heal-

ing phase. This type of obturator is relined periodically to adapt to the underlining healing tissues. The definitive or the final obturator is fabricated 6 months after the healing is completed^{3,4,5}.

The bulb portion of the definitive obturator can be solid or hollow depending on the extent of the defect. The solid bulb is advocated in small defects whereas the hollow bulb is advocated when the defect is large. If the defect is extensive, solid bulb is contraindicated as it leads to increased weight of the prosthesis, unnecessarily stressing upon the teeth and supporting tissues. The hollow bulb obturator improves retention and also aids in speech resonance. Reduced weight of the hollow bulb makes it comfortable and also reduces the consciousness of wearing a prosthesis and possibly enhances the lost facial esthetics⁶.

The superior surface of the bulb can be left open as a reservoir to collect the nasal secretions that can be drained from time to time, but it can lead to accumulation of nasal secretions, bad odour, difficulty in polishing and cleaning the internal surface and lack of support from the superior aspect of the defect. A closed bulb obturator however more often indicated is advantageous if the subject demonstrates normal secretory output.

Wide surgical resections for the control of malignancies frequently result in a small number of remaining, unilaterally clustered teeth. These remaining teeth serve as abutments for the obturator and are subjected to constant, nonaxial, cantilever forces⁷. The skin graft-mucosal junction scar band will also stretch out over time and become ineffective in helping to retain the obturator. The weight of an obturator can be significantly reduced by hollowing out the bulb resulting in significant loss of weight⁸. Abutment teeth and soft tissue undercuts will be subject to less stress to meet the primary goal of prosthodontic rehabilitation preservation of the remaining structure⁹.

The technique employed in this case was simple, inexpensive and time saving. There was no demarcation between the bulb and the palate portion that makes it more hygienic. The bulb portion is made of heat cure so it was less irritant to the tissues and thus more acceptable by the patient. The improvements observed in the patient after insertion of prosthesis were (Fig 4) as follows; nasal regurgitation was corrected and there were improvement in masticatory efficiency, phonetics and also rebuilding of self confidence of the patient. The success of any obturator prostheses depends upon careful selection of materials

used, cautious designing of prostheses, technique and laboratory procedures employed by prosthodontist, and also maintenance & care to provide comfort, function, esthetics and minimum changes to the remaining compromised structures of the patient.

CONCLUSION

A technique has been described for construction of an open bulb hollow obturator for a patient who has undergone Maxillectomy. An open bulb was chosen because of excessive secretions of the patient. Procedure was performed by giving utmost importance to functional, aesthetic and psychological needs of the patient. So as Maxillofacial prosthodontist, our aim should be to restore esthetics and functions in patients with gross developmental/acquired defects in its natural form and motivating them for living ambitious life in society.

REFERENCES

1. Aramany MA. Basic principles of obturator design for partially edentulous patients. Part I : Classification, J. Prosthet Dent 1978; 40:351.
2. Brown KE. Peripheral consideration in improving obturator retention. J Prosthet Dent 1968; 20:176-181.
3. Beumer, J. III & Zlotolow I. Restoration of facial defects, etiology, disability and rehabilitation. In Maxillofacial rehabilitation, Proshodontic and surgical considerations, Beumer, J., Curtis, T.A., Marunik, M.T, C.V. Mosby Company ISBN 0-8016-0676-4. USA.
4. Chalian, V.A., Bogan, R.L. and Snadlewick, J.W. Retention of Prosthesis in Maxillofacial Prosthetics Multidisciplinary Practice. Chalian, V.A., Drane, J.B. & Standish, S.M, The Williams and Wilkins Company, ISBN 10:0683015125 Baltimore, USA.
5. Taylor, Thomas D. Clinical Maxillofacial Prosthetics.ch 7 Quintessence publication, ISBN: 0-86715-391-1.
6. Minsley GE, Nelson DR, Rothenberger SL. An alternative method for fabrication of a closed hollow obturator. J Prosthet Dent 1986;55:485.
7. Schwartzman B, Caputo A, Beumer J. Occlusal force transfer by removable partial denture designs for a radical maxillectomy. J Prosthet Dent 1985;54:397-403.
8. Wu YL, Schaaf NG. Comparison of weight reduction in different designs of solid and hollow obturator prostheses. J Prosthet Dent 1989;62:214-217.

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9. DeVan MM. The concept of neurocentric occlusion as related to denture stability. J Am Dent Assoc 1954;48:165-169.

Dentist Day Celebration – Free Denture Camp organised by International College of Dentists at I.T.S-CDSR

To celebrate the Dentist Day, International College of Dentists in Collaboration with I.T.S Centre for Dental Studies and Research, Muradnagar and IDA-South West Delhi Branch organised a three day free denture camp from 6th-8th March, 2014. The valedictory function of this free denture camp was held on 10th March, 2014. Padmabhushan, Padmashree Hony. Brig. Dr Anil Kohli (President –ICD) was the chief guest. The function began with lamp lighting by Dr Anil Kohli, Dr R P Chadha (Chairman – ITS THE Education Group) and Dr HariParkash (Director General, Its Group of Dental Institutions).

The function was attended by all Head of Departments, Deans, Professors, Faculty, students of ITS-CDSR and more than 100 patients were present. Dr HariParkash welcomed the dignitaries and gave a health talk in Hindi. He explained the importance of saving the natural dentition. He advised the patients about various treatment options available in dentistry and how they can benefit by a regular dental check up. He stressed upon tobacco free society.

Dr. Anil Kohli addressed the patients in Hindi. He congratulated ITS Dental College for their efforts in upliftment of community dental health. He explained to the patients the importance of dental health and hygiene. Dr Anil Kohli stressed that all the patients attending this dental health awareness talk should spread this message among their relatives, friends and neighbours.

During this three day Dentist Day celebration, an educational quiz was conducted in which more than 135 dental students participated. Camps were held in nearby villages of Muradnagar and Street play were organised for spreading dental awareness among villagers. After the health talk, denture distribution ceremony was held. Dr Anil Kohli distributed dentures to over 100 patients. His interaction with patients was motivational and inspirational. The programme ended with sweets distribution among the patients.

