CASE REPORT

Prosthetic Rehabilitation of a Partially Edentulous Patient with Maxillary Acquired Defect by a Two-Piece Hollow Bulb Obturator (Using a Dentogenic Concept)

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ABSTRACT

Patients may face functional, aesthetic, and social distress because of the palatal defects. Prosthetic rehabilitation of maxillectomy or developmental defect can be challenging for prosthodontists. Prognosis of the prosthetic appliances can be affected not only by patients' own ability to adapt to the prosthesis but also by the factors like the remaining teeth, bony structure, and existing mucosa. Maxillary defects are usually developed by surgical intercession of the benign or malignant conditions and trauma cases. Speech, mastication and aesthetics can be hampered by any extent of palatal defect. During obturation of palatal/maxillectomy defects, the primary intent of the prosthodontist should be the shutting of the maxillectomy defect and parting of the oral cavity from the sinonasal openings by use of different bulb designs. In the present case, dentogenic concept has been applied while fabricating the two-piece hollow bulb obturator for restoration of the defect. Well known fact about the gravitational force is that it acts on maxillary obturator and reduces its retentive qualities, this can be counteracted to some extent by making the obturator hollow. Dentogenic concept is the skill, training, and procedure of generating the chimera of natural teeth in artificial teeth during prosthetic restorations.

Key Words: Maxillectomy defect. Hollow bulb. Two-piece obturator. Dentogenic concept.

INTRODUCTION

In patients with palatal defects, an obturator is austerely a device for occluding the oral cavity from the nasal cavity. Obturator acts as an oro-nasal seal and reestablishes the previous speech function in the majority of the instances.1 For reducing the weight of the prosthesis and to make it comfortable and well tolerated by the patient, multiple techniques had been described in literature.2-5 The weight and retention of the obturator can be reduced and increased respectively by the frothiness of the obturator. The frothiness of the hollow bulb obturator reduces the reticence of patience of wearing an obturator and increases the comfort level as well.6,7

This report describes the impression techniques and method of invention of two-piece hollow bulb obturator for partially maxillectomy patient followed by arrangement of artificial teeth by using dentogenic concept. Dentogenic concept is an esthetic viewpoint. Its rationale is to present acquaintance, whereby the prosthodontist may replace the lost dentition in such a manner as to effect an appearance which is gracious to the gender, personality and age of the patient. The dentogenic restoration is designed to augment the spontaneity of appearance in an individual. The dentogenic concept is an exciting activity in the monarchy of cosmetic art.8

CASE REPORT

A 53-year female patient was remitted to the prosthodontics department of Government Dental College and Hospital, Ahmedabad from Gujarat Cancer Research Institution for rehabilitation of partially dentulous maxillary defect produced on patient's left side after surgical intervention (Figure 1). Teeth were present on the right side of maxilla from second premolar to the third molar; and in mandible, from right second molar to the left second molar; and all teeth were intrinsically stained and malaligned. Mouth opening was average. Patient was experiencing difficulty in mastication and deglutition due to nasal impulse of food and also complained of nasal twang during speech.

Treatment plan:

On the basis of extent, the defect was Aramany class I. But, in this patient Aramany class I design was not followed because the condition of the remaining teeth was not favourable to follow the design. So, two-piece hollow bulb obturator with replacement of missing teeth was planned.
Prosthetic rehabilitation of a partially edentulous patient with maxillary acquired defect by a two-piece hollow bulb obturator

Procedure (Figure 2, 3, 4):
Primary impression was made in the putty consistency of the rubber base impression material; and after retrieval of a primary cast, custom tray was made.
Putty and light bodies of the elastomeric impression material were used to make secondary or final impression of the defect area, and final cast with accurate reproduction of defect portion was retrieved out.
Modeling wax was used to block out the minor undercuts in the defect and a thin layer of wax up was done, then the entire assembly was flaked, dewaxed, and cured. After opening of the flask, the defect area in the base of the cast filled with the table salt and covered with a cellophane sheet. Then, after mixing of an auto polymerized acrylic resin, a small amount of acrylic resin in daugh consistency was placed over cellophane sheet and contoured with the remaining palate. After completion of the polymerization, a hole was drilled in the superior surface of the bulb by using a No. 8 bur and poured out the table salt. Then auto polymerizing acrylic resin was used to seal the hole, and a handle of auto polymerizing acrylic resin was attached on to the outer surface of the bulb in alignment of the arch form. Polishing, and finishing of the bulb was carried out.
Pickup impression of the hollow bulb was taken in medium consistency of the rubber base impression material. Then after removal of the hollow bulb from the impression, impression was poured and a final cast was removed for fabrication of the second part of the prosthesis.
Shellac denture base was adapted on the final cast and wax rim was made for jaw relation, and then jaw relation was recorded by means of the hollow bulb in place in the patient mouth.
Non anatomic posterior teeth were preferred to eliminate lateral defective occlusal contact, and arrangement of missing anterior teeth was done according to mandibular anterior teeth arrangement following a dentogenic concept for aesthetic of the patient. Then waxed up denture were attempted in the patient mouth and verified for retention, stability and comfort. Phonetics was checked and corrections were made accordingly.
Now, the second part of the prosthesis with the replacement of missing teeth is ready; here both the

Figure 1: Post-surgical intra-oral view of acquired partial maxillectomy defect.

Figure 2: Final impression and hollow bulb fabrication with the help of table salt.

Figure 3: Pickup impression with hollow bulb and final cast with waxed up denture.

Figure 4: Two-piece hollow bulb obturator.
parts are separate and the first part (hollow bulb) locked in the second part (denture part) with the help of the handle. Patient can wear or remove both parts herself and she can also separate them for cleaning.

Necessary instructions were given and patient was kept for follow-up at the regular intervals of time.

DISCUSSION

Loss of soft tissue and/or bone present an exigent dilemma for reconstructive surgeons because of collapse of the lip, cheek and peri-orbital soft tissues as well as palatal competence. In maxillary resections, obturator may be used as a stent for holding of dressings or packs post-surgically. The development of a haematoma and eventual failure of the graft in case of split-thickness skin grafts may be prevented by the secure adaptation of the graft to the wound by means of obturator.9,10 Widespread prosthodontic management for follow-up at the regular intervals of time.

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REFERENCES