

Functional, esthetic and psychological rehabilitation of a hemi-maxillectomy patient with closed hollow bulb obturator

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Abstract: The intraoral defects can either be congenital or acquired. The most common defects lead to an opening in maxillary antrum and nasopharynx. These defects usually affect variety of functions, including swallowing, drooling of oral secretions, speech and mastication. Esthetic, functional and psychological rehabilitation of maxillo-mandibular complex is the ultimate goal of prosthodontic treatment. The treatment of choice for such defects is the fabrication of lightweight hollow obturator prosthesis. This case report presents rehabilitation of a 58-year-old female with closed hollow bulb obturator who underwent hemi-maxillectomy with removal of floor of orbit for squamous cell carcinoma.

Keywords: hemi-maxillectomy, rehabilitation, hollow obturator

Introduction

The intraoral defects can be classified as congenital malformations or acquired defects resulting from surgery for neoplasms or due to prolonged infections intra orally.¹ Most defects usually affect multiple functions, including speech, deglutition, drooling of saliva and loss of lip support.²

After surgical resection, esthetic and functional rehabilitation of maxillo-mandibular complex is the ultimate goal of prosthodontic treatment. It restores facial contour, improves mastication, improves speech and deglutition, reduces drooling, and provide lip support. It helps not only to restore function and esthetics following surgery but also the psychological well being of the patient.³

The defect can involve a small portion of hard and soft palate or extend along alveolar ridges and the floor of nasal cavity. The treatment of choice for such defects is the fabrication of an obturator prosthesis.⁴ The Glossary of Prosthodontic Terms defines an obturator as “a maxillofacial prosthesis used to close a congenital or acquired tissue opening, primarily of the hard palate and/or contiguous alveolar/soft tissue structures”.⁵ Obturators are classified as solid, open hollow, and closed hollow as to the nature of their extension into the defect site. Both open and closed hollow obturators allow for the fabrication of a lightweight prosthesis that can be tolerated by the patient.⁶

This clinical report describes the prosthetic rehabilitation of a partially edentulous patient who underwent hemimaxillectomy for resection of squamous cell carcinoma to restore the defect and separate the oral and nasal cavities from each other.

Case report:

A 58-year-old female reported to the Department of Prosthodontics, Government Dental College and Research Institute, Bangalore with complaint of difficulty in chewing, deglutition, nasal tone in speech and nasal regurgitation. She had undergone extensive surgical removal due to squamous cell carcinoma of the maxilla. On clinical examination an oval defect on left maxillary side was seen measuring approximately 4 x 3 cm (Fig.1, 2, 3). Partially edentulous mandibular arch was noted. The pupillary line was canted towards left indicating that left eye was present at a lower level. This was due to removal of floor of orbit on the surgical side resulting in sagging of orbital contents (Fig. 1).



Fig 1. Extra-oral pre-operative view



Fig. 2: Intra-oral view



Fig. 3: Post-surgical defect of left hemi-maxilla with opening in nasal cavity. Note: presence of extremely attrited teeth with staining of teeth on right maxilla due to tobacco chewing habit.

There were signs of healthy mucosal tissue at the borders of the defect. It included all teeth on the side of the defect except left central incisor, approximately 5 years ago.

It was planned to fabricate a maxillary obturator prosthesis which would serve multiple functions of acting as a barrier against food and liquid from entering the defect during mastication and deglutition, prevent escape of air, better phonetics, improve mastication and esthetics.

Clinical procedure:

1. An upper maxillary tray was selected, the extensions of which covered all the remaining maxillary teeth and vestibule.
2. Local anesthetic spray (Xylocaine Pump Spray 10%, AstraZeneca, Sweden) was used for the palatal and post palatal region before making the impression. A cotton gauge covered with vaseline and anesthetic solution was placed in the defect cavity to block undesirable undercuts and protect the area from the residual impression material. The cotton gauge was tied with a thread to take it out easily after the impression.
3. An impression was made with an irreversible hydrocolloid and a cast was obtained by using type III dental stone.

4. After doing jaw relation, teeth setting was done and a hollow bulb teeth-bearing obturator, using lost salt technique, was fabricated after curing with heat- cured polymerizing acrylic resin. (Fig. 4)



Fig. 4: Fabrication of hollow bulb obturator

5. The assembly was then deflaxed and was finished and polished (Fig 5, 6).



Fig. 5: Polished hollow acrylic resin obturator.



Fig. 6: Hollow obturator perfectly sealed floats in water.

6. Mandibular removable partial denture was fabricated using conventional processing techniques (Fig. 7).



Fig. 7: Mandibular removable partial denture

7. On delivery of the obturator occlusal adjustments were made, and any interferences were noted and corrected. (Fig. 8, 9)



Fig. 8: Finished prosthesis



Fig. 9: Post-operative view

Discussion:

Maxillary defects are created by surgical treatment for malignant neoplasms, congenital malformation and by trauma. The size, location of the defects and

condition of remaining teeth if present, influence the degree of impairment and difficulty in prosthetic rehabilitation. The obturator is used to restore masticatory function, esthetics and improve speech, deglutition for maxillary defect patients. In the absence of immediate covering of the defect, soft tissues collapse dramatically due to loss of support affecting esthetics with possible psychosocial stigma. Neglecting timely prosthodontic intervention may negatively influence facial contour, which is difficult to reconstruct later. Regurgitation of food into the defect can cause infection, halitosis and embarrassment for the patient. This also influences psychology of the patient negatively. The prosthesis should maintain health of the remaining tissues; therefore, healthy abutments and tissues should support the prosthesis.

The prosthesis helped the patient overcome above difficulties. Despite its advantages, however, prostheses has few limitations, including the need for manual dexterity to maintain the prosthesis, the difficulty in obtaining perfectly water-tight seal of the oral cavity from the nasal cavity, the problem of retention with large defects, and, of greater importance, decreased patient satisfaction.

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