

Case Report

Prosthetic Rehabilitation of Maxillary Defects– Case Report

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Abstract:

The restoration of esthetics and function in patient with gross defects of the maxilla is a valuable and often dramatic service provided by maxillofacial prosthodontist. The primary objective in each case is to construct a prosthesis, which will restore the defect, improve aesthetics and thereby benefit the morale of patient. The use of an intraoral hollow obturator restores the vital functions of mastication, deglutition and speech. Although several recent advancements are there which can be carried in institutions only having specialized care centers with advanced technology and expensive materials. In case such a patient turns up in a general dentist's office, he has no choice but to refer him to specialty centers. Many times patients don't pursue the treatment due to financial or geographic difficulties. Such patients can be treated with simple acrylic obturators in general dental practice also. Four clinical cases are presented here who were treated with simple acrylic resin hollow obturators which restore the function and do not require costly materials and special technical manpower.

Key words: Obturator, Hollow bulb, Maxillectomy

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Introduction:

Man's need for the artificial replacements to supply missing or lost body parts has probably existed as long as man itself. . Maxillo-facial reconstruction by prosthetic means is a valuable contribution which dentistry offers to the public. French surgeon, AMBROSE PARE was the first to use an obturator to close palatal perforations. Such defects can be congenital (cleft-palate) or

acquired (due to surgery or trauma). Such patients face many problems like impaired articulation, difficulties in deglutition, nasal regurgitation and disfigurement of face. Successful rehabilitation of function and esthetics in a patient with gross anatomic intraoral defects is a challenging task for the dentist. These patients if not treated often become psychologically dependent.

Surgical intervention is the best line of treatment in these defects. But the systemic condition of the patient coupled with financial difficulties may not allow radical surgical procedures. The prosthetic restoration of these defects provides a non-invasive method of restoring function and esthetics. Principal function of an oral obturator is closure of palatal defects for establishment of oronasal integrity. Fabrication of such prosthesis requires technically simple, biologically inert, durable materials. Although there have been several advancements in prosthetic rehabilitation of intraoral defects like implant-supported prosthesis and resilient materials like silicone obturators but acrylic obturators have several advantages as they are simple, non-invasive, cost-effective and allow for periodic examination and cleaning. Patients can be treated with obturators whether they are edentulous, partially edentulous or have a full complement of teeth. Obturators can be made either in acrylic resin or silicone materials. Silicone Elastomers can be: Room temperature vulcanizing (RTV) or High Temperature Vulcanizing (HTV) They are resilient but are costly, need special technical manpower and are not easily available. Room temperature vulcanising silicone is an open cell material and readily picks up odour.^{1,2} Their properties like poor tear strength and life less appearance have limited them from universal acceptance. To overcome these problems heat

processed acrylic resins are routinely used for making obturators. Acrylic resin is easily available, easy to stain and color, as has good strength to be fabricated with feather margin and has good life of about 2 years.^{1,2} These materials can also be of value with rapidly changing defects due to the ease of relining. These materials are easily available and have less cost and are familiar to all the practitioners. This article presents four such patients who were given acrylic resin prosthesis to cover their defects.

Case Report 1:

A 22 years old male patient came with the complaint of inability to eat, improper speech and poor esthetics. History revealed surgical correction of cleft lip when the patient was 11 years old. Intraoral examination revealed a congenital hard and soft palate defect extending upto the alveolar ridge (Veau's class II defect). The patient was not willing for any surgical treatment for the cleft palate. Speech was impaired. All anterior teeth and first premolars were missing. In the lower arch, full complement of teeth except right second premolar was present. The lower incisors had extruded above the occlusal plane. Occlusion in the posterior teeth was normal. Gingival health was normal. So a hollow bulb obturator engaging the defect area was planned. Primary impression was made in alginate on a stock tray. A special tray was constructed and a secondary

impression was made in elastomeric impression material (medium body addition silicone). The tray was not overloaded with impression material as excess material in the nasopharynx would increase the difficulty of removing the impression without a fracture. All oral perforations were packed with gauze that had been saturated with petroleum jelly.

Anterior teeth were set according to aesthetics. Heat cure acrylic resin obturator was fabricated³ and hollowed out according to technique given by Varoujan A Chalion. It should be hollow to aid speech resonance, to lighten the weight. The denture was invested in the flask in the usual manner. The wax was boiled out in the conventional manner. The undercut areas in the cast of the defect were blocked out. The auto-polymerizing acrylic resin was mixed and allowed it to come to a dough consistency.

A layer of self cure acrylic resin was contoured in the bottom of the defect. The flask was closed to allow the resin to cure for 15 min. Salt powder was placed to fill the defect. The heat cure acrylic resin was packed in the usual manner to the top half of the flask and cured in the usual manner. It was then deflasked and trimmed and polished in usual manner. Three to four holes were made in the bulb part of the denture. The salt was flushed from the acrylic resin bulb with a steam of boiled water. The holes were sealed with self-cure resin and finished and polished. The denture was then inserted in the patient's mouth. (Figure 1-6) Patient was satisfied with the esthetics and reported better masticatory function on follow-up examination.



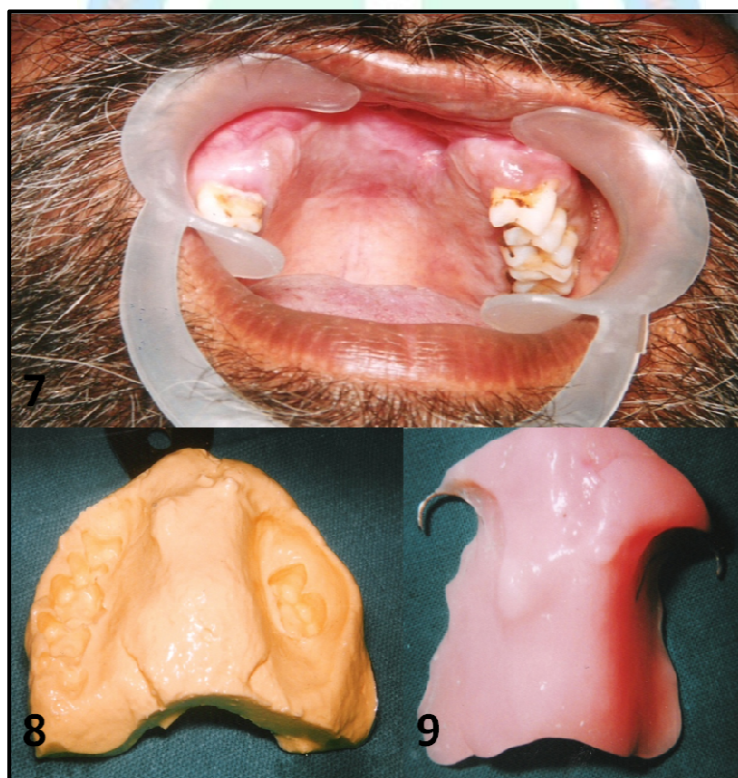
Case 1: Figure: 1) Pre-operative photograph; 2) Pre-operative intra-oral view; ; 3)Rubber base impression of maxillary arch; 4) Tissue surface of hollow obturator; 5) Post operative intraoral view; 6) Extra-oral view at completion of treatment.

Case Report 2:

A 50 years old male patient came with the chief complaint of poor esthetics and replacement of anterior teeth. The patient had a history of verrucous carcinoma due to which anterior maxillary segment was resected with consequent removal of anterior teeth two years back. The treatment resulted in a cancer free patient, however dentally and socially crippled.

Intraoral examination revealed total absence of maxillary anterior ridge and maxillary anterior teeth. All other teeth were present. Calculus and moderate recession of gingiva was present around the remaining teeth, but there was no evidence of mobility.

Patient was sent for oral prophylaxis. A full palatal coverage partial acrylic denture with wrought wire clasps on first premolars was planned. Impressions were made in a stock tray in irreversible hydrocolloid impression material. The lips support was improved by anterior teeth setting and proper labial flange. Retention was obtained by anatomical and mechanical means. The finished prosthesis was adjusted in the patient's mouth.



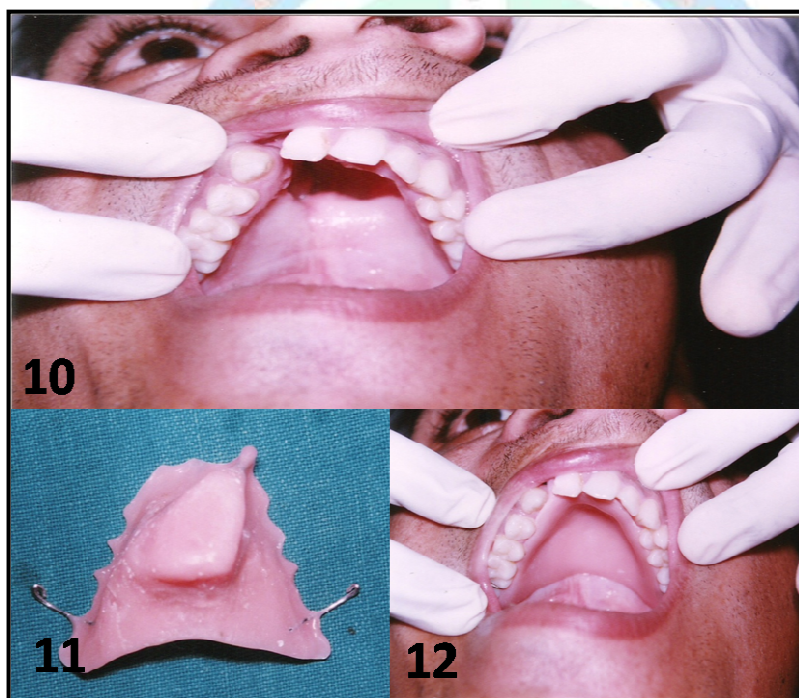
Case 2: Figure 7) Pre-operative intra-oral view; 8) Alginate impression of maxillary arch; 9) Tissue surface of hollow obturator

Case Report 3:

A 20 years old male patient came with the complaint of nasal regurgitation of food and liquids. The patient had a surgical correction of lip done at 10 years of age and correction of defect in the posterior portion of hard and soft palate at the age of 17 years. Correction of defect in anterior portion of hard palate, and alveolus was not done as the patient was not willing to undergo any more surgeries. On intraoral examination, it was found that a congenital defect was present in anterior palatal region and alveolus on right side.

The right lateral incisor was missing and left central incisor was distally inclined. The right central incisor was mesially inclined. The right canine was partially erupted. The lower arch was normal. A temporary removable appliance was planned till the surgical closure of the defect with alveolar bone grafting is attempted.

Impression was made in alginate in a stock tray. A hollow acrylic resin obturator with pin head clasps for retention was fabricated and adjusted in the mouth. Further orthodontic and surgical treatment was advised.



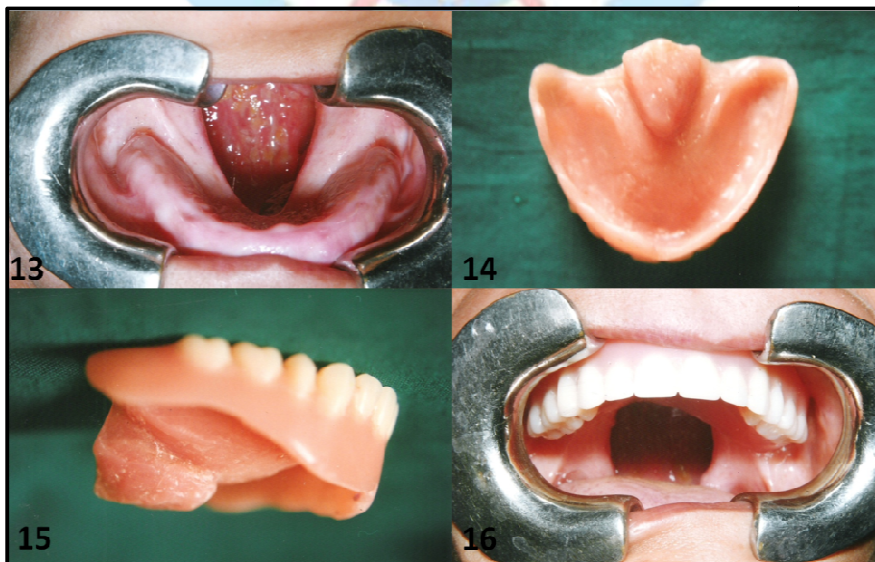
Case 3: Figure 10) Pre-operative intra-oral view; 11) Tissue surface of hollow obturator; 12) Post operative intraoral view

Case Report 4:

A 45 years old female patient reported with a complaint of inability to eat properly. History revealed that patient got all her teeth extracted about 1 year back due to caries and periodontal disease and wanted to get them replaced. She did not have any previous denture experience. On clinical examination, it was seen that a congenital defect of soft palate and posterior part of hard palate was present. Anterior portion of hard palate and alveolus were intact and patient did not experience any problem of regurgitation or speech, though she had a nasal twang in her voice. Both upper and lower ridges were well formed with firm, healthy mucosa. Slight undercuts were present in maxillary tuberosity region.

The patient had a good neuromuscular coordination. The frenum attachments were normal and tongue was normal in size and position.

Complete upper and lower dentures were planned. Primary impressions were made in impression compound and secondary impressions in a light body addition silicone impression material in a border molded special tray. The patient was instructed to bend her head forward and from side to side so that the functional limits of the soft palate could be recorded. Jaw relations were recorded and upper and lower dentures were fabricated in a conventional manner. The obturator portion of the maxillary denture was hollowed out. The dentures were evaluated in the mouth for esthetics and function.



Case 4: Figure 13) Pre-operative intra-oral view; 14 & 15) Tissue surface of hollow obturator; 16) Post operative intraoral view

Conclusion

Maxillofacial prosthetic rehabilitation is a cornerstone of efforts to restore the head and neck cancer patient's oral functions and cosmetics following surgery to pre-treatment baselines. It is essential for the material to have natural function and lifelike appearance, be easily placed and comfortably retained, be durable and easily maintained, should retain color and most importantly be affordable to the patient. Advances in polymer technology have made possible the development of more durable and esthetic materials to replace lost maxillo-facial tissues. The various existing commercial maxillofacial prosthesis materials do not comply as ideal due to rather short life expectancy in a normal service environment. The state-of-the-art for flexible maxillofacial materials is continuously striving to attain the ideal prosthetic device with quality features. In the meantime, these patients, already physically and emotionally handicapped, should not be denied service on the pretext of lack of facilities or materials. Providing simple obturators in their neighbourhood clinical setting would

be a service well deserved by these patients.

References:

1. Arthur O. Rahn, Louis J. Boucher, Maxillofacial Prosthesis, Principles and Concepts. W.B Saunders Co. 1970 p. 89-95, 217.
2. Chalian VA, Drane J B, Standish SM, Maxillofacial Prosthetics, Multidisciplinary Practice, Williams and Wilkins Co. 1971, p. 133-138.
3. Knapp JG. A simplified approach to the fabrication of a maxillary hollow obturator prosthesis. J Prosthet Dent 1984;51:67-9.
4. Karen SMA. An innervated investment method for the fabrication of a closed hollow obturator prosthesis. J Prosthet dent 1998;80:129-32.
5. Sykes LM and Rashid M. Combination intraoral and extraoral prosthesis used for rehabilitation of a patient treated for cancer of the oris – A clinical report. J Prosthet Dent 2000; 83:613-6.
6. Black W. Surgical obturator using a gated prosthesis -A technique for fabrication of an acrylic obturator. J Prosthet Dent 1992;68:399-42.
7. Denlin H, Barker GR. Prosthetic rehabilitation of the edentulous patient requiring partial maxillectomy. J Prosthet Dent 1992; 67:223-227.
8. Antonian DV, Toljanic J, Grahm L. Obturator prosthesis retention for edentulous patients with large palatal defect. J Prosthet Dent 1996;76:227-29.

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