

Lost Glycerin Soap Bolus Technique to Fabricate Closed Hollow Obturators using Single Flasking Procedure: A Case Report

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Abstract

Maxillary obturator prosthesis is more frequent modality of treatment than surgical reconstruction for maxillectomy in patients suffering from oral defects. It is a standard practice to hollow out the defect portion of the obturators to reduce its weight. The processing technique described in this case report involves incorporation of the "customised glycerine soap bolus with cold cure stabilizing rod" during packing procedure of the obturator prosthesis and eliminated later once the curing procedure was completed. This technique is a single step procedure resulting in the closed-hollow obturator as single unit with uniform wall thickness around the hollow space ensuring the least possible weight of the hollow obturator.

Keywords: Hollow obturator; Maxillary defects; Obturator processing technique.

Introduction

Obturator is derived from the Latin word "obturate" which means to close or shut off. Most common intraoral defects in the maxilla are in the form of an opening into the antrum and nasopharynx. Maxillary defects can be congenital, developmental, acquired, traumatic, or surgical involving the oral cavity and related anatomic structure.¹ 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".²

In general, size and location of the defect decide the type of rehabilitation. Smaller sized defect can easily be reconstructed surgically subject to favourable tissue response. Large maxillary defects are often associated with the loss of hard tissues including bone and teeth complicated with

overlying soft tissue collapse. In such situations, the prosthetic obturators help in a great extent as they not only replace the defect portion but also restore masticatory and speech functions by replacing the teeth and natural anatomical form of the missing structures.³ There are various obturators design based on Aramany's classification and evaluated for weight reduction. The obturators often become heavy and hence are hollowed out in the defect portion to reduce its weight as a standard practice from 6.55% to 33.06% depending on the size of the defect.⁴

The hollow space of such obturators may be open from top (open - hollow) or completely closed (closed - hollow). The open - hollow obturators often collect moisture and require frequent cleaning or exit holes to prevent the fluid accumulation.⁵ On the contrary, the closed obturators do not get moisture collection and reducing the air space. Closed-

hollow obturators are fabricated by incorporation of dissolvable materials during packing of the resin, doing multiple flaking procedures or fabricating separate components and sealing them together to make it hollow.⁶

The processing technique described in this case report is a single step procedure resulting into the closed hollow obturator as single unit with uniform wall thickness around the hollow space ensuring the least possible weight.

Case Presentation

A 57-year-old male patient reported in the Department of Prosthodontics and Crown & Bridge, Inderprastha Dental College and Hospital, Ghaziabad, India, with a chief complaint of difficulty in chewing, nasal regurgitation of fluids, speech with nasal twang in his voice and missing teeth in upper front tooth region since 3 years. Medical history revealed he had surgery 3 years back in relation to anterior maxillary region; surgery report reveals Ameloblastoma of the anterior maxilla which was secondarily infected. Mental attitude of the patient was philosophical (House Classification). Personal history revealed that patient was tobacco smoker (beedi) 7 to 10 beedis per day for past 30 years. Intra oral examination revealed anterior palatal defect, Class VI (Aramany, 1978), missing maxillary central incisors, lateral incisors and both premolars (Figure 1).

Treatment options were discussed with the patient such as surgical intervention by using vascularised free flap containing a bone fragment and non-invasive procedure by using obturator prosthesis. Due to the chances of the failure of vascularised graft, it was decided to fabricate conservative and non-invasive hollow bulb obturators using glycerin soap bolus.



Fig. 1: Pre-operative intra oral photographs.

Technique

A preliminary impression was made using irreversible hydrocolloid (Zelgan 2002 dust-free easymix, Dentsply, India) with cotton gauge placed over it to prevent ingress of material into palatal defect (Fig. 2). The preliminary impression was poured with dental plaster (Kaldent, Kalabhai Dental Pvt. Ltd. India) and custom tray was fabricated using autopolymerizing acrylic resin (self-cure acrylic repair material, Dentsply India) (Fig. 3).



Fig. 2: Preliminary impression using alginate.



Fig. 3: Primary cast and Special tray.

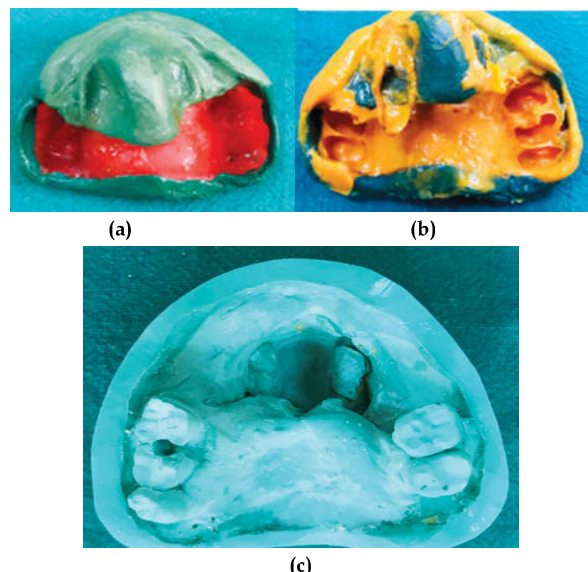


Fig. 4:(a) Border moulding and recording palatal defect with green stick compound. (b) Secondary impression using condensation silicone (light body consistency). (c) Master cast

Border molding and palatal defect were recorded using green stick impression compound (Pinnacle, DPI, India). Final impression was made with light viscosity condensation silicone impression material (Oranwash, Zhermack, Italy) (Figure 4) and the master cast was fabricated using dental stone (Kalstone, Kalabhai, India).

The palatal defect was blocked out by using modelling wax. Using autopolymerising resin, a denture record base was prepared and wax occlusal rim was made over it. Maxillo-mandibular relationship was recorded and transferred to a semi-adjustable articulator (Hanau Wide Vue Articulator) (Figure 5). Selection and arrangement of teeth were done and try-in was performed on the patient for retention, stability, phonetics, and aesthetics.

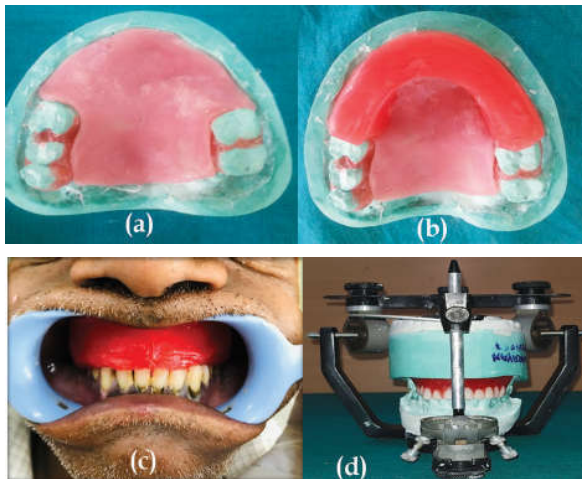


Figure 5: (a) Record base, (b) Occlusal rim (c) Jaw relation (d) Articulation.

After successful try in, flasking and dewaxing procedures were carried out during the packing procedure (Figure 6). The defect area was first loaded and packed with heat polymerizing acrylic resin. On that previously customised “glycerine soap bolus with cold cure stabilizing rod” was adapted over it (Figure 7). Finally, the whole area was loaded with heat cure acrylic resin and curing was done in a conventional manner (Figure 8). After Acrylization, prosthesis was removed from the flask. Glycerine soap material was removed from the prosthesis by drilling a hole in the defect portion and placing it in warm water. Finishing and polishing procedures were carried out in a conventional manner (Figure 9). Finally, the hollow obturator prosthesis was inserted in the patient mouth. Patient was happy and satisfied with his improved function, speech, and aesthetics.



(a)



(b)

Fig. 6: (a) Flasking (b) Dewaxing.



Fig. 7: Customised glycerine soap bolus with cold cure stabilizing rod.



Fig. 8: Adaptation of glycerin soap bolus at the time of packing.



Fig. 9: Complete obturators with hollow space.

Discussion

There are several methods available in the literature to fabricate lightweight, hollow obturators. These techniques include; Grinding out the interior of the bulb,⁴ fastening the lid to the superior border,⁶ incorporation of the soluble materials like sugar, salt and ice during packing are some of the methods to create the hollow prostheses⁷ separate processing of two halves followed by joining them with an autopolymerizing resin (two step processing technique).⁸ However, the sealed area presents a site for water leakage, promoting bacterial growth, discoloration, and increased weight of the prosthesis.⁹

The technique described in this article is superior to most of the techniques mentioned in two ways¹ It fabricates the prosthesis as a single unit in a heat cured acrylic resin and² it allows uniform wall thickness for closed hollow obturators.¹⁰ The technique used in this particular case involving stabilizing rod, is a variation of standard "Glycerine soap bolus technique". The advantage of this method is to maintain a predictable internal dimension of a hollow space¹¹ in one step processing of heat cured resin as a single unit.

Conclusion

Several merits can be attributed to the use of this technique for fabrication of closed hollow bulb

obturators. The prosthesis is fabricated using a single flask which considerably reduces the laboratory time and makes the procedure simple. The thickness of the hollow bulb can be controlled and light weight closed hollow bulb prosthesis can be fabricated. The separate fabrication of a lid is not needed thereby preventing the chance of water leakage, bacterial infection, and discoloration of the prosthesis as the preformed bulb template is completely covered by heat cure acrylic resin.

References

1. Beumer J, Curtis T, Marunick M. Maxillofacial Rehabilitation: Prosthodontic and Surgical Considerations. St. Louis: Ishiyaku Euro America, Inc. Publishers. 1996; 19(4): 240-85.
2. The glossary of prosthodontic terms. Journal of Prosthetic Dentistry. 2005; 94(1): 10-92.
3. Patil PG, Patil SP. A hollow definitive obturator fabrication technique for management of partial maxillectomy. J Adv Prosthodont. 2012; 4(2): 248-53.
4. Matalon V, LaFuente H. A simplified method for making a hollow obturator. J Prosthet Dent. 1976; 36(3): 580-82.
5. McAndrew KS, Rothenberger S, Minsley GE, Judson C. Hickey scientific writing awards. An innovative investment method for the fabrication of closed hollow obturator prosthesis. J Prosthet Dent. 1998; 80(9): 129-32.
6. P. Phankosol and JW. Martin, "Hollow obturator with removable lid," The Journal of Prosthetic Dentistry. 1985; 54(1) 98-100.
7. Schneider A. Method of fabricating a hollow obturator. J Prosthet Dent. 1978; 40(3):351-54.
8. Browning JD, Kinderknecht J. Fabrication of a hollow obturator with fluid resin. J Prosthet Dent 1984; 52(4): 891-95.
9. Wu CW, Hung CC, "An alternative method for fabrication of an open hollow obturator-case report. Journal of Dental Sciences. 2008; 3(2): 102-107.
10. Wiciewicz W, "Changes of thickness of the Erkodur thermoplastic foil obturator plate after deep pressing. Dental and Medical Problems. 2003; 40(1): 81-84.
11. Chalian VA, Barnett MO. A new technique for constructing a one-piece hollow obturator after partial maxillectomy. J Prosthet Dent 1972; 28(6): 448-53.