

A Teaching aid for Crown and Bridge Preclinical Work in Dental Schools

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ABSTRACT

The advantages of using acrylic resin models for student education have been emphasized, and their fabrication by the students for pre-clinical crown and bridge work has been described. However, it is often desirable for dentists to construct acrylic resin casts in demonstrating a procedure for a table clinic, in displaying unusual conditions in the oral cavity, such as surgical or congenital defects, or as a more permanent record than a gypsum cast for future reference. The time, equipment, and complicated procedures usually discourage the use of acrylic resin. This article describes a technique that is simple and rapidly accomplished by the students.

Keywords: Maxillary, Mandibular, Polymethyl Methacrylate

INTRODUCTION

Mostly dentists and dental technicians have been using the prefabricated acrylic models as a matter of standard procedure in teaching crown and bridge preclinical work in academic institutions. Its vast appeal is attributed to one important factor - availability. But the main disadvantage is its high cost, and it is very difficult to supply in a institution of hundred students. By saving the expenditure, the unique technique of fabricating acrylic models eliminates the high cost of purchasing the prefabricated models. In addition,



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this will give an opportunity to the students to make their articulated acrylic models. The students fabricate their typodont jaw models that helps them to have a better understanding of tooth preparation before performing the same in patients

The purpose of this paper is to briefly report the procedure followed by the students in their preclinical lab.

TECHNIQUE

1. Two ideal gypsum casts, one of the maxillary arch and another of the mandibular arch were selected. The casts were evaluated carefully for any nodules or bubbles and intercuspation between the two casts (Fig 1).



Figure 1: Maxillary and mandibular ideal casts

2. The casts were soaked for five minutes in clear slurry water. This was made by soaking artificial stone casts or particles in tap water for 48 hours. The resultant solution is slurry water.
3. Two oversized flasks which can accommodate the maxillary and the mandibular casts were selected. The clearance from the border of the casts and the periphery of the flasks was approximately 1 cm.

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4. Normal-setting alginate (irreversible hydrocolloid) was proportioned and mixed with approximately one quarter more water than is used for making impressions. The proportion and the mix should be such that, it should fill atleast two third of the flask.
5. Alginate and water were mixed. A smoother mix is obtained when the alginate is mechanically spatulated under reduced atmospheric pressure.¹
6. The flask was filled with the impression material (atleast two third).
7. Excess slurry water from the cast surface was removed with an air syringe, and the casts were coated with a thin layer of the impression material using a brush or finger. This step will minimize voids in the impression.²
8. The casts were inverted onto the loaded flask, and excess material was allowed to flow down the sides of the flask (Fig 2). Precaution was taken to prevent the cast to contact the flask. The casts were centrally positioned inside the flask and the base of the cast and the border of the flask were at the same level.³



Figure 2: Cast inverted in to the alginate impression material

9. The impression material was allowed to set.
10. After the recommended setting time of the alginate, the casts were carefully retrieved from the flask by blowing compressed air around the margin of the cast. The resultant irreversible hydrocolloid mold was free of voids and any deformation (Fig 3).
11. Irreversible hydrocolloid mold of the mandibular cast was prepared in the same fashion.
12. A complete set of typodont teeth was selected. The mesiodistal, buccolingual and the occluso-cervical dimension of the individual ivory tooth were identical with that of the ideal cast.



Figure 3: The resultant mold

13. An individual tooth from the teeth set was removed and placed into the corresponding socket of the impression mold (Fig 4).



Figure 4: Teeth were placed into the corresponding socket of the mold

14. Four to five sheets of baseplate waxes were melted in small wax -pot.
15. The molten was uniformly poured at one end of the mold until whole of the mold fills completely. The wax should be hot enough to flow like water. The wax was allowed to cool (Fig 5).



Figure 5: Molten wax poured and allowed to cool

16. Once the wax has cooled and hardened, the lid of the flask was removed. The flask was held in the left hand, and 2 or 3 fingers were pressed in the back of the mold to help "push" out the wax model. The model was inspected carefully for any nodules or voids and was corrected accordingly (Fig 6).



Figure 6: Cooled and Hardened Wax Model



Figure 7: Cured and articulated acrylic models

17. The wax models were processed in heat cure acrylic resin as complete dentures.^{4,5} After the necessary finishing and polishing the two casts were secured with perfect intercuspation, by using a thick rubber band or sticky wax. The acrylic models were articulated in a hinged articulator (Fig. 7).

CONCLUSION

Duplicate casts are frequently needed for diagnostic procedures, treatment planning, and documentation.³ A technique which permits the students to duplicate casts using materials normally available in most dental schools has been described here. The resultant cast demonstrates acceptable accuracy and surface detail and can be an excellent teaching aid in dental schools.

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