

Preformed Beading and Boxing Appliance

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Abstract Conventional beading and boxing procedure is time consuming and involves application of heat that might distort green stick compound used for border molding. Earlier studies regarding beading and boxing methods have shown usage of various materials that were disposable and that cannot be recycled. To reduce the time consumed for beading and boxing procedure and to make this procedure cost-effective by using recyclable beading material, “Preformed boxing appliance” with moldable clay meant for beading the secondary impression was used. Secondary impression was supported by 3 studs provided on the floor of the boxing appliance. The cast was poured. The duration for the entire procedure was much less than the conventional procedure.

Keywords Secondary impression · Beading and boxing · Border molding · Recyclable beading material

Introduction

Boxing an impression involves building up vertical walls around an impression, usually in the wax to produce the

desired shape and form of the base of the cast and to preserve certain landmarks of the impression [1]. Boxing an impression allows a controlled environment to establish and protect ideal borders on the master cast, eliminates distortion associated with slumping of the gypsum material when an impression is inverted and permits control over the thickness of the base.

Boxing an impression involves placing a bead all the way around the impression border with utility wax. Boxing of impressions is seemingly difficult, time consuming procedure for students and beginners and accuracy may be lost by too much handling of the impression.

Since this beading and boxing is a time consuming procedure, a preformed appliance has been designed to bead and box the impression and to minimize the wastage of utility wax and to minimize the time spent on beading and boxing. The beading material (mouldable clay) used in this experimental design is reusable and the walls of the appliance can be opened and closed. This is of great advantage when compared to using beading and boxing wax for an impression. The added advantage with this beading and boxing appliance is that alginate impressions and elastomeric impressions can also be beaded and boxed in less time and at a lesser cost.

Description of Beading and Boxing Appliance

The base of the appliance is 1 cm in height and the height of studs on the base of the appliance are 1 cm in height. So the height of the base from the floor to the tip of the stud is a total of 2 cm (Fig. 1). The purpose of the studs is to prevent the edges of the alginate impression from contacting the base, which can lead to the distortion of the impression. Over these studs, the custom acrylic tray with

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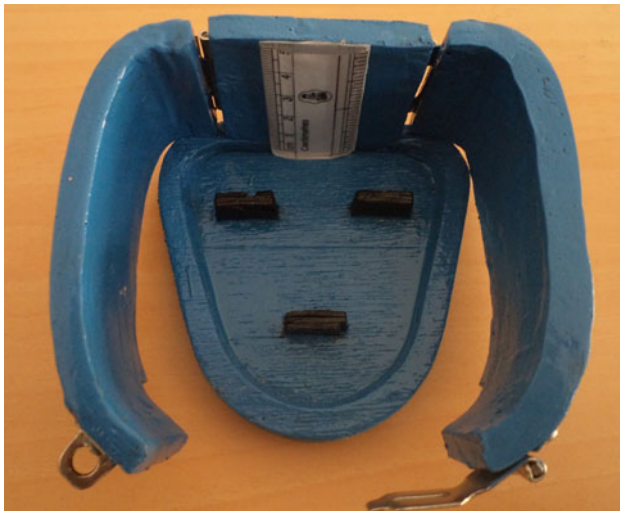


Fig. 1 Beading and boxing appliance with elevated studs



Fig. 2 Slot provision for impression tray handle

secondary impression or stock metal tray with primary impression rests.

The tray handle passes through the slot provided in the anterior part of the walls of the appliance (Fig. 2, 3). The lateral walls of the appliance can be opened and closed. The posterior wall is fixed to the base. The scale attached to the posterior wall helps us to assess the exact height of the base of the cast. Two hinge joints present at the rear aspect of the appliance connects the posterior wall and the lateral walls of the appliance.

A latch and a hook are present on the front aspect of the right and left lateral walls respectively. The latch and the hook locks the appliance in place while the dental stone is setting in the appliance during the procedure of pouring the cast after beading has been done with mouldable clay

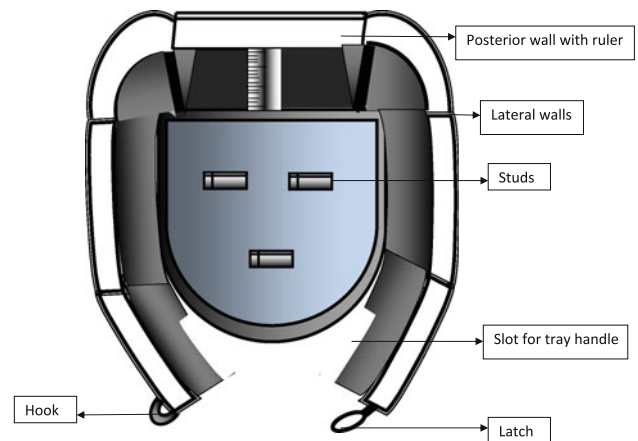


Fig. 3 Schematic diagram of preformed beading and boxing appliance



Fig. 4 Beaded and boxed secondary impression

(Yanran clay, Zhejiang, China) (Fig. 4). This appliance was made of autopolymerising resin (DPI-self cure; Dental Products of India, The Bombay Burmah Trading Corporation Ltd, Mumbai, India).

This appliance can be made for each size of dentulous trays keeping 2–4 mm of space around the tray to the walls of the appliance. This will reduce trimming time and amount of Dental stone.

Procedure

- Step 1: The lateral walls of the appliance are opened and coated with petroleum jelly.
- Step 2: The tray handle of the custom tray used for making secondary impression of edentulous arch is trimmed off and a stainless steel wire is

attached horizontally. This wire passes through the slot anteriorly. In case of stock metal tray this modification is not necessary.

- Step 3: The beading area around the secondary impression and the tongue space (in case of mandibular impression) is filled with mouldable clay up to 2 mm below the flanges of the impression.
- Step 4: The lateral walls of the appliance are closed and latched.
- Step 5: Dental stone (Kalastone, Kalabhai dental Corp. Mumbai, India) is mixed as per proper water: powder ratio and poured into the beaded impression surface.
- Step 6: The appliance is placed on the vibrator to eliminate air bubbles from the impression.
- Step 7: After the stone is set, the cast is retrieved and the master cast thus obtained is trimmed and the mouldable clay is preserved for later use (recyclable).

Discussion

According to Sowter [2], the boxed impression controls the thickness of the base of the cast and facilitates placing remounting plates. Harris [3] has described plaster and pumice mix as a beading material for impressions made with elastomeric impression materials. Blank [4] has described “Paddle grip method” which involves the use of caulking compound rope for beading and metal strips for boxing. The full beaded and boxed impression was supported by a tennis paddle so that it can be placed on the vibrator for pouring the cast.

All the techniques described by various authors over a period of time involve beading and boxing materials that

cannot be reused. But, the appliance described in the present technique involves beading material which can be reused for multiple impressions. For boxing, a preformed appliance is used which is also reusable and cost effective.

It is known from basic dental material sciences, that mixing Dental stone as per recommended water:powder ratio results in sedimentation process. The heavier particles of the dental stone settle at the bottom of the boxed impression which happens to be the impression surface. This makes the impression surface of the cast harder. This is of great advantage especially in the cast involved in the crown and bridge procedures. This appliance which can bead and box alginate impressions also will result in the casts with greater surface hardness. This area of research can be considered for further studies.

Conclusion

Beading and boxing is recommended to achieve a quality master cast and prevent slumping of gypsum material when an impression is inverted. This beading and boxing appliance is very simple to use, time saving and uses beading material that is reusable.

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