Case Report

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The Puri-Press Technique: The Easy Way of Producing Self-Cure Acrylic Trays and Denture Bases Using A Modified Dough Method

R Prakash[1*] D Uday Kiran Teja[2] P Lakshmu Naidu[3]

[1]Professor and Head, Department of Prosthodontics, Anil Neerukonda Institute of Dental Sciences, Visakhapatnam, Andhra Pradesh, India.
[2]Senior Lecturer, Department of Prosthodontics, Anil Neerukonda Institute of Dental Sciences, Visakhapatnam, Andhra Pradesh, India.
[3]Senior Lecturer, Department of Prosthodontics, Anil Neerukonda Institute of Dental Sciences, Visakhapatnam, Andhra Pradesh, India.

ABSTRACT

Aim: To demonstrate an easier, simpler and reliable method of performing the dough method of manipulating self-cure acrylic in the production of denture bases or special trays by altering the composition and using a mechanical press. The technique outlined by the author is in two steps. The first involves diluting the chemical activator to 50% by addition of heat cure and self-cure monomer in equal parts thus ensuring double the working time. The second is the use of a lubricated mechanical press to produce a sheet of polymer for adaptation. An easy and reliable modification of the dough method is outlined coupled with the use of a kitchen press for easy preparation of special trays and denture bases. The author uses this method in the teaching curriculum after first allowing students to attempt the regular method. The modified method is thus quite a favourite with students as they experience the benefits after first trying the conventional method.

Keywords: Puri Press Technique, acrylic trays, modified dough method.

INTRODUCTION

Complete denture therapy involves a proper understanding of the principles of retention, stability and tissue support.[1,2,3] This usually requires the making of precise secondary impressions and the use of denture bases that are rigid and precise fitting. Conventional complete denture rehabilitation as taught to students in institutions involves the making of special trays and subsequently denture bases out of self-curing acrylic. While denture bases can be made using the sprinkle on method it is preferred that the special trays be made by the dough method. [4,5] Most students find the dough method extremely frustrating on account of limited working time and thus attempt to make special trays using the sprinkle on method which is time consuming and with no definite control over thickness. This non-uniform thickness can result in flexible special trays prone to errors in final retention and stability.

Autopolymerising acrylic is manufactured with a dough forming time and setting time adjusted by the manufacturer. The component responsible for this self-curing is a teriary amine that is present only in the monomer supplied for self -curing acrylic.[6.7] Normally the reaction can usually only be slowed down slightly by cooling the monomer bottle. An interesting workaround that the author recommends is diluting the concentration of the cold curing activator, the tertiary amine, by half by using a 1:1 proportion of heat-cure:self-cure monomer. The addition of the heat-cure monomer devoid of the chemical activator thus dilutes the concentration down by 50% effectively doubling the working time with no noticeable negative effect on the mechanical strength or handling of the resin. The method proposed has another component of making the sheet of polymer much more efficiently than by using a rolling pin or two glass sheets to press the polymer. Proposed is the adaptation of yet

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*Correspondence Dr. R Prakash.
Department of Prosthodontics, Anil Neerukonda Institute of Dental Sciences, Visakhapatnam, Andhra Pradesh, India.
Email: dr_prakash@dr.com

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another kitchen utensil – this time a good old Indian one, the Puri press used to make puris.

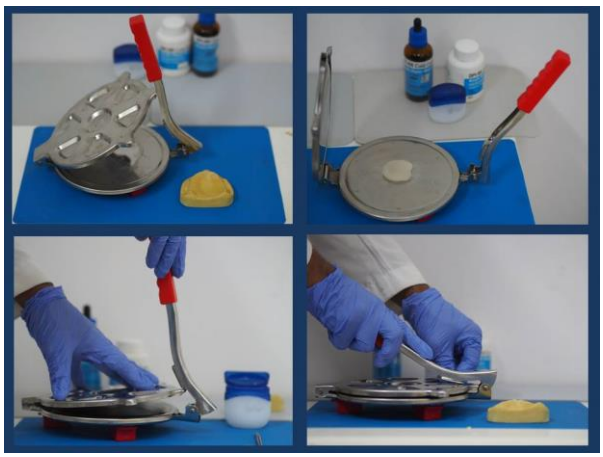

Fig 1: The patty of self cure loaded into the Puri-Press and pressed.

Fig 2: The sheet of polymer produced by the press is adapted to the cast and the excess cut away producing a denture base.

METHOD

The following materials were used:

1. Heat-Cure Acrylic Monomer (DPI, Mumbai, India)
2. Self-cure Polymer and Monomer (DPI, Mumbai, India)
3. Petroleum Jelly – Vaseline (Hindustan Unilever, Mumbai, India)
4. Puri Press – Masco (Indo-Kitchen Metal Industries, Rajkot, India)

The monomer is first prepared. Using a measuring cup 2.5 ml of heat-cure monomer and 2.5 ml of self-cure monomer are dispensed and added together. The polymer is then sifted in to the monomer in a porcelain mixing jar or measuring cup till moderately saturated. Once the dough stage commences the dough is removed, briefly dipped in cool water and placed on the bottom pad of the Puri-Press that has been lubricated with petroleum jelly. The patty of self-cure is hand patted to a flatter shape and then the upper pad lowered and the lever pressed to compress the pads together. The Puri-Press is opened and the sheet of polymer removed for adaptation. The operator should wear gloves and work in a well - ventilated room.

DISCUSSION

Text books describe various variants of the dough method from direct open finger adaptation of dough to closed compressed adaptation. The sheet of required polymer is usually produced by either using a rolling pin or pressing the dough between two sheets of glass. The outlined technique harnesses better working characteristics by tweaking the working time. This enhancement of working time is by a direct understanding of the role of the chemical initiator present exclusively in the cold-curing monomer. Addition of heat cure monomer devoid of the chemical activator thus dilutes the concentration of the activator. While a rolling pin is convenient it does not apply uniform force at one go. The Puri-press is a modification of the method of forming a sheet by pressing between two glass sheets. While attempting to press between sheets there is a certain degree of uncertainty and clumsiness associated with the technique. The simple lever pressing of the Puri-press coupled with the dilatant nature of dough viscosity that provides enough resistance to prevent over thinning enables the production of a uniform sheet of polymer with an effortless single press. The simplification of the procedure and the modification of the monomer allows sufficient working time for the operator to actually adapt and cut off excess with a pair of scissors thus minimizing post adaptation trimming to a minimum. The traditional technique of forming and adapting self-curing acrylic dough is simplified with a subtle modification to the monomer composition and the adoption of a Puri-Press as a ready to use stainless steel mechanical press. The modification of monomer is inexpensive and with readily available materials. The Puri-Press is

available online from most retailers for Rs.500 and is thus an economical and invaluable addition.

CONCLUSION

Dentistry is both a science and an art. Students must always be exposed to traditional techniques along with improvements and modifications so that it inculcates a desire to improvise and improve. The simple and yet efficient modification of the dough method outlined in this article has been very well received by students who were first taught the conventional method.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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