

## Generating a functionally compatible border complete denture extension as an adjustment procedure

Hiroshi Shimizu, DDS, PhD,<sup>a</sup> Kenneth S. Kurtz, DDS, FACP,<sup>b</sup> and Yutaka Takahashi, DDS, PhD<sup>a</sup>

<sup>a</sup>Division of Removable Prosthodontics, Department of Oral Rehabilitation, Fukuoka Dental College, Fukuoka, Japan, and <sup>b</sup>Advanced Education Program in Prosthodontics, International Program in Prosthodontics, New York University College of Dentistry, New York, NY, USA

This article describes the chairside and laboratory procedures utilized to create the functionally compatible border region of a complete denture with good retention and that causes no pain using a dynamic impression material and autopolymerizing pour-type denture base resin.

(Asian Pac J Dent 2012; 12: 33-35.)

**Key Words:** complete denture, dynamic impression material, functionally compatible border region

### Introduction

The main problem for patients wearing complete dentures is the development of decubital ulcers with associated pain. This difficulty can usually be corrected simply by adjusting the mucosal surface of the denture base. However, adjustment can be difficult, especially with a mandibular complete denture, if the ulcer occurs in the border region because morphological alteration of part of the border shape can diminish the retention of the prosthesis.<sup>1</sup>

This article describes the chairside and laboratory procedures utilized to create a functionally compatible border region of a complete denture using dynamic impression material and autopolymerizing pour-type denture base resin.

### Technique

Sufficiently grind the offending border region of the denture with a laboratory carbide bur (261, GC Corp., Tokyo, Japan). Apply dynamic impression material (Denture Soft II, Kamemizu Chemical Ind. Co., Ltd., Osaka, Japan), and have the patient wear the denture for a few days. Make sure that it can be worn with no pain and that there is adequate retention (Fig. 1). Cast dental stone (New Plastone LE, GC Corp.) into the mucosal surface and around the denture to create a definitive cast. Attach two wax sprue rods to the dynamic impression material on the denture (Fig. 2). Do not attach them to the peripheral border of the denture in order to preserve the shape of the border molded flange. Mix the base and catalyst of silicone elastomeric impression material (Exafine Putty type, GC Corp.) and cover the denture. When the impression material is set, remove the dynamic impression material and wax sprue rods thoroughly from the denture by loosening the materials with boiling water. Treat the surface of the region where the dynamic impression material was applied with ethyl acetate for 120 s<sup>2,3</sup> in order to improve the bonding of the autopolymerizing pour-type denture base resin to the portion added to the denture base. Return the silicone mold to the cast in the original position and seal with sticky wax (New Sticky Wax, GC Corp). Pour the free-flowing mix of autopolymerizing pour-type denture base resin (Palapress Vario, Heraeus Kulzer Inc., Irvine, CA, USA) into the pour holes and polymerize in a pressure unit (Palamat practice EL T, Heraeus Kulzer Inc.) according to the manufacturer's instructions. After processing, remove the silicone mold and retrieve the denture (Fig. 3). Perfect the final form of the denture by cutting the

sprues and polishing in the conventional manner, and the entire procedure is finished (Fig. 4).



**Fig. 1.** Dynamic impression material on the border region of the denture



**Fig. 2.** Attached wax sprue rods



**Fig. 3.** Retrieved denture after processing



**Fig. 4.** Polished denture

## Discussion

The chairside and laboratory procedures to create a functionally compatible border region of a complete denture were described in this article. The advantages of the present procedure are the ability to make an accurate evaluation before the procedure is completed that the denture will have good retention without causing pain, as well as esthetic results due to using denture base resin instead of direct reline material. Although a disadvantage of this technique is the length of time it requires, this drawback seems to be unavoidable at present. In a similar way, augmenting the lip support can be provided using soft wax instead of dynamic impression material and autopolymerizing pour-type denture base resin.<sup>4</sup> One caution to be noted is that the bond durability between the autopolymerizing pour-type denture base resin and prepolymerized denture base resin may be inferior to the durability of the conventional surface preparation using dichloromethane.<sup>3</sup> However, there is medical evidence that dichloromethane may be carcinogenic to humans,<sup>5</sup> so a more effective new surface treatment is definitely needed.

## References

1. Darvell BW, Clark RK. The physical mechanisms of complete denture retention. Br Dent J 2000; 189: 248-52.
2. Shimizu H, Ikuyama T, Hayakawa E, Tsue F, Takahashi Y. Effect of surface preparation using ethyl acetate on the repair strength of denture base resin. Acta Odontol Scand 2006; 64: 159-63.
3. Shimizu H, Kakigi M, Fujii J, Tsue F, Takahashi Y. Effect of surface preparation using ethyl acetate on the shear bond strength of repair resin to denture base resin. J Prosthodont 2008; 17: 451-5.
4. Shimizu H, Nakahara G, Takahashi Y. Use of soft wax and pour-type denture base resin to augment lip support for a removable prosthesis. J Prosthet Dent 2008; 100: 242-3.
5. Dell LD, Mundt KA, McDonald M, Tritschler JP 2nd, Mundt DJ. Critical review of the epidemiology literature on the potential cancer risks of methylene chloride. Int Arch Occup Environ Health 1999; 72: 429-42.

## Correspondence to:

Dr. Hiroshi Shimizu

Division of Removable Prosthodontics, Department of Oral Rehabilitation, Fukuoka Dental College

2-15-1 Tamura Sawara-ku, Fukuoka 814-0193, Japan

Fax: +81-92-801-0513 E-mail: simizuh1@college.fdcnet.ac.jp

Accepted November 13, 2012.

Copyright ©2012 by the *Asian Pacific Journal of Dentistry*.

Online ISSN 2185-3487, Print ISSN 2185-3479