

Altering Internal Surface of Putty Impression Materials for Better Recording of Tooth Preparation Margins

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Abstract

This article describes the clinical procedures for a modified putty-wash impression technique, in which the hydraulic pressure induced from planned flowing of wash material in the inner surface of putty impression toward the vestibule, pulls over the gingival tissues covering finishing line. This simple method reduces the need to use a retraction cord in normal-depth finishing lines in gingival sulcus.

Keywords: Dental Impression Materials, Dental Impression Technique, Gingival Retraction Techniques.

Introduction

Achieving an accurate impression of a prepared tooth is an important step in fixed prosthodontics that requires appropriate recording of the prepared finishing line, especially in subgingival margins (1). One of the several impression techniques that have been widely used is putty-wash impression technique (2, 3). The two-step putty-wash (dual-phase) technique is one of the most dimensionally accurate impression methods (4, 5). This impression technique has been modified to solve a number of problems associated with making impressions, especially in registration of subgingival margins (6, 7). Some of these techniques include matrix impression technique (8), laminar impression technique, (9,10) tube impression technique,(11) hydrodynamic impression technique^{12,13} and some other innovative techniques (2,3,6,7,14).

In the method described here, the hydraulic pressure induced from flowing wash material in the inner surface of putty impression pulls over the gingival tissues covering the finishing line. This method can be used in all cases that putty-wash impression making is necessary for fabrication of fixed dental prostheses.

Technique

1. One week after tooth preparation, remove the provisional restoration and clean the prepared tooth.
2. Select a suitable prefabricated tray and carry out the first stage of impression with a putty impression material (for example: Speedex C-Silicone Impression Material – Putty, Coltene/Whaledent, Germany) (Fig. 1).

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1. After removing the putty impression from the patient's mouth, rinse it under tap water and dry it with a gentle air stream.
2. Grind away a thin layer of impression material from the inner surface of the negative imprint of the prepared tooth with an acrylic bur (round or ball nose carbide tree bur) (sswhite dental, New Jersey, USA) in a low-speed handpiece, but do not trim the preparation margins.
3. Trim a 2-mm width channel of the gingival portion of the impression material next to the margins with a round carbide ball bur.
4. Create two or more channels in the buccal and lingual walls of the putty impression from the marginal channels towards the depth of the vestibule for leading the excess of wash impression material used in the next stage (Fig. 2).
5. Isolate the prepared tooth and simultaneously mix the wash impression material (for example: Speedex C-Silicone Impression Material – wash, Coltene/Whaledent, Germany) and fill the tooth parts of putty impression with the mixed material. Carry the filled tray to the patient's mouth and place it very carefully in its correct position. The wash material will flow from the prepared tooth cavity toward the marginal channel and to its way to exit; it will force the gingiva outward from the finishing line. Lack of external putty support for the displaced gingiva will permit the wash to flow into gingival sulcus and register this area (Fig. 3).
6. Wait for the wash material to set and then remove the completed impression from the patient's mouth (Fig. 4). Wash the impression with tap water and disinfect it with a suitable material. Finally, send the impression to dental laboratory to pour the stone cast.



Figure 1. The first stage of taking impression with a putty impression material



Figure 2. Prepared putty impression for planned flow of wash material



Figure 3. Completed putty-wash impression

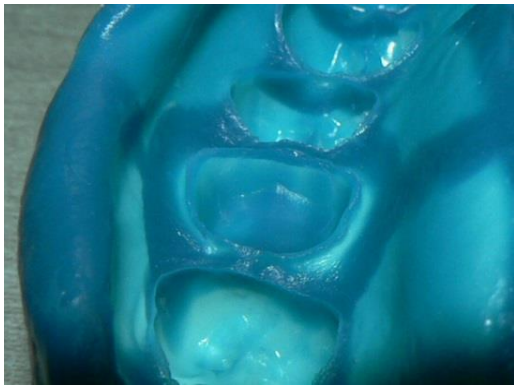


Figure 4. Registered finishing line

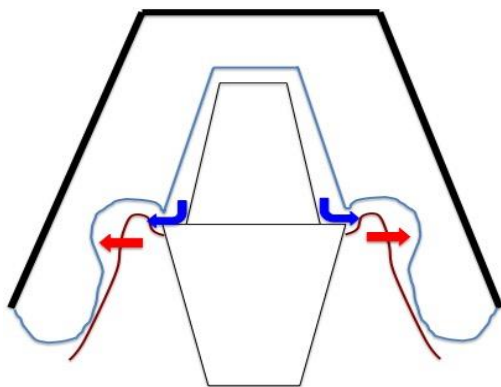


Figure 5. Path of movement of wash material in the prepared putty impression

Discussion

In conventional putty-wash impression techniques, the putty impression material can push and collapse the gingival tissue against the prepared margins (14). In the technique presented here, planned trimming of the putty material can create a hydraulic pressure due to controlled extrusion of the wash material from the prepared tooth cavity toward the gingival sulcus and then flow it out of the impression. This pressure displaces the marginal gingiva and holds it in a position away from the finishing line (Fig. 5).

The excess material can clean the preparation surface and gingival sulcus as it extrudes out, forcing out air and fluids toward noncritical vestibular or lingual portions (14).

Indications and contraindications: This technique can be used in all dental fixed prostheses impression procedures. There is not any contraindication for this technique.

Advantages and disadvantages: This technique is simpler and has fewer procedural steps than nearly all similar previous methods (6, 8, 14). However, it is clear that the ability of the wash material to displace gingiva is limited. For example, in deep subgingival margins, this method cannot be effective and must be used with a retraction cord.

In a technique described by Bhansali et al (6) for preserving interdental papillae, a large number of procedural steps are needed. In the present method, the papillae are preserved simultaneously with the creation of a sufficient space in the putty impression material over the gingival papillae.

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