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Case report

Rapid fabrication of a digital prosthesis

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ABSTRACT

Finger prosthesis often needs refabrication due to its discoloration following use. This article presents a novel, economical, and cost-effective technique to duplicate the patient's existing prosthesis to obtain a new wax replica, which is then clinically tried and processed to obtain new silicone finger prosthesis. This technique requires comparatively less clinical and laboratory steps as to fabricate an entirely new prosthesis. The newly fabricated silicone finger prosthesis has the fit and marginal adaptation of the patient's existing prosthesis but the esthetics is improved.

Introduction

Fingers or digits have an important role in the function and aesthetics. The loss of the digits leads to functional and psychological problems [1–3]. Silicone finger prostheses have lifelike appearance [4]. Finger or digital prosthesis have been also used to prevent and protect ulcerated finger tips in patients with microangiopathy of fingers [5].

Finger prosthesis often has low durability when compared to facial prosthesis. It needs to be frequently replaced as it can be irreversibly stained or discolored due to repeated insertion and removal. Fabrication of new finger prosthesis is time consuming and requires several clinical and laboratory steps [6]. Even after fabrication of the finger prosthesis, intricate adjustments are necessary during the delivery visit to obtain a retentive fit and proper marginal adaptation. In some scenarios, a well-fitted prosthesis may need to be replaced due to discoloration or wear of the existing prosthesis.

This article presents a novel cost-effective technique to fabricate new finger prosthesis by duplicating the patient's existing prosthesis to obtain a wax replica that has the fit and marginal adaptation of the patient's existing prosthesis. The wax replica needs fewer adjustments to obtain a comfortable and retentive fit as compared to fabricating an entirely new wax up, reducing the overall fabrication time. The newly fabricated prosthesis has improved esthetics and the fit and marginal adaption as that of the patient's existing prosthesis.

Technique

1. Make impression of the patient's existing finger prosthesis with irreversible hydrocolloid impression material (Jeltrate Regular Set; Dentsply) in a small container (Jeltrate Regular Set; Dentsply) and make key groove at the edge of the impression for orientation of the stone stump in the later stage (Figs. 1 and 2).
2. Box with tape (Fig. 3) and pour the inner surface of the silicone prosthesis and over the hydrocolloid impression with Type IV dental stone (Nok Stone; Lafarge) to get the

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Fig. 1 – Patient's existing finger prosthesis.

Fig. 2 – Irreversible hydrocolloid impression of patient's existing prosthesis.

Fig. 3 – Boxing the hydrocolloid impression.

stone stump with base (Fig. 4). Gently remove the stone digit stump from impression after the stone sets so that the impression remains intact (Fig. 5). Apply thin layer of separating medium (Tinfoil substitute; Factor II Inc) over the stone stump.

3. Pour the hydrocolloid impression with molten baseplate wax (TT 100 soft; Cavex) to obtain a wax replica of the patient's existing finger prosthesis (Fig. 6). Place the stone stump over the hydrocolloid impression filled with wax and allow the wax to set (Fig. 7). Gently remove the wax replica of finger prosthesis by tearing the hydrocolloid impression (Fig. 8).
4. Try in the wax replica and do necessary adjustment and final texturing (Fig. 9). Fabricate a 3-piece mold from Type IV dental stone (Nok stone; Lafarge). Eliminate the wax from the mold and apply tinfoil-separating medium (Tinfoil substitute; Factor II Inc).
5. Mix room temperature vulcanizing silicone (MDX 4-4210; Factor II Inc) according to the manufacturer's recommendation with intrinsic stains to match the shade of the patient's skin and pack the silicone into the mold.

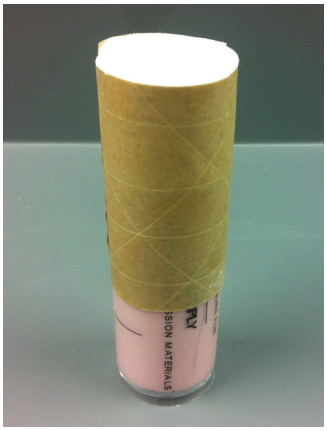

Fig. 4 – Pouring the impression with Type IV dental stone.

Fig. 5 – Removed stone finger stump.

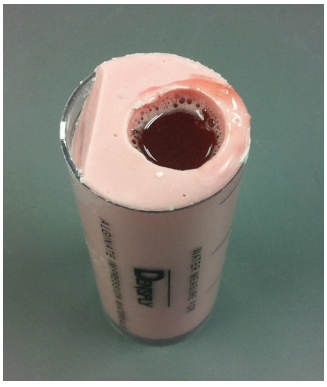

Fig. 6 – Pouring the hydrocolloid impression with molten baseplate wax.