



PROVISIONAL RESTORATION CHARACTERIZATION WITH EDIBLE PIGMENTS.

Prosthodontics

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ABSTRACT

Provisional restorations are an integral part of any prosthodontic procedure. They are used in the interim between tooth preparation and fitting a definitive restoration. In addition to aesthetics they fulfill important functions such as: the protection of the underlying tooth allowing pulpal healing, protection against dental caries and accumulation of dental biofilm, prevents gingival overgrowth, auxiliary to determine the reduction during tooth preparation, help occlusal stability, useful as a guide for the definitive restoration shape, contour and shade, acquaint the patient with a semblance of the final restoration; therefore a properly fabricated provisional restoration is important in achieving a successful indirect restoration so its confection and adaptation should not be overlooked.

KEYWORDS

Provisional restoration, acrylic resin, characterization, edible pigments

INTRODUCTION

Provisional restorations have typically been made with acrylic resin and more recently bis-acrylic composite resin provisional restorative materials.⁹

These provisional materials must be durable for the time required until final restoration fabrication.⁵ Traditionally, autopolymerizing polymethyl methacrylate (PMMA) resin has been reported to be the most frequently used material of choice for interim restorations fabricated by direct and indirect techniques. The material has a long record of use, low cost, and good strength. Its marginal adaptation has also been shown to be acceptable. However, this material has poor color stability, porosity and poor surface texture,⁷ which directly influences the inability to characterize it with various shades that are present in natural teeth. There are many procedures for making provisional restorations such as prefabricated crowns, direct alginate impression technique, block technique, indirect matrix technique, and laboratory heat-processed technique. Most of these procedures do not permit characterizing the provisional restorations, because layering various shades of acrylic resin is difficult or not possible.³ Therefore, the provisional that are performed in most dental offices have a monochromatic appearance, which is not aesthetically accepted by patients.

In the other hand, clinicians are often asked to provide natural-looking provisional restorations, despite the brief duration of their use. Characterization of indirect interim restorations can be achieved by additive or subtractive methods. Additive methods often employ the stratification of different hues, opacities, and modifiers of self-cure acrylics or resins to obtain the desired effect. Subtractive methods - **LIKE THE INDIRECT SANDWICH TECHNIQUE**- describe techniques based on the removal of acrylic from the restoration to be later pigmented and filled with transparent self-curing resin. So far, the characterization has been made with the use of colored pencils,⁸ chalk,² fluid resin pigments,¹² celluloid crowns,¹⁶ polycarbonate crowns,⁷ pigmentation of temporary cement,¹⁴ and stain kits.¹⁵

Nowadays, there are kits available to pigment acrylic resins, however they have a considerable cost, are difficult to obtain and takes time to fix the pigment. In addition, if the wrong amount or shade of color is applied, it should be expected to harden and be removed with burs increasing the time of characterization. This is why the general practice dentist does not invest time or money in them.

For this reason the aim of this article is to present a technique of indirect characterization of provisional restorations in the dental

office. It is accessible, easy to manipulate and it has a very low cost materials. The technique proposed guarantee the execution of restorations in a short time, highly aesthetic, durable and personalized, leaving aside the monochromatic aspect of the common provisional.

MATERIALS AND METHODS

An upper central incisor was made using a matrix made of polyvinyl siloxane (Flexitime-putty). This matrix was filled with self-curing acrylic resin (NicTone 62) by dusting and dripping technique. Once polymerized, the edges were cut out and remodeled with Braasslers burs and Shofu stones. (Fig 1) A slight wear was made on the vestibular face of the teeth with a Brassler pear bur to generate a small space where the dye and transparent self-cure acrylic resin was applied.

For the characterization there were used edible pigments in gel from the brand Ma Baker and Chef. These pigments are certified by the FDA, thus they are not toxic. The following pigments were used Purple # ITEM JC 40-010, Yellow # ITEM JC 01-010, Black # ITEM JC 14-010, Orange # ITEM JC 28-010, Blue # ITEM JC 26-010 and Brown # ITEM JC 15-010. All of these pigments were mix with toothpaste (Colgate Total 12) in order to improve its viscosity and consistency; facilitating its handling. Also, it helps to achieve the desired tone. The white color was obtained from the natural coloration of the toothpaste, so no additional pigment was used. A brush with natural bristle and flame tip was used to apply the pigment on the vestibular face of the acrylic incisor in order to carry out the characterization. (Fig 2)

When the desired characterization was achieved, the pigment was dried with the air from the triple syringe for 3 to 5 minutes. If the characterization is not achieved, all pigments can be removed easily with water, speeding few minutes for starting over again without damaging the acrylic resin underneath. After finishing the characterization, a light layer of transparent acrylic resin was added to cover the pigment and return the desired volume and shape to the tooth. (Fig 3)



Figure:1 Silicon matrix to duplicate in acrylic
Source: Own



Figure:2 application of pigments certified by the FDA
Source: Own



Figure:3 Transparent acrylic application

Source: Own

Once the acrylic resin was polymerized, it was cut out with Brassler burs and stones to give the final shape. Finally, the tooth was polished with blanket, polyacrylic and white from Spain in the usual way to finish the acrylics. (Figs 4, 5 and 6). Six samples were characterized trying to reproduce the real pigments of teeth with fluorosis in their different degrees, in order to demonstrate the viability of this technique.



Figure:4 Devastate with fresones Brassler

Source: Own



Figure:5 Polished with blanket

Source: Own



Figure:6 Final finished

Source: Own

RESULTS

The characteristics of teeth with fluorosis in its various grades were reproduced successfully, which is why this technique demonstrated its effectiveness in characterizing provisional restorations.

Once the characterization is finished and covered with the transparent self-curing acrylic resin, it is resistance to washout because the samples did not suffer color changes during polishing process. The pigments and the toothpaste are not toxic because they are intended for human consumption. Moreover, if the characterization is not acceptable this technique allows the pigments to be removed with water eliminating any pigment and avoiding any distortion of the restoration.

CONCLUSIONS

The technique suggested for the characterization of provisional restorations proved to be quick and easy to give accurate characterizations to the provisional restorations of acrylic resin. It offers the advantage of being washable avoiding repeating the provisional if the color is not achieved on the first attempt. It does not require material or special equipment so it is available to any dentist and the pigment is easily obtained. It is economical and edible so that the risk of toxicity is avoided.

The characterization of provisional restorations with the described technique offers to the dentist a new alternative to achieve a temporary restorations that meet the aesthetic needs of patients with high effectiveness and low cost.

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