

ESTHETICS ENHANCEMENT IN PROVISIONAL CROWNS: “BRINGING ARTIFICIAL CLOSE TO NATURAL”

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ABSTRACT:

The word provisional means established for the time being, pending a permanent arrangement. Provisional restorations are a critical component of fixed prosthodontic treatment. In addition to their biologic and biomechanical requirements, interim restorations provide the clinician with valuable diagnostic information. Clinicians often are asked to provide natural-looking provisional restorations, despite the brief duration of their use which might appear time consuming but has a pronounced psychological effect on the patient aspect. Although provisional restorations are usually intended for short-term use and then discarded, they act as functional and esthetic blueprint for the design of the definitive prosthesis. This article reviews the techniques to enhance the esthetics of provisional crown by altering its shape, size and color making them appear as natural as possible.

Key words: Provisional, Esthetics, Restoration.

INTRODUCTION:

When teeth are prepared, a substantial amount of tooth structure or restorative material is removed. This is to configure the teeth so that they can function as abutment for cemented restorations.^[1] When the procedure is completed, such teeth are essentially “undressed”, but cannot be immediately restored to full form and function¹ because fixed prosthodontic treatment, whether involving complete or partial coverage and natural or dental implant, commonly

relies on indirect fabrication of definitive prostheses in the dental laboratory.^[2]

The word provisional means established for the time being, pending a permanent arrangement.^[3] It can be challenging for practitioner to justify the use of provisional treatment because of its “temporary” nature, especially when the time required to produce a interim restoration equals that spent for tooth preparation and impression making. However, the exclusion of this essential step and the quality of the provisional

restoration can make a difference between success and failure.^[4,5,6] The term *provisional, interim or transitional* have been used interchangeably in the literature.² A provisional restoration must satisfy important dentist and patient needs. Unfortunately “temporary” often conveys the notion that the requirements are unimportant; the dentist however must not reduce clinical efficiency and treatment quality. Literature reveals that time and effort expended fulfilling the requisites of provisional restorations are well invested.^[3]

Patient expectations for improvement of tooth shape, size, arrangement, color, and surface texture have promoted better esthetic materials for interim restorations. Shaded acrylic resin provisional restorations improved control of size, contour, shade, and marginal adaptation over preformed metal or polycarbonate temporary crowns. Teeth with pronounced gingivo-incisal color contrast, high-value translucent teeth, and restorations that are remade to improve esthetics can limit the capability of shaded acrylic resin provisional restorations to satisfy the esthetic demands of discerning patients.

IMPROVING THE SURFACE TEXTURE ^[7]

These effects are most important for maxillary anterior teeth adjacent to teeth with well-defined lobes, imbrication lines, or developmental defects.

1. DEVELOPMENTAL LOBES

Developmental lobes are most effectively simulated in wax during the final stage of the diagnostic waxing. To produce a natural effect, it is critical to avoid making grooves that are straight or sharp edged or have uniform cross sections. Instead, grooves should be created with a gentle crescent shape, with softening of the edges and slight varying of the cross section by burnishing with the largest-diameter waxing wire. If a polypropylene sheet is used to form the external surface form, these subtle details can be reproduced in the resin.

2. DEVELOPMENTAL DEFECTS

Placement of developmental defects is most effectively accomplished in the resin just before pumice and rag wheel finishing. Depending on their size and definition, these features may be created with a sharp-edged, inverted-cone green stone rotating parallel to the occlusal plane and touched briefly to the resin. Often the defects are most noticeable in the cervical third of the tooth, but an adjacent tooth is the best guide for determining their distribution.

3. IMBRICATIONS LINES

Imbrications lines may be simulated with a coarse diamond rotary instrument rotating slowly and moved across the facial surface from proximal to proximal. This will reduce the surface reflectance of the resin after it is finished and polished. However, as with all texture effects, overfinishing will obliterate these lines. Care must be taken to monitor the finishing by rinsing pumice from the

surface and drying it. A completely smooth and highly polished provisional may be excellent for plaque control but will not be esthetically compatible with the adjacent teeth. The patient should be asked which of these two factors is more important.

TECHNIQUES FOR ESTHETIC ENHANCEMENT

1. COLOUR [8]

Custom color effects that simulate intrinsic and extrinsic stains, cracks, or hypo calcification of adjacent teeth may be added to provisional restorations with paint-on stain kits. These should be applied quickly, avoiding over manipulation, which causes streaking and surface roughness.

The technique involves mixing Palaseal (Heraeus Kulzer), photopolymerising methacrylate laquer with porcelain powder stain of different shades which are applied over restoration. The mix is then photo polymerized. (Fig.1 and 2)

2. TRANSLUCENCY [9]

The procedure requires two resins-one colored to match the body and one to match the enamel of the tooth. Some manufacturers provide enamel of incisal shades that may be used without modification. When these are not available or when variation is needed, clear resin powder may be mixed with a smaller fraction of the "body" powder to produce the desired translucency.

The enamel color resin is carefully bead-brushed onto the occlusal or incisal surface of the External Surface Form and tapered to end at the middle or cervical third. The resin's tendency to flow where it is not wanted can be controlled by manipulation with the brush tip. When the desired distribution of enamel color resin is achieved, a disposable syringe is loaded with body color resin and the External Surface Form is immediately filled, avoiding disruption of the enamel color resin. The result is a more natural-appearing provisional restoration with translucency in the incisal or occlusal portion that closely matches the existing dentition.

CONCLUSION:

Characterization can be accomplished internally with a layering technique used during the fabrication of the provisional restoration and/or externally with the use of surface stain kits. Internal characterization is not always predictable, as the different layers tend to be displaced during processing procedures. External stains frequently contain volatile thinners that evaporate prematurely from their containers. Blending such stains over facial surfaces can be a challenge.

Esthetics in temporary coverage may or may not be a major objective for the patient and/or the dentist. However, certain situations dictate a reasonable amount of custom shading for the creation of a "stand-back" illusion of esthetic compatibility.

A well-contoured, opaque, plastic-like provisional restoration is never perceived in the same manner as one with a natural appearance. Poor esthetics on a temporary restoration may pressure the acceptance of the final restoration. High quality interim esthetics allow for porcelain modification to take place without time constraint.

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FIGURES:



Fig. 1 Provisional restoration evaluated intra orally for its fit, marginal integrity and occlusion



Fig. 2 Final characterised provisional restoration