

COMPOSITE RESIN VENEERS: COMBINATION OF DIRECT AND DIRECT- INDIRECT RESTORATIVE TECHNIQUES

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Abstract: **Goal:** Dental aesthetic dissatisfaction is strongly related to darkened teeth, stained restorations and deficient anatomy. Identifying these factors and associating them with the patient's expectations along with the particularities of the case is the key to the success and longevity of any dental treatment. Case report: Female patient, 27 years old, sought dental care in a private office with aesthetic complaints of darkened anterior teeth and stains between the posterior teeth. After carrying out clinical and radiographic examinations and extra and intraoral photographs, digital planning and analog wax-up were carried out and approved by the mock-up test. The treatment involved class II type restorations on upper premolars and composite resin veneers combining two restorative techniques, direct technique (teeth 13 to 23) and direct-indirect technique (teeth 14-15, 24-25). **Advantages and Limitations:** The use of the direct-indirect restorative technique allows for better visualization and precision of the work, care for the gingival tissues and peace of mind for the patient, considering that part of the procedure is carried out outside the mouth, on the other hand, a greater learning curve is necessary to the execution and agility in completing the restorative procedure. **Conclusion:** Optimizing the resolution of complex aesthetic cases using combined restorative techniques that are versatile and resolving greatly assists in the planning and execution of clinical cases with assertiveness and predictability.

Keywords: Aesthetic Dentistry; Composite Resins; Dental veneers; Restorative Technique.

INTRODUCTION

The resolution of highly complex aesthetic dental cases needs to be linked to the knowledge of restorative techniques that allow, depending on the clinical situation, to restore function, aesthetics, health and well-being to the patient

(TIN-OO MM, et al., 2011). In these clinical situations, through the incorporation of new technologies and techniques into the dental market, increasing versatility is possible for a more assertive clinical resolution on the part of the professional, and this must be strongly linked to the study and practice developed (BLATZ MB, et al, 2019; ALIKHASI M, et al., 2022).

The evolution of restorative materials contributes greatly to the increasingly precise and long-lasting execution of aesthetic dental treatments. The versatility of composite resin in relation to color, opacity, optical effects, light transmission, suitability for tooth shapes is what has led this material to success among dentists and patients, and thus contributing to achieving a more balanced smile. and harmonic (FERRACANE JL., 2011).

As demand arises, composite resin requires a professional who has knowledge of its optical characteristics, thicknesses and appropriate combinations to achieve results that mimic the dental structure. Therefore, restorative techniques have been created to optimize and guide functional and aesthetic dental results (COLLARES K, et al., 2017).

Among the restorative techniques, the polychromatic layering technique was developed with the aim of using restorative materials not dependent on a specific commercial brand of composite resin (FAHL, et al., 1995). Fahl, et al, 1995, conceptualizes the technique by categorizing shades of artificial dentin and artificial enamel, using in the technique shades of composite resin based on VITA and non-VITA, according to the individual characteristics to be reproduced (FAHL, et al., 1995).

The polychromatic technique consists of using dentin composite resins based on VITA or non-VITA and the enamel shades can be subclassified into: a) body enamel, b) value enamel, c) translucent effect enamel, d) effect

enamel semi-translucent milky (FAHL, et al., 1995). Each restorative system available on the market may employ a different color terminology, and this exactly represents the type of optical characteristics that must be replicated with each layer of the restoration. In each clinical situation, the real need for the number of layers to compose a restoration will be verified, which will be determined by the polychromaticity intended to be reproduced (DIETSCHI D, FAHL N JR., 2016).

The creation of restorations can use direct manufacturing techniques, that is, the complete adhesive process is carried out and the composite resin is applied directly to the dental structure, allowing it to be sculpted, restructuring shape and color, distributing the layers of composite resin accordingly. with the polychromaticity of the dental element (FAHL, N JR., 2000).

In order to facilitate the creation of composite resin restorations, minimizing errors in color, stratification and polymerization, the direct-indirect technique was developed, which consists of sculpting the composite resin directly onto the tooth structure, without prior adhesive preparation, photoactivated, removed from the dental structure, allowing adjustments to remove excess, finishing and polishing to be carried out extraorally, undergo thermoprocessing that allows maximizing the photoactivation and resistance of the composite resin and finally carry out cementation indirectly to the tooth (FAHL N JR., 1996).

The direct-indirect technique allows all steps to be carried out in a single clinical session, encompassing the benefits of the direct and indirect technique with simplified use, being used in anterior and posterior areas in veneers, dental fragments, class V, among other uses. Thus, the technique guarantees excellent aesthetics, better mechanical properties, in addition to unsurpassed

polishing and marginal adaptation (FAHL N JR., 2015; FAHL N JR, RITTER AV, 2021).

Through knowledge and mastery of conceptual restorative techniques, it is possible to adapt the professional's skill, experience in using the technique, polychromaticity of the dental element so that an effective execution is achieved. Therefore, this clinical case report aims to present the associated use of direct and direct-indirect polychromatic restorative techniques in the resolution of a previous aesthetic case.

CLINICAL CASE REPORT

A 27-year-old female patient sought dental care in a private office with aesthetic complaints of darkened anterior teeth, disharmony in tooth shape and stains between the posterior teeth (Figures 01 to 03). Complete clinical and radiographic examinations and extra and intraoral photographs continued for aesthetic smile planning. Interproximal radiographic examinations confirmed the existence of secondary lesions of dental caries in the upper premolar teeth and endodontic treatment in the left upper lateral incisor (#22), which was satisfactory and without periapical changes. To study and plan the aesthetic complaint, digital smile planning and analog wax-up were carried out (Figure 04), which was approved by the patient through the mock-up test.

It was reported in the initial consultation that the patient had undergone teeth whitening approximately six months ago, and had a satisfactory smile color. She also reported that tooth 22 had not responded to whitening. Therefore, the clinical sequence of the present case consisted of the intervention of secondary caries lesions in the interproximal regions of dental elements 14, 15, 13, 25, 24 and 23 (Figures 05 and 06). The restorative technique used the following composite resins for execution Herculite Precis A3D and A1E (Kerr Dental, Orange, CA, USA); IPS Empress

Direct Color Ocher and Brown resin (Ivoclar Vivadent, Vivadent, Schaan, Liechtenstein).

In the second restorative stage, aesthetic restorations were carried out, creating veneers in composite resin using the direct polychromatic restorative technique (Fahl et al., 1995) on dental elements 13, 12, 11, 21, 22 and 23 (Figure 07), and using the technique direct-indirect restoration (Fahl N Jr., 1996) on dental elements 14, 15, 24 and 25 (Figure 08). All restorative procedures followed the use of absolute isolation with a rubber dam, except for the creation and cementation of the veneers using the direct-indirect technique. 1mm buccal and incisal grinding was performed with diamond burs on the darkened tooth element 22. The restorative sequence used for the direct polychromatic technique (#13-23) employed the following restorative materials: Vitaescence PF (Ultradent Products Inc. Utah, USA); Creative Color A1-B1-LO + A2-A3 (Cosmedent, Chicago, IL, USA); Form A1D (#12) (Ultradent Products Inc. Utah, USA); Empress Direct B1D (Ivoclar, Vivadent, Schaan, Liechtenstein); Empress Direct Trans (Ivoclar, Vivadent, Schaan, Liechtenstein); Harmonize B1E (Kerr Dental, Orange, CA, USA) and Estelite Omega MW (Tokuyama, Tokyo- Japan).

To create the direct-indirect veneers (#24-25; #14-15), the following composite resins were used: Empress Direct B1D (Ivoclar, Vivadent, Schaan, Liechtenstein) and Harmonize B1E (Kerr Dental, Orange, CA, USA), cementing the veneers with NX3 Clear light-cured cement (Kerr Dental, Orange, CA, USA).

One session was reserved for the complete finishing sequence, secondary and tertiary anatomy and polishing (Figures 09 to 12).



Figure 01: Front initial photograph.



Figure 02: Right side initial photograph.



Figure 03: Initial left side photograph.

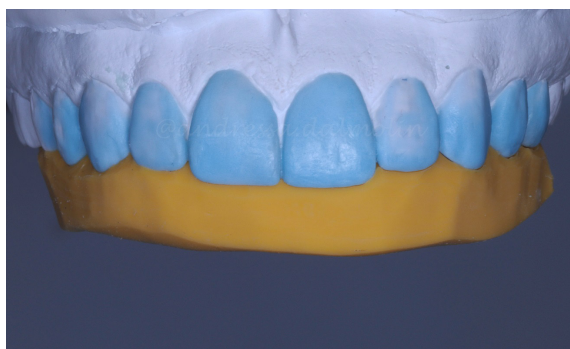


Figure 04: Analog wax-up and palatal guide made of addition silicone.

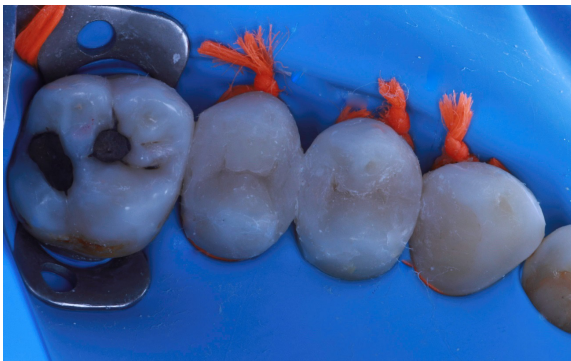


Figure 05: Photograph after execution of interproximal restorations on dental elements 15, 14 and 13.



Figure 06: Photograph after execution of interproximal restorations on dental elements 25, 24 and 23.



Figure 07: Production of composite resin veneers using the direct polychromatic restorative technique on dental elements 13, 12, 11, 21, 22 and 23.

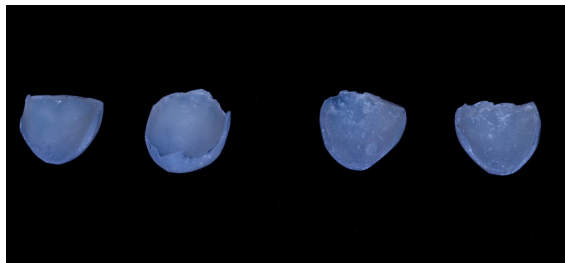


Figure 08: Production of composite resin veneers using the direct-indirect restorative technique on dental elements 14, 15, 24 and 25.



Figure 09: Final front photograph.



Figure 10: Final photograph on the right side.



Figure 11: Final left side photograph.



Figure 12: Half-open smile photography.

DISCUSSION

Aesthetic dental solutions are challenging, especially in cases that involve changes in color, shape, balance of tooth sizes and different teeth to achieve the desired harmony in the smile.

Composite resin is a versatile restorative material as it allows the execution of complex cases with great color harmony, light transmission and mimicry of dental tissues. On the other hand, it is an operator-dependent material, as it demands theoretical and practical knowledge about restorative materials, the different characteristics of dental tissues and the technical skill of the professional. The repetition of processes allows the clinician to understand each color nuance and the perception of dental polychromatism.

Restorative techniques can be used according to the professional's preference and expertise. In the present clinical case, two techniques were used to facilitate the restorative process and show the versatility and similar performance achieved with both techniques, both in color and harmony in the smile.

The direct-indirect restorative technique allows a smoother execution for both the professional and the patient, given the longtime of clinical care, which allows benefits such as a better marginal finish and polishing of the facets performed extraorally. A positive characteristic in the present case for the use of

the technique was the location, posterior teeth demonstrate greater difficulty in accessing rotary instruments and cervical handling of the composite resin, thus, the present clinical situation allowed and motivated the use of the direct-indirect technique seen that there were no retentive sites on the dental elements.

Therefore, it is notable that the professional's experience in using each restorative technique facilitates the process and performance achieved, as an increasing learning curve is necessary when using new techniques. Thus, it is necessary to study theoretical and practical restorative techniques prior to their use in clinical cases, and this way, be able to associate techniques within the professional's domain in order to facilitate restorative processes and work ergonomics, both for patient and professional, and maintain the same performance and longevity achieved.

CONCLUSION

Direct and direct-indirect polychromatic restorative techniques present specific benefits and indications for each clinical case. Therefore, optimizing the resolution of complex aesthetic cases using combined restorative techniques can greatly assist in the planning and execution of clinical cases with assertiveness and predictability. There is a need to master techniques to carry out work that combines versatility and resoluteness, achieving the patient's desires and desires, associated with care and appreciation for oral health.

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