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USE OF THE SEMI-DIRECT TECHNIQUE FOR REANATOMIZATION WITH COMPOSITE RESIN - CASE REPORT

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Abstract: With the increasing demand for esthetic restorations in anterior teeth, dentists are increasingly opting for the use of materials that have good clinical performance and are easy to work with. Guided aesthetic remodeling is a technique that allows for this reduction in working time with the anticipated visualization of the expected result through planning and individualization for each patient, and its main objective is to achieve a final clinical result as the similar as possible to the planned one. The use of the transparent guide promotes the dental protection and allows the photopolymerization of the composite resin through the material, simplifying the clinical steps and reducing the operator's clinical time. With this, the objective of the work is to report the sequence of the semi-direct technique with transparent guide for a young patient dissatisfied with her teeth, and, it is to demonstrate, through a clinical case report. As a result, a good clinical time, a good aesthetic result and ease of the procedure were obtained. It is concluded that with the patient and professional satisfied with the result, the described technique can be an alternative in the daily routine of the dental surgeon today.
Keywords: Composite resins; Dental Restoration; Operative Dentistry.

LITERATURE REVIEW

With the incorporation of social media allied to pre-established dental harmonic standards, advances in dentistry and the decrease in the search for pain relief, this has become much more requested by patients looking for restorative procedures with an aesthetic purpose (1); (2.3);

The diagnostic wax-up serves to provide a vision of the smile to be built, integrating the relationship between gums, teeth and lips into the model (4).

With the models already waxed, it is possible to carry out the mock-up guide that will determine a preview of the result to be obtained. The technique is considered one of the most efficient and objective ways to confirm the treatment plan, in addition to observing the biological limitations of the patient in question (5).

This previous waxing also allows the production of platinum guides, which is a form of guided direct restoration, delimiting the dimensions such as height and width of the teeth already planned. In some cases, transparent guides can be made which, in addition to determining the dimensions already mentioned, will also involve the dental volume, and can be used as a screen for direct resin restorations, as it allows the passage of light (3,6,7).

Among these procedures, composite resin buccal restorations, better known as veneers, are in great demand because they become a viable alternative, as they are more economical and versatile than other materials such as ceramics and can change color, shape, size. and volume of teeth. (8)

The finishing and polishing stages allow for surface smoothness and, when properly performed, lead to a decrease in surface roughness, reducing the adhesion of bacterial plaque, enabling a healthy periodontium, offering a sensation of shine, which increases the naturalness and durability of the restorations, encouraging greater patient comfort and satisfaction (9). The objective of this article is to report the clinical sequence of the semi-direct restorative technique in composite resin with the aid of a transparent silicone guide in a young patient.

CASE REPORT

Female patient I.C.P., 23 years old, attended the Dentistry clinic of the '' Universidade Estadual do Oeste do Paraná" (UNIOESTE), dissatisfied with the aesthetics of her smile.

She had yellowed upper anterior teeth and an unsatisfactory and disharmonious anatomical shape (Figure 01).

For analysis and planning of this case, anamnesis, radiographic examinations, study model and intra and extraoral photographs were performed. After anamnesis and clinical examination, patient and dentist opted for a conservative approach with nanohybrid composite resin restorations using the direct technique.

Before the restorative procedure, at-home bleaching was performed with 10% carbamide peroxide (Whiteness Perfect 10% - FGM Produtos Odontologicos, Joinville, SC, Brazil) for 3 weeks. After bleaching was completed, a period of 14 days was allowed to select the color of the resin using a chromatic map of the natural and clean tooth, which is determined by the correlation of enamel and dentin with light during refraction and light reflection processes. (Figure 02).

The study models were used to perform the diagnostic waxing (Figure 03), this step aims at reconstructing the size, shape and anatomy of the teeth. A VOCO silicone matrix (VOCO GBMH, Cuxhaven, Germany) was used to carry out the Mock-up. Bisacrylic resin (3M™ Espe™ Protemp™ 4, Sumaré, SP -BR) was injected into the matrix and this set was taken in the mouth until complete polymerization, then finishing and polishing was carried out. The diagnostic test evaluates the planning and predictability of aesthetic treatments, allowing the three-dimensional visualization of the final aesthetic result through a simple and fast technique. After approval by the professional and patient, the restorative stage itself began.

The restorative step was performed after prophylaxis and modified absolute isolation using cyanoacrylate (Figure 4), the buccal surfaces were roughened with fine-grained burs to remove the aprismatic enamel layer in order to obtain better adhesion to the enamel surface (Figure 5). Gingival retraction was performed with Pro-Retract 0000 retractor wires (FGM Joinville - SC - BR) (Figure 6), improving the tooth/restoration interface to avoid cervical excesses

For hybridization, 37% BIODINAMICA phosphoric acid (Ibiporã-PR-BR) was applied for 30 seconds (Figure 7a), removed with jets of air and water and dried with jets of air (Figure 7b), as it was performed on enamel and there was no involvement of dentin substrate in any restored region.

The first layer of Adper Scotchbond Multi-purpose universal adhesive (3M Espe, Sumaré, SP - BR) was applied with the aid of a KG Brush microbrush (KG Sorensen, Cotia, SP - BR), with frictional movements and then light cured (Figure 8a. The adjacent teeth were isolated with Isotape tape (IsoTape Isolation Tape TDV- Pomerode, SC – BR) and the restorative stage itself began (Figure 8b).

The restorative chromatic map was divided into a cervical third in color B1, middle third BLL, incisal third with translucent achromatic effect resin T20. It began by inserting the rehabilitation with increments of nanoparticulate composite resin over the transparent silicone matrix. This set was then adapted to the anterior teeth and then photoactivated for 20 seconds, thus obtaining the reconstruction of the incisal and buccal surface of the teeth in question.

A transparent silicone guide over an acetate pre-molded was created using a diagnostic wax-up, reproducing the buccal and incisal surface - a guided restoration technique (Figure 9). The set of the matrix plus the composite resin was placed in the mouth (Figures 10ª and 10b), adapted and each element was restored and polymerized with the guide in position (Figure 10c). of the gingival embrasures was carried out with a Microcut saw (TDV) (Figure 11a), thus obtaining the final restorative format equal to

that of the diagnostic wax-up (Figure 11b).

With the reanatomization completed, the finishing and polishing sequence began. Initially, the finishing was carried out with strips of Epitex sandpaper (GC american inc, Japan) of coarse grain, refining the surface smoothness of the proximal parts (Figure 12), on the free faces the finishing was carried out with sandpaper discs (Figures 13a and 13b), care must be taken that the abrasive is parallel to the incisal edge and centralized with the midline of the patient so that the dental length is equivalent and that the smile curve is adequate and ascending towards the distal, with the aid of a compass, it was verified if the size and symmetry of the homologous teeth. On the buccal and incisal surfaces, a sequence of aluminum oxide discs of the soflex type (3M Espe™ Sumaré, SP -BR) was used. We positioned the disc below the contact point, as the wear is not accentuated. Figure 14 shows the immediate final appearance.

After 21 days, the patient returned for texturing, a stage in which the secondary and tertiary anatomy is determined using KG SORENSEN diamond burs (KG Sorensen, Cotia, SP - BR) with F and FF granulation (Figure 15). Subsequently, the development grooves were made using abrasive rubbers impregnated with aluminum oxide, so the grooves are smoothed and result in a more natural appearance.

Polishing is the final step of the protocol, this process consists of generating a surface with less roughness and the restoration becomes less susceptible to the deposition of cariogenic bacteria, reducing the recurrence of carious lesions and gingival inflammation(10). This way, the longevity of restorations is directly related to the ability of composite resins to produce a smooth and reflective surface, and to maintain this effect over the long term (11–15), for which abrasive rubbers and a silicon carbide brush are used. used. First, the polishing is carried out with abrasive rubbers Jiffy (Indaiatuba-SP) of coarse grain (Figure 16a) and fine (Figure 16b), later we use chronic abrasive rubber (Figure 17a) and to obtain the final shine, we used felt discs (Figure 17b).

After all the finishing and polishing steps were completed, the occlusion was checked with carbon paper in maximum usual intercuspation (MIH), in laterality and protrusion. Thus, a rehabilitation using direct composite resin veneers was obtained, with satisfactory aesthetic and functional results (Figures 18a and 18b).

DISCUSSION

During aesthetic and functional planning, it is important to pay attention to complaints, assess the patient's perspectives and expectations, financial condition, occlusion and available time, in order to offer the best treatment for each case, and thus obtain greater satisfaction with the result. It is important to emphasize that the concept of aesthetics is subjective and is related to the patient's social, cultural, geographical and psychological factors, and therefore the patient's expectations must be taken into account, because what is cosmetically pleasing to the dentist can not be for the patient and success in rehabilitation depends on it(16).

Both the mock-up and the diagnostic wax-up allow the patient to visualize, give his opinion and consent to his new smile before any wear that the patient is not aware of is carried out. The dentist who usually carries out such aesthetic plans must adopt the mock-up as a routine in his office, as it allows a greater perspective on the result, avoiding failures and providing a smaller margin of error in more complex cases (17)

The semi-direct restoration technique using a transparent matrix allows the introduction of the resinous material inside the silicone guide and photopolymerization.

The use of the transparent silicone matrix can be done directly in the patient's mouth, or through a plaster model, in the case above, we use the plaster model to mold the silicone matrix and use this mold to insert and light cure the intraoral resin. This technique allows the simplification of working time and less discomfort for the (18)

The restorative and rehabilitative treatment is of fundamental importance, as it recovers the patient's aesthetics and self-esteem, as well as functional issues and prevents the aggravation of pre-existing dysfunctions (19). With the advent of minimally invasive dentistry, dental surgeons opt for the use of direct restoration techniques with the use of composite resin, as these present ease of work, few repairs and low cost, making it the material of first choice in aesthetic rehabilitations. that prioritize the least wear of the dental structure. (20–22)

Dental bleaching is a previous and essential step for rehabilitation in patients who have a lot of color change (yellow teeth), as it directly influences the final result and reduces the need for dental wear, enhancing the aesthetic restorative treatment (23). Bleaching must be completed two weeks before starting the restorative treatment, because the release of free radicals such as ammonia and CO2 can negatively influence the properties of the composite resin and the adhesive system (22,24–26). The finishing and polishing of composite resin restorations provide an improvement in aesthetics and a decrease in the occurrence of extrinsic staining (27,28). The finish gives the tooth the return of anatomical formats and removal of excesses (29,30). Polishing certifies the smoothness and shine of the restoration (30,31). Microhybrid resins provide a smoother and brighter surface and, when associated with proper finishing and polishing, increase the longevity of these restorations. Rough restorations with the presence of roughness lead to a decrease in resistance and accelerate the degradation process (28). However, despite these factors, the longevity of composite resin restorations depends on the patient, because inadequate oral hygiene favors the degradation of the organic matrix of the resinous composite (32).

Regardless of the chosen restorative technique, correct planning following all the restorative steps carefully is fundamental for the success of the long-term treatment.

CONCLUSION

The reported case showed the use of the semi-direct technique for the reanatomization of anteroposterior teeth with the use of transparent guides, where this provides a reduction in clinical time and simplification of the operative steps, since the elements can be photopolymerized through the guide, reducing adjustments on the buccal surface, facilitating the finalization of the case.

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Figure 1: 1a. Initial front photo. 1b. Left side initial photo. 1c. Left side initial photo.

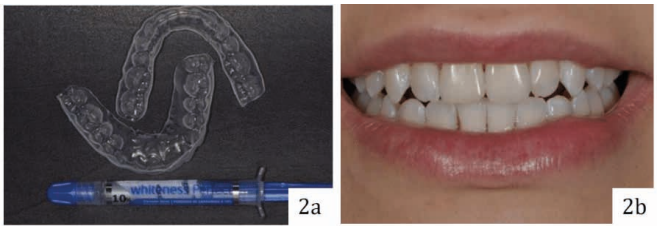

Figure 2: 2a. homemade whitening gel. 2b. whitened teeth.

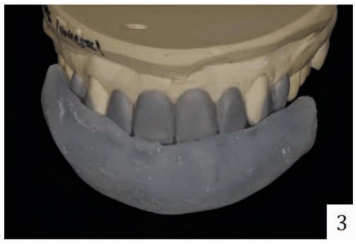

Figure 3. Diagnostic waxing.

Figure 4. Diagnostic waxing.

Figure 5. Roughening

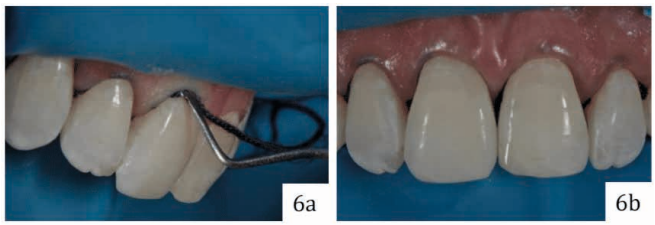

Figure 6: 6a. Placement of the retractor wire. 6b. gingival retraction

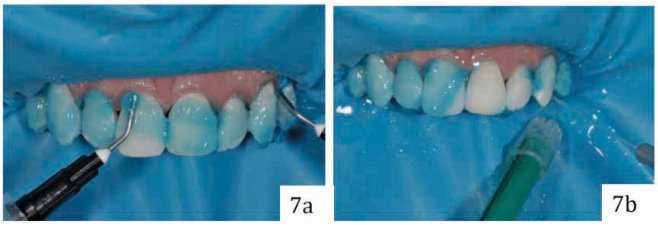

Figure 7: 7a. Application of phosphoric acid. 7b. water wash

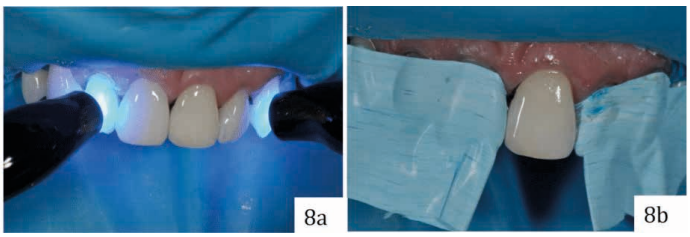

Figure 8: 8a. Adhesive application and light curing. 8b. Protection of adjacent teeth with Isotape.

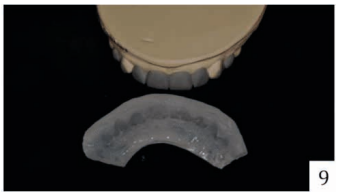

Figure 9. Transparent silicone guide.

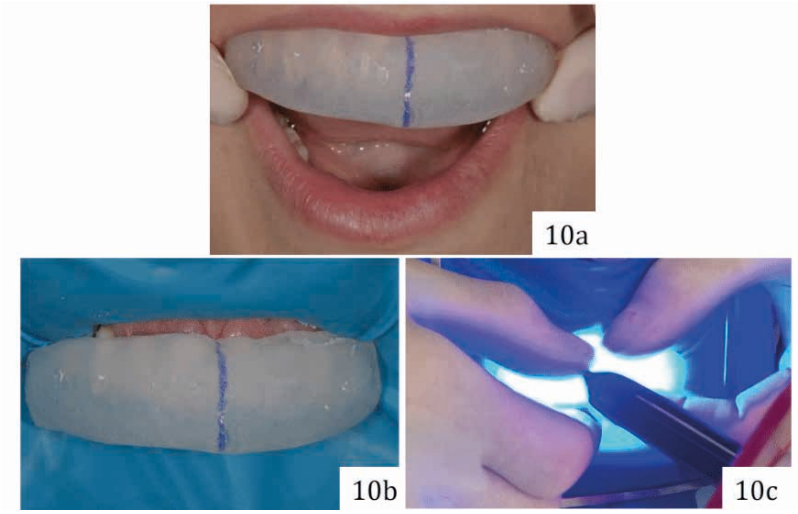

Figure 10: 10a. Silicone guide in position. 10b. Reproduction of the enamel layer in transparent silicone. 10c. Light curing with the silicone guide in place.

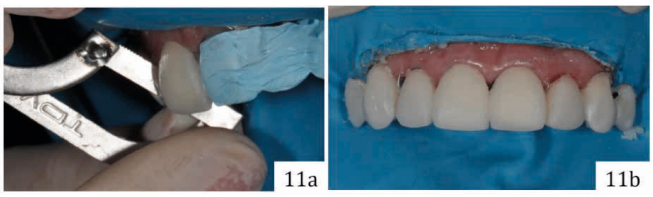

Figure 11: 11a. Interdental separation with Microcut TDV saw. 11B. Immediate final appearance

Figure 12. Finishing with sandpaper strip.

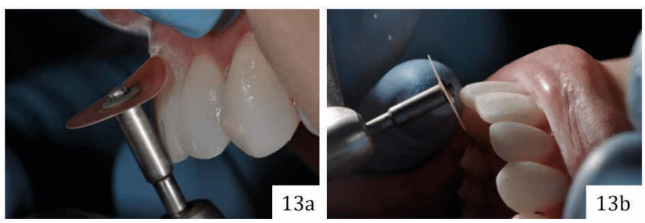

Figure 13: 13a and 13b. disc finish.

Figure 15. Texturing.

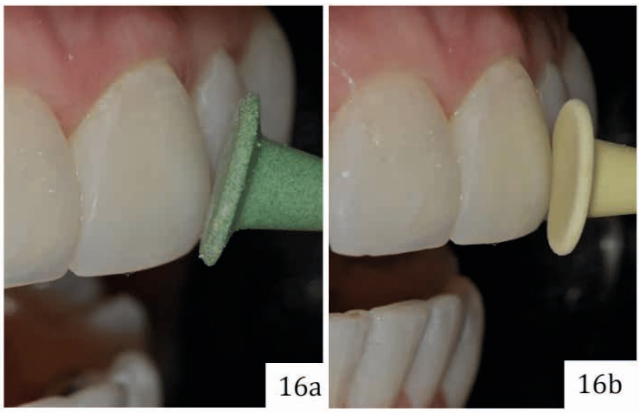

Figure 16: 16a and 16b. Polishing with abrasive rubber of coarse and fine grain respectively.

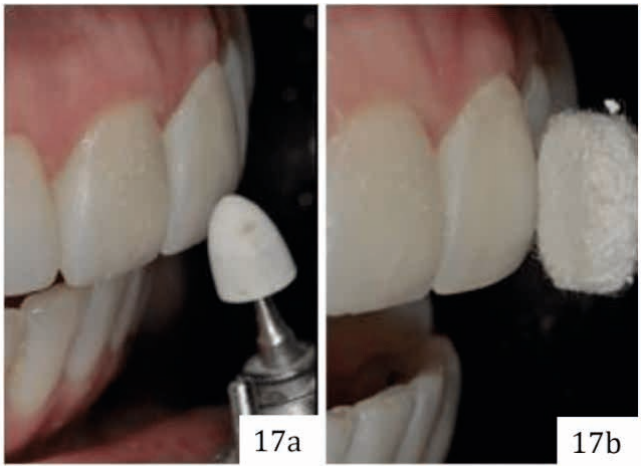

Figure 17: 17a. conical abrasive rubber polishing and 17b. Polishing with felt disc.

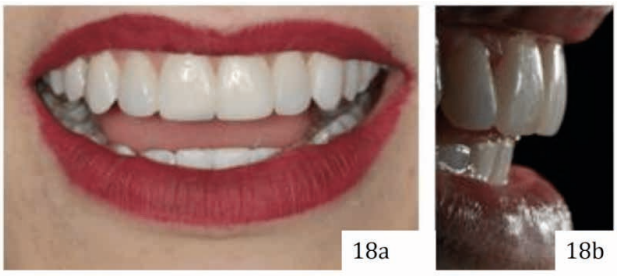

Figure 18. Final look.