

## Orthodontic treatment finishing with minimally invasive resin composite veneers

Finalização de tratamento ortodôntico facetas de resina composta minimamente invasivas

Rafael Massunari MAENOSONO<sup>1</sup>, Carla Muller RAMOS<sup>1</sup>, Letícia Ferreira de Freitas BRIANEZZI<sup>1</sup>, Denise Ferracioli ODA<sup>1</sup>, Rafael Francisco Lia MONDELLI<sup>1</sup>, Sérgio Kiyoshi ISHIKIRIAMA<sup>1</sup>

1 – Department of Operative Dentistry, Endodontics and Dental Materials – Bauru School of Dentistry – University of São Paulo – Bauru – São Paulo – Brazil.

### ABSTRACT

Anatomic alterations caused by incisal guide wear, even when small, can cause the aspect of an aged smile. The objective of this clinical case is to report a highly conservative esthetic treatment performed through the association of in-office bleaching and resin composite veneers. In-office bleaching was performed with 35% hydrogen peroxide, and in the following week, minimal invasive resin composite veneers were installed on the upper incisors and canines. In the next appointment, finishing and polishing were performed with abrasive discs and silicon carbide brushes. The results were considered highly satisfactory, establishing a younger aspect of the patient's smile. Resin composite veneers are still an excellent alternative for esthetic re-anatomization of anterior teeth, capable of generating optimal results with low costs and time.

### KEYWORDS

Composite resins; Dental veneers; Esthetics; Tooth bleaching.

### RESUMO

Alterações anatômicas causadas pelo desgaste da guia incisal, mesmo quando pequeno, podem causar um aspecto de um sorriso envelhecido. O objetivo deste caso clínico é reportar uma tratamento estético altamente conservativo realizado por meio da associação de clareamento em consultório e facetas de resina composta. O clareamento em consultório foi realizado com peróxido de hidrogênio a 35%, e na semana seguinte, facetas de resina composta minimamente invasivas foram instaladas nos incisivos e caninos superiores. Na próxima consulta, acabamento e polimento foram realizados com discos abrasivos e escova de carvão de silício. Os resultados foram considerados altamente satisfatórios, estabelecendo um aspecto jovial ao sorriso da paciente. Facetas de resinas compostas são ainda uma excelente alternativa para reanatomização estética dos dentes anteriores, capazes de gerar resultados ótimos com baixo custo e tempo.

### PALAVRAS-CHAVE

Resinas compostas; Facetas dentárias; Estética; Clareamento dental.

### INTRODUCTION

In contemporary dentistry, the esthetic aspect pursued not only includes aligned teeth, but also white teeth, with adequate form and function. In this context, different restorative techniques have been developed in order to obtain excellent esthetic results. [1] Recently, great attention has been given

to indirect restorative materials, especially for minimal invasive veneers, which can be used with minimum thickness due to the evolution of dental ceramics, determining in some cases, preparations without any tooth wear. [2,3]

Despite that some clinical results have already been published in the international literature, still not much is known about the longevity of these minimal invasive indirect

veneers, since the friability of ceramic materials associated with small thicknesses may impact on some premature failures of the restorations. Controlled clinical trials are still not available, and few clinical reports show evaluations of more than 5 years. In addition to this, the technique has an increased cost and part of the public may not be able to pay for this kind of treatment.

In this context, an interesting alternative is resin composite direct veneers. When severe color alterations are not presented, resin composite veneers may work with minimum thicknesses, with limited or even no tooth preparations.[4,5] Its cost is also highly reduced since no laboratorial step is needed. The great disadvantage against indirect veneers lies in the pigmentation and polishing losses that can happen after several years, however, adequate re-polishing may re-establish its initial properties. [6]

The present clinical case reports an esthetic finishing of an orthodontic treatment, which was performed with resin composite restorations that required minor preparation of the tooth structure, limited to the areas where small enamel opacifications and old restorations were present.

## CASE DESCRIPTION

A young adult patient, female gender, was still not satisfied with her smile even after orthognathic surgery and orthodontic treatment. Previous to the removal of the brackets, it was possible to see anatomic alterations on the upper central incisors caused by incisal guide wear (Figure 1). After the removal of the brackets, small white opaque stains in the upper lateral incisors were observed (Figure 2), with slightly darkened canines, which also bothered the patient (Figure 3).

In the first appointment, in-office bleaching was performed with 35% hydrogen



**Figure 1** - Initial aspect of the patient after orthodontic treatment. Observe the incisal guide wear on the upper central incisors.



**Figure 2** - After bracket removal, several white enamel opacifications on the upper lateral incisors were observed.



**Figure 3** - Upper canines were slightly darker than the other teeth, and this bothered the patient.

peroxide gel (Lase Peroxide Sensi, DMC) on the anterior teeth (Figure 4), with an extra application on the upper canines. Bleaching was performed for 36 min, with hydrogen peroxide gel being applied three times (each time for 12 min), in association with hybrid LASER/LED light (Whitening Lase II, DMC). After teeth rehydration, the color of the canines was similar to the other teeth (Figure 5).

In the next appointment, the restorative step was initiated. Previous to isolation, tooth preparation was initiated removing some old restorations, and small wear was performed on the white opaque stains on the upper lateral incisors (Figure 6). Afterwards, etching was performed with 37% phosphoric acid for 30 s on the entire buccal surface (Figure 7), and

after intense rinsing, the Adper™ Scotchbond Multipurpose Plus (3M ESPE) adhesive system was applied (Figure 8) and light cured for 20 s. The application of the resin composite (Vitre-science, Ultradent) was performed with the incremental technique, as illustrated in the schematic drawing (Figure 9). The same clinical sequence was performed on the other teeth, veneering both the central and lateral incisors and the canine cusps.

In the following week, finishing and polishing were performed with Sof-Lex Pop-On (3M ESPE) and Astrobrush (Ivoclar-Vivadent). An intense brightness of the restorations in the lateral view (Figure 10), and a more harmonic smile in the front view were observed (Figure 11).



**Figure 4** - In-office bleaching with 35% hydrogen peroxide gel (Lase Peroxide Sensi, DMC) was performed in the first session.



**Figure 5** - After rehydration, the canines now have a similar color to the other teeth.



**Figure 6** - The restorative procedures were initiated after a week. Small preparations were performed on the white opaque stains, along with the removal of old composite resin restorations.



**Figure 7** - Teeth were prepared one by one with 37% phosphoric acid for 30 s, followed by intense rinsing for 30 s.

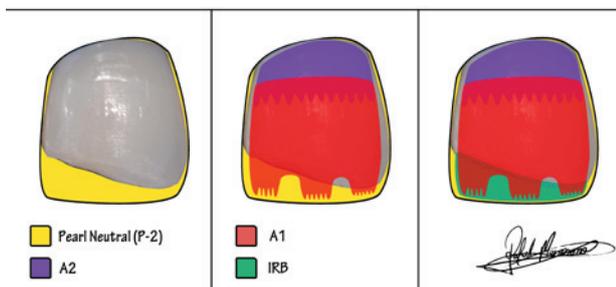


**Figure 8** - After water removal, the third step of the adhesive adesivo Adper™ Scotchbond Multipurpose Plus (3M ESPE) was applied and light cured for 20 s.



**Figure 10** - Lateral view after finishing and polishing. An intense glow obtained with a micro-hybrid composite was observed.

### Color Map



**Figure 9** - Composite resins (Vit-I-escence, Ultradent) were applied by the incremental technique. The lingual surface was initially reconstructed with Pearl Neutral (P-2), determining the external shape of the tooth. Next, A2 and A1 were applied on the cervical and medium to incisal thirds, respectively. Between dental mamelons, an IRB color was applied to increase translucency in this area. Finally, an unique increment of P-2 was applied determining the final tooth shape.



**Figure 11** - Frontal view of smile, whose appearance became younger due to better harmony obtained through composite resin veneers.

## RESULTS

The results of the direct resin composite veneers were considered highly satisfactory, since an esthetic pattern was obtained through a very conservative technique, with minimum wear of the tooth structures.

## DISCUSSION

In the present case report, resin composite veneers were selected not only for the material's

reduced costs, but also for being faster and predictable, because the patient would participate in an important social event in a few weeks. Since resins composite do not require a laboratorial step, they can be finished faster if no color adjustments are necessary.

Despite the urgency, a tooth bleaching session was performed before the restorative treatment in order to obtain a better substrate color, which consequently prevented unnecessary tooth wear to achieve improved esthetic results. [7,8] It's important to note that adhesive restorations are not indicated in the same session of bleaching therapy since

the remaining oxygen may interfere in the polymerization of the resin composite, causing lower bond strength to the tooth structure. Thus, restorations were performed a week later. [9,10]

Teeth preparation was minimally invasive, limited to small wear on some white opaque enamel lesions and removal of old restorations. However, the application of the composite resin was performed on the entire buccal surface, increasing the volume of the central incisors, which were compromised by incisal wear that occurred before orthodontic treatment. Resin composite was applied with the incremental technique, associating opaque and translucent composites to reproduce a young incisal guide.

After a couple of days, the resin composite veneers were finished and polished. This waiting time is needed to relax the tensions caused by polymerization shrinkage of the composite resin through the hygroscopic expansion of the composites in water. [11] A very successful polishing was obtained despite that microhybrid composite resin was used. Some studies actually revealed that there are almost no differences between nanoparticulated and microhybrid composite resins when polishing is performed adequately. [12]

## CONCLUSION

Resin composite veneers are still an important alternative for esthetic resolution of anatomical alterations of anterior teeth, with the advantages of being predictable, fast and have a lower cost when compared to ceramic veneers.

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**Sérgio Kiyoshi Ishikiriama**  
(Corresponding address)

Al. Dr. Octávio Pinheiro Brisolla, 9-75 – Vila Universitária  
CEP 17012-901 - Bauru, SP, Brazil  
E-mail: serginho@usp.br

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