**PREFABRICATED COMPOSITE RESIN VENEERS: A CLINICAL CASE REPORT**

**FACETAS PRÉ-FABRICADAS EM RESINA COMPOSTA: RELATO DE CASO**

Amanda Oliveira de Araújo1, Davi Farias Manta1, Mário José Pinto Lopes2, Marlus da Silva Pedrosa3, Claudio Heliomar Vicente da Silva4, Márcia de Almeida Durão5

1Department of Dentistry, Centro Universitário Maurício de Nassau - UNINASSAU, Recife, Pernambuco, Brasil.

2 Department of Post-graduation in Dentistry, Centro de Pós-Graduação em Odontologia Faculdade Sete Lagoas, Recife, Pernambuco, Brasil.

3Department of Dentistry, Faculdade Integral Diferencial – DeVry | Facid, Teresina, Piauí, Brasil.

4 Associate Professor, Department of Prosthetic Dentistry and Maxillofacial Surgery, Federal University of Pernambuco – UFPE, Brazil.

5Professor, Centro Universitário Maurício de Nassau, UNINASSAU, Recife, Pernambuco, Brasil.

**Corresponding Author:**

Claudio Heliomar Vicente da Silva

Rua Jorge Couceiro da Costa Eiras, 443, Apto 2403, Boa Viagem. Recife - PE – Brasil, zip code: 51021-300.

**Email:** claudio\_rec@hotmail.com

**Phone number:** +55 81 3463 - 0025 / +55 81 9900 - 9307

All of the authors of the article “**Prefabricated composite resin veneers: a clinical case report*”,*** above mentioned, have read and approved the paper and it has not been published previously nor is it being considered by any other peer reviewed journal.

**RESUMO**

A estética dental apresenta impacto relevante no desenvolvimento psico-social do indivíduo e estimula o surgimento de novos materiais e técnicas restauradoras pouco invasivas, com resultados imediatos e maior previsibilidade. Este trabalho objetiva apresentar relato clinico de reabilitação funcional e estética da harmonia do sorriso associando plastia gengival, clareamento dental e facetas pré-fabricadas de resina composta, ressaltando vantagens, limitações e a percepção do paciente. Paciente jovem (20 anos) apresentava insatisfação com seu sorriso. Após análise clínica, radiográfica, realizou-se fotos intra/extra orais, obteve-se modelos de estudo em gesso e foram realizados o planejamento digital do sorriso e enceramento diagnóstico. Os procedimentos propostos foram aceitos, autorizados pelo paciente antes da sua realização. O tratamento realizado mostrou-se efetivo como uma alternativa rápida, prática e segura, com restabelecimento estético e funcional com a satisfação do paciente.

**Palavras-chave:** Estética dental; Clareamento Dental; Resina Composta.

**ABSTRACT**

This article aims to present a clinical case report of a functional and aesthetic rehabilitation of smile harmony through periodontal plastic surgery, dental bleaching and prefabricated composite resin veneers, highlighting the advantages, limitations and the patient perceptions. A young patient (20 years-old) was dissatisfied with his smile. After clinical and radiographic examinations, extra- and intra-oral photographs were taken, plaster study models were obtained, and digital smile planning and diagnostic wax-up were performed. The patient accepted and authorized the proposed procedures. The treatment performed proved to be effective, being a quick, practical and safe alternative, with aesthetic and functional recovery and patient satisfaction.

**Keywords:** Dental Esthetics. Tooth Bleaching. Dental Veneers. Composite Resin.

**INTRODUCTION**

Small and malpositioned teeth as well as inadequate mesiodistal relationship compromise the occlusion, the apparent relative and golden proportions, leading to the presence of diastema and interfering with the aesthetics of the smile. This clinical situation leads to discomfort to the patient and brings to dentistry, the challenge of a conservative aesthetic solution.

Restorative procedures, with no or minimal dental preparation, that employ adhesives, ceramics or nanotechnology of state-of-the-art composites represent dental aesthetic solutions. Ceramic laminates or dental veneers, ceramic fragments and direct or indirect restorations of composite resin can be cited as examples[1,2,3].

Indirect ceramic restorations are more resistant, however, they require laboratory steps, are time-consuming, and so rising the costs. Direct resin composite restorations require manual dentist skills and undergo polymeric deterioration over the years [2]. The indirect use of these composites is intrinsically linked to the evolution of these materials, with the improvement of their properties enabling dental mimetization, surfaces with greater smoothness and resistance [4].

The introduction of dental veneers in anterior teeth dates back to 1937, but it was not until the 1970s that it became popular among dentists due to the development of composites and adhesive systems and concepts of preparation and restorations increasingly conducted with the purpose of obtaining greater preservation of the structure dental [5].

The indirect use of composite resins, such as prefabricated composite resin venees, evidently existed for a short period of time in the 1980s in a system called mastique (Dentsply/Caulk), composed of methyl methacrylate and large inorganic particles. However, due to the difficulties of adhesion and little chemical stability, this system proved not to be efficient to overcome the challenges of the oral cavity [2].

A concept of prefabricated composite resin veneers has been reintroduced, into the market, in 2011, through the system called Direct Venear (Edelweiss Dentistry, Hoerbranz, Austria), composed of nano-hybrid resin with additional laser technology, which gives the veneers a hard and shiny surface, with texture similar to the natural dentition [5].

The current prefabricated veneers, such as the Componeer / Coltene system, have a technological development advance with significant improvements in their composition and degree of polymerization conversion [6].

This article aims to present a clinical case report of a functional and aesthetic rehabilitation of smile harmony through periodontal plastic surgery, dental bleaching and prefabricated composite resin veneers, highlighting the advantages, limitations and the patient perceptions

**CASE DESCRIPTION**

A 23-year-old male patient reported dissatisfaction with the appearance of his smile. The clinical examination showed direct restorations in composite resin, with changes in color, shape, brightness and texture, in teeth #13 to #23 (Figures 1, 2 e 3).

Digital smile planning was performed through intra and extra oral photographs in the software Power Point (Office Microsoft) in order to provide the ideal dental dimensions and gingival contour, which for its scope would require periodontal plastic surgery, tooth whitening and tooth reshaping with prefabricated composite resin veneers. The proposed treatment was accepted by the patient.

After the verification of the normality of hematological exams (hemogram, coagulogram and fasting glycemia), gingivoplasty was performed in the region of tooth #11, restoring the harmonious appearance in the gingival contour (Figure 3).

After tissue healing, all composite resin restorations from tooth #13 to #23 were removed with diamond burs 3080, 2135F and 3195FF (KG Sorensen), followed by polishing of the enamel with Sof-Lex Pop-on disks (3M), exposing the natural enamel to the oral cavity for initiation of the restorative treatment (Figure 4)

Sequentially, at-home dental whitening with 16% carbamide peroxide gel (Whiteness perfect - FGM), 04 hours a day, for 15 days, was performed to achieve uniformity of color between the teeth.

After tooth whitening, we proceeded to the stage of placement of the pre-fabricated composite resin veneers. The Brilliant NG Componeer System (Coltene) was chosen given its good cost-benefit ratio, practicality of cementation and favorable aesthetics. These veneers consist of ultra-thin laminates (0,3mm in the cervical and 0,6 / 1,0 mm in the incisal) pre-fabricated in Brilliant NG composite resin (Coltene). It is recommended that its cementation be performed with the same composite resin from which the veneer is fabricated, allowing the restoration to form a monoblock [7].

The selection of the size “L” of the veneer was performed through the BrilliantTM NG COMPONEER Contour Guide (Coltene), positioned on the teeth (Figure 5)

The color selected with the Shade Guide BrilliantTM NG (Coltene), for the veneer, was the “bleach”, and for the cementation resinous material was the dentin A1/B1. The veneers were sequentially installed following the following clinical protocol:

A – Preparation of the pre-fabricated composite resin veneer:

1 - Venner adjustments to planned dental dimensions and cervical contour with Sof-Lex Pop-on disc with higher abrasiveness (3M) at low speed.

2 – Decontamination of the inner face with alcohol 70º.

3- Application of adhesive system One coat Bond (Coltene) on the inner side, followed by air jet to remove the excesses and not photoactivation of the polymerization of the same.

B – Teeth Preparations (#13 to #23):

1 –- Isolation of the operative field (labial retractor, cotton rollers and high power suckers).

2 – Prophylaxis with Robinson's brush and pumice / water paste followed by washing and drying.

3 – Conditioning of enamel with gel of phosphoric acid 37% (Magic Acid - Coltene) for 30 seconds, washing for 60 seconds, and drying with air-jet (Figure 6).

Application of the adhesive One Coat Bond SL (Coltene) on the conditioned enamel, allowing to stand for 20 seconds and removal of the excesses with air jet (Figures 7 and 8).

After the preparation of the adhesive surfaces, a single increment of Brilliant NG composite resin (dentin A1/B) was applied to the inner surface of the prefabricated veneers (Figure 9).

The veneers were placed on the teeth, pressed with a silicone spatula (TDV) in order to extravasate the excess of composite resin used for fixation, which were removed using a spatula for composite resin and brush on the vestibular face, and polyester strip in the proximal surfaces (Figure 10 and 11).

With the correct placement of the veneers, the resin polymerization was activated with Radii-call led curing light (SDI) (1700 mw/cm2).

After 07 days, it was performed the texturing and individualization of the veneers with the use of sandpaper discs, diamond finishing tips and rubber polishing points. Figures 12 and 13 show the completed clinical case.

**DISCUSSION**

The direct restorations in composite resin present limitations ranging from the difficulties of color selection to the surface finishing given that these procedures depend on the ability of the operator.

The maintenance of the aesthetics in direct veneer is still critical and is influenced by its polymerization, superficial polymer deterioration, the quality of oral hygiene, diet and deleterious oral habits of the patient [2, 8-10]

The prefabricated composite resin veneers bring with them previous polymerization with greater hardness and resistance to degradation, increasing the expectation of clinical durability of the restoration [11].

Thus, they present good aesthetic results and simple placement technique. The skilled professional can improve the pre-set sizes to any shape and size of tooth.In the majority of the situations, dental preparation is not necessary; and with the ease of use of the composite resin as a fixing agent, it is possible to align the teeth easily. If the operator wants to individualize the veneers, diamond tips and sandpaper discs, similarly to a composite resin restoration, may be used [2, 11].

The pre-fabricated composite resins employed in this clinical case report are composed of a composite resin, nano-hybrid, with high fraction of filler particles (about 80% by weight and 65% by volume), radiopaque (radiopacity 2 mmAl), with enamel characteristics that give it a natural appearance similar to the dental structure. Organic Matrix: BisGMA, Bis-EMA, TEGDMA, EDAB.

Photoinitiator: Camphorquinone. Charge Particles: Not stated by the manufacturer. Average particle size: 0.6 μm. Particle size variation: 0.01 - 2.5 μm. The modulus of elasticity of 9 GPa, is close to that of the dental structure, and the compressive strength of 392 MPa, makes this material able to withstand tensions well. It has water solubility around 0.9 μg / mm 3 and a water absorption of 16 μg / mm 3, which may indicate minimal degradation over time [12].

Its internal surface is micro retentive and does not require the use of prior phosphoric acid conditioning. The fixation is done with Brillant NG (Coltene). It is a composite with prepolymerized particles, reduced to nanometric size, that act as polymerization propagators, providing superior mechanical properties and excellent handling: It is non sticky, does not lose shape due to flow before polymerization, exhibits minor shrinkage and polymerization stress, easy and fast polishing and finishing, excellent surface gloss [12].

The photoactivation of the polymerization during fixation should start at the palatal surface to direct the polymerization contraction to the dental surface, with an ultraled, for 40 seconds, followed by photoactivation for the same time at the vestibular surface. Good polymer conversion of the resin used for cementation will aid in color stability. The color stability of the veneers, they are related to oral hygiene and the patient's diet.

As any new restorative alternative, in spite of all the potential it may have, it requires clinical studies of long-term control [2].

**CONCLUSION**

The restorative treatment with prefabricated composite resin venner of the Componeer System proved to be effective, being a quick, practical and safe alternative, with aesthetic and functional recovery and patient satisfaction.

**REFERENCES**

1. Conceição EN. Restauração de resina composta direta em dentes anteriores. In: CONCEIÇÃO, E.N. et al. Dentística: Saúde e Estética. Porto Alegre: Artmed; 2007.

2. Chain MC, Alexandre P. Facetas estéticas pré-fabricadas como procedimento restaurador – um caso clínico. Full Dent. Sci. 2014.

3. Magne P, Magne M, Belser UC. Adhesive Restorations, Centric Relation, and the Dahl Principle: Minimally Invasive Approaches to Localized Anterior Tooth Erosion. Eur J Esthet Dent*,* 2007;2(2):260-273.

4. Mendonça AAM, Rocha DM. Facetas pré-fabricadas em resina composta uma realidade clínica: relato de caso clínico. Universidade Federal de Sergipe. 2016.

5. Dietschi D, Devigus. A. Prefabricated Composite Veneers: Historical Perspectives, Indications and Clinical Application. Eur J Esthet Dent, 2011;6(2):178-187, 2011.

6. Touati B, Aidan N. Second generation laboratory composite resin for indirect restoration. J Esthet Dent. 1997;128:573– 581.

7. Gomes G, Perdigão J. Prefabricated composite resin veneers: a clinical review. J Esthet Restor Dent. 2014 Sep-Oct;26(5):302-13.

8. . Chain MC. Materiais dentários. São Paulo: Artes Médicas; 2013.

9. Gresnig MM, Kalk W, Ozcan M. Randomized controlled split-mouth clinical trial of direct laminate veneers with two micro-hybrid resin composites. J Dent. 2012;40(9):766-75.

10. Gresnigt MM, Kalk W, Ozcan M. Randomized clinical trial of indirect resin composite and ceramic veneers: up to 3-year follow-up. J Adhes Dent. 2013;15(2):181-90

11. Souza EM, Silva e Souza JRMH, Lopes, FAM, Osternack FHR. Facetas estéticas indiretas em porcelana. JBD, 2002;1(3):256-262.

12. Brilliant NG Componeer. Rio de Janeiro: Vigodent. Package Leaflets. Available at:<Em:http://www.coltene.com.br/wp-content/uploads/2015/06/Instru%C3%A7%C3%B5es-de-uso7.pdf.