The importance of multidisciplinary planning in cases using ceramics with little or no preparation in aesthetic area: clinical case report

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Abstract: The use of ceramics called "contact lenses", or without preparation, has grown a lot in recent years in clinical practice. Although it seems the best treatment choice, in many cases, this treatment approach is not possible. The simplification of the term often leads the clinician and the patient to make wrong choices. The objective of this article is to discuss the concept of contact lenses, diagnostic challenges, its indication until its completion, aiming to provide a treatment with predictability and longevity with the use of lithium disilicate-based ceramics. **Keywords:** Ceramic laminates. Contact lenses. Mock-up.

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INTRODUCTION

Patients' demands for aesthetic treatments, associated with new technologies and dental ceramics, enable dentists to rehabilitate teeth with an unfavorable smile through treatments with little or no wear, faster, less invasively and lasting.[1,2]

In recent years, the trend for of ceramic restorations' simplification in anterior regions is possible due to a minimally invasive approach or without preparation.[3,4]

One of Dentistry's greatest challenges is the pursuit of perfection in the anterior maxilla region. Therefore, obtaining study casts and photographic protocols associated with clinical and radiographic examination is essential for proper diagnosis and correct case planning.[5]

Due to the facility of researching through media in general, patients' demands for less invasive and lasting procedures, especially in the anterior region, has increased.[6]

The ceramic laminates so-called contact lenses[7] - due to their similarity to ophthalmic lenses' thickness (ranging from 0.2 to 0.5 mm) - allow teeth shape change, as long as there is room for it and it does not require a very dramatic color change. Other indications for their use would be the closure of diastema, increase in buccal volume, canine guides and even occlusal covers.[8,9]

Due the great changes regarding bonding procedures, we can say that every type of restorative treatment has become minimally invasive, even to correct small changes in form with dental ceramics, through which, depending on the material used, can get very close to the properties of a natural tooth, providing aesthetic, functional, and lasting results.[10]

Thus, the present article aims to discuss the importance of multidisciplinary planning, challenges, and limitations in clinical cases with little or no wear in the search for enamel preservation, respecting the patient's demands for excellence.

CASE REPORT

A 20-year-old female patient sought the practice of the Aesthetic Dentistry course at the APCD in Santo André for correcting diastema between her anterior teeth. Her main complaint was the fact that she had turned to orthodontic treatment several times and the spaces between her anterior maxillary teeth unavoidably opened again after some time, disturbing her smile's aesthetics (Figs 1-4). The patient rejected any possibility of a new orthodontic treatment.

After all the information gathered in the anamnesis and clinical examination, complementary exams, such as periapical radiographs, study casts and photographs, were made. The patient was diagnosed with Bolton's discrepancy, which justified the reappearance of diastema. As the patient rejected the possibility of a new orthodontic procedure, even for a better division of spaces, the treatment chosen had no orthodontics. The proposed plan, initially, was the bleaching treatment by the mixed technique (Whiteness HP Whiteness + Perfect 10%) and the gingival papillae plasty between the canines and laterals, in order to reduce its thickness, once it was hyperplasic in appearance - due to orthodontic treatment - leaving the smile more harmonious, and finishing with contact lenses (IPS E-max Press, Ivoclar Vivadent) with the make-up technique. At that moment, the question was whether we would be able to make an adequate treatment without orthodontics and without wearing the dental structure to create spaces for the ceramic laminates. After

the bleaching and gingival plasty conducted, by the inner bevel technique with blade 15C (Figs 5 and 6), an addition diagnostic wax-up (Fig 7) was made for smile analysis through mock-up. For the mock-up, we used the bis-acryl resin in the A1 color (Structur, Voco), so we could see the future restoration and the patient could, together with the team, evaluate the final shape of the teeth and if everything would look pleasant on her smile (Figs 8-10).

Figure 1: Initial smile. **Figure 2:** Initial lateral smile. **Figure 3:** Initial lateral smile. **Figure 4:** Initial frontal Intraoral.

Figure 5: Gingival plasty to reduce papillae volume.

Figure 6: Appearance after gingival plasty (comparison between executed side and the one to be operated).

Figure 7: Addition waxed-up model.

Figure 8: *Mock-up* in position.

Figure 9 e 10: *Mock-up* lateral views.

After the patient's approval and with the information obtained from the ceramist, it was verified that there was sufficient space for the preparation of laminates with a thickness of 0.2 mm and also that all the teeth involved had an insertion axis to support the ceramic laminates, without needing to wear.

In the molding step, in order to promote the removal of the apical gingival margin and reduce any possibility of blood or crevicular fluid contaminating the mold, a retraction cord (#00 Ultrapack) was used. In this case, it was decided to use the addition silicon (Silagun Heavy and Honigum Light DMG), as it has greater dimensional stability compared to condensation silicon and the possibility of being poured under ideal conditions in the laboratory in up to one week, besides producing up to three casts with a single mold. Thus, a cast can be used for die and the hard one can be used to check the proximal contacts, which minimizes or eliminates the need for any interproximal and / or occlusal adjustment. Occlusal registration was performed with addition silicon (O Bite DMG). There was no need for provisionary installation, since no wear was performed.

In the next session, prior to cementing, gingival retraction was held with a retraction cord (#00, Ultrapack) and prophylaxis with pumice stone - paste/water and microbrushes (Hot Spot Design). The "contact lenses" were tried with the aid of Try -in paste (Variolink Veneer, Ivoclar Vivadent) to verify the most suitable color resin cement. After choosing the cement color, the inner face of the ceramic in lithium disilicate was treated with 10% hydrofluoric acid (China conditioner, Dentsply) for 20 seconds, washed thoroughly with air/water and dried. Then, the pieces were cleaned with 37% phosphoric acid (Ultra Etch, Ultradent) with the aid of a microbrush for 20 seconds and washed with air/water spray. With the dried parts, a silane-coupling agent (Monobond, Ivoclar Vivadent) was used, allowed to act for 2 minutes and subsequently air-dried (Figs 15 and 18).

Figure 11: Retraction cord # 00.

Figure 12: Prophylaxis with pumice stone – paste/ water.

Figure 13: Pre-cementing prophylaxis.

Figure 14: Cement color proof Try-in paste aid.

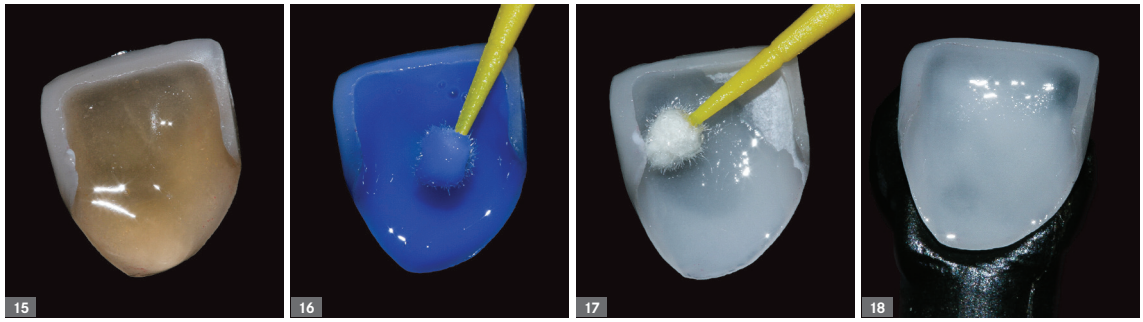

Figure 15: E-max Conditioning with hydrofluoric acid for 20 seconds. **Figure 16:** Cleaning with phosphoric acid. **Figure 17:** Application of silane. **Figure 18:** Appearance post-silanization.

The cementing was performed tooth by tooth, using polytetrafluoroethylene tape (Isotape, TOF) on adjacent teeth, protecting them from the acid etching and adhesive system.

The teeth were prepared according to the total acid etching and simplified adhesive system (XP Bond Dentsply Caulk) technique. The teeth surfaces were treated with phosphoric acid 37% (Ultra Etch, Ultradent) for 30 seconds throughout the enamel, washed thoroughly with air/water spray, dried and then subjected to the active application of two layers of adhesive. After solvent evaporation with air jet, the adhesive was not polymerized, so that the entire adhesive/resin cement set would go through the process at the same time, thus avoiding any problem of adaptation of the "contact lenses".

In the piece already prepared, the chosen cement was dispensed and positioned on the tooth with a slight digital pressure, removing the cement extrusion with the help of a brush (1023, Hot Spot Design) and dental floss. Following the

procedures of excess cement removal, light curing was carried out for 40 seconds per side (Bluephase, Ivoclar Vivadent); then a #12 blade was used to remove any remaining resin cement, avoiding that it could remain in contact with the gingiva, which could cause inflammation of the surrounding gingival tissues and pigmentation of the margins of the new restoration.

After 30 days of control of the clinical case, gingival health could be noted to be in perfect conditions, as well as the harmony of the new smile (Figs 19-22).

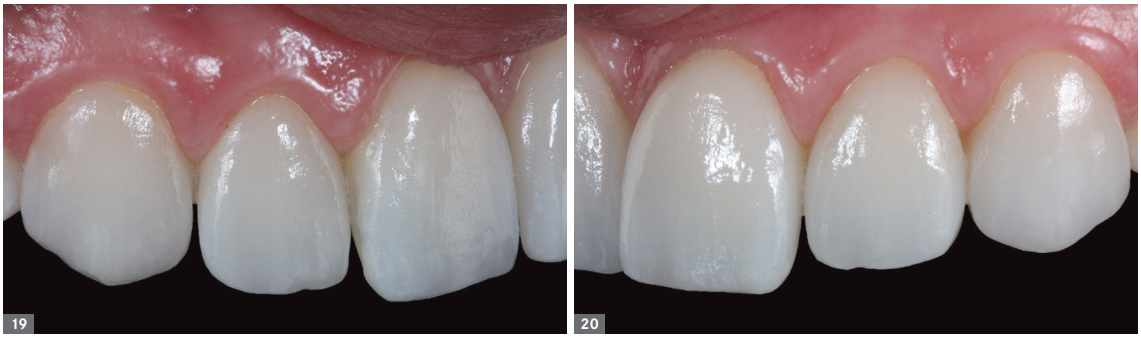

Figure 19 and 20: Final photographs.

Figure 21 and 22: Final smile.

CONCLUSION

There is still a discussion as to what is the best choice between no preparation or minor wear on enamel guided by diagnostic wax-up. In the case of "contact lenses", one can expect overcontouring in the regions of cervical ends which, if not done with much care, may result in a tooth shape with exaggerated volume and possible inflammation of the surrounding gum tissues.

Another difficulty is the adaptation of the parts that, for not having a defined axis of insertion, can be cemented in several positions, which can be a big problem.

In the authors' opinion, the correct diagnosis, planning, and execution of photographic techniques, preparation - when necessary - casting, cementation, occlusion and, especially, interaction with the ceramist, are much more important than the "contact lenses" term or technique.

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