Reestablishment of interproximal contact with custom ring technique

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Abstract

This case report presented a recently technique designed to promote an suitable reestablishment of interproximal contacts. This technique was first described in 2013 and favours the proximal faces rebuilding using materials such as gingival barrier, metallic matrix with the correspondent metallic ring and gliceryn. A female patient sought for aesthetic appearance of her posterior tooth. After clinical evaluation, proximal caries between the teeth 35 and 36 were found and removed. New restorations were performed using a customized ring technique. This technique presents advantages as better stability of the metallic ring and appropriate proximal contour showing satisfactory results.

Keywords

Resin composite, restoration, technique

Introduction

In contemporary dentistry, there has been a growing demand for aesthetic restorative treatments by patients, leading dental surgeons to use materials that feature a more satisfying aesthetical appearance, such as composite resins. Given the current situation, the use of amalgam as a restorative material practically fell into disuse, and this material had an easy condensation during the reconstruction of proximal cavities, allowing an easy adaptation of this material and maintaining gingival health in the interdental area due to a good adaptation that those restorations provided.

Teeth and gums together play an important role in the aesthetics of a smile, as teeth with balanced size, adequate shape, correct position, and in harmony with the surrounding tissue, along with the periodontal tissues, compound the essential characteristics of a beautiful and healthy smile. The existence of the interdental papilla is fundamental to the composition of the gingival aesthetics,¹² which is determined by the form and position of the clinic crown, and by the interproximal contact.³ The loss of the interdental papilla might cause black spaces, food impaction, and phonetic issues.⁴⁻⁶

One of the challenges of Class II restorations is exactly the reestablishment of the contour and interproximal contact⁷⁻¹⁰ between the teeth, and clinic evidences demonstrate that the proximal gingival margin is the most common area to present failure in the adhesive process when compared to amalgam restorations.¹²⁻¹⁴ In addition to this, there is the restriction or incapacity to obtain access to the repair area without removing the whole restoration. For those reasons, it is extremely important performing adhesive restorations under a good local isolation and promote a good marginal adaptation of the restoring material. Unlike the amalgam, which can be condensed against a metal matrix maintaining its form in order to establish a proximal contact, the composite resin is a viscous material, with rheological properties that do not allow a condensation against matrix bands in a predictable way.¹⁵⁻¹⁷

Loomans et al. (2009)¹¹ emphasized that all matrix systems evaluated by them during the reconstruction of Class II cavities resulted in marginal overcontour. This difficulty found during the restorations with composites in proximal cavities can be solved using a technique recently described by Jordi
Manauta and colleagues. This technique consists in a practical customization of palodent original rings used to hold the metal matrix with low-cost materials, such as the gingival barrier used for tooth whitening.

**Case Report**

Female patient sought for dental care complaining of the aesthetic appearance of her posterior tooth. After clinical evaluation, proximal caries between the teeth 35 and 36 were diagnosed, so the caries must be removed and new restorations should be placed [Figure 1]. This clinical case was propitious for the customized rings technique. After absolute isolation, a small amount of glycerin was applied between the teeth proximal faces [Figure 2]. A light-cured gingival barrier (Top Dam - FGM-Joinville/Brazil) was applied between the interproximal faces [Figure 3] and before the light-curing, the Unimatrix kit (TDV - Santa Catarina / Brazil) dodo ring was placed [Figure 4] and more gingival barrier was applied, then the whole set was light-cured [Figure 5]. The customized ring stabilized the matrix set [Figure 6] and the cavity preparations were carried out [Figure 7], the phosphoric acid etched dentin for 15 seconds and enamel for...
30 seconds, and water-spray rinsed for 15 seconds. The dentin was dried with absorbent paper. Then, Ambar (FGM-Joinville/Brazil) total etch adhesive system simplified single bottle was applied to get adhesion between the composite and the substrate [Figure 8]. A metal matrix was fixed with the customized ring surrounding the tooth 36 and the proximal wall was rebuild with enamel Opallis A2 (FGM-Joinville/Brazil) composite resin. The customized set was removed after light-curing [Figure 9]. The metal matrix was placed with the customized ring involving the tooth 35 in order to repair the proximal face using the same resin composite. The customized set was removed after light-curing [Figure 10] and Opallis A2 dentin (FGM-Joinville/Brazil) composite resin was inserted in a stratified layer associated with Opallis enamel resin (FGM-Joinville/Brazil). Pigments were placed at occlusal face to obtain grooves depth. The finishing and polishing were performed with multi-laminated drills and rubber cups [Figure 11]. The customized ring is efficient technique in order to obtain appropriate proximal contact tightness after the whole procedure restoration [Figure 12].
The female patient emigration clearance is required came to our clinic complaining about the aesthetic appearance of the restoration in her posterior tooth; a clinical evaluation also diagnosed the existence of proximal decay in teeth 35 and 36. Thus, there was the need to replace the restoration and removed the decay affected tissue. This condition seemed suitable to apply the custom ring technique. Therefore, the following procedures were performed:

1. Initial situation that shows teeth 35 and 36 with infiltration and proximal cavities;
2. A small amount of glycerin was applied in the interproximal area of the aforementioned teeth;
3. A small amount of photopolymerizable gingival barrier was applied;
4. The ring was placed on the unpolymerized gingival barrier;
5. A small amount of material was applied surrounding the ends of the ring and in close contact with the previously inserted barrier, in order to be polymerized.
6. The custom ring was then removed;
7. The cavity preparations were performed;
8. It was applied a phosphoric acid conditioning for 15 s in dentin and 30 s in enamel, followed by abundant washing for 15 s. The dentin portion control was made using absorbing paper. The simplified total etch adhesive system Ambar (FGM-Joinville/Brazil) was used to promote the bonding between composite and substrate.
9. A metallic matrix was placed along with the custom ring, facing tooth 36. The composite chosen was Opallis (FGM-Joinville/Brazil) and a mixture of enamel, and a high-value composite was used to rebuild the proximal wall in this step. The custom set was then removed after photopolymerization.
10. The metallic matrix was replaced along with the custom ring, now facing tooth 35. A mixture of enamel and a high-value composite was used to rebuild the proximal wall. The custom set was then removed after photopolymerization.
11. Pigments were inserted to give depth to the grooves, followed by the continuation of occlusal stratification with composite resin. A refinement of tooth anatomy was performed with multilaminated burs and rubber cups for finishing and polishing.
12. After completing the restoration, we could observe the efficiency of the custom ring technique.

**Conclusion**

After the performance of the restoration using the technique of customization of metallic rings, we could perform tactile tests that confirmed the efficacy of the establishment of proximal contact between tooth elements 35 and 36, proving the efficacy of the custom ring technique.

**References**