CASE REPORT

Planning and clinical strategy in direct composite restorations

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Abstract

Patients are seeking increasingly the expertise of dental surgeons for esthetic dental improvement. The dental surgeons should know the restorative materials and techniques in order to optimize the clinical practice and to obtain satisfactory results. Also the dentist should know the average heights and widths of the anterior teeth to detect the esthetic disharmony and to eliminate it for reproducing the correct dental anatomy. Thus, this study aimed to describe a clinical case report of direct restoration using the palatal barrier technique.

Keywords
Composite resin, restorative materials, techniques

Introduction

The search for esthetic dental results promoted an evolution of restorative materials and techniques in order to optimize the clinical practice and to obtain satisfactory results. The development of these materials improved the procedure effectiveness to restore dental function and smile esthetics. When beauty appearance is the main factor, color, morphology and teeth position are relevant features and must be properly considerate for the treatment planning.\(^1\,^2\)

The dentist should know the average heights and widths of the anterior teeth to detect esthetic disharmony and to eliminate it,\(^3\) once it is not possible to reproduce the correct dental anatomy without the appropriate information about the average dimensional values.\(^4\)

Furthermore, opalescence, fluorescence, color, and translucency parameters must be previously known to allow the proper resin application according to the different stratified layers to obtain a dental natural appearance.\(^5\)

A diagnostic wax-up is created for the case planning, and a silicone barrier or “wall” is made as a guide to the treatment in order to facilitate the dental anatomy reconstruction. This silicone barrier can be made from pre-existing restorations, when the restoration shape is good, but need color change; or from a diagnostic wax-up at the study model, due to the need of smile rehabilitation or any fracture presence.

This matrix is a clinical strategy during the restoration confection, guiding the limits, and showing the required wear for the restorative material placement at the incisal edge, at the buccal and palatal space.

Thus, this study aimed to describe a clinical case report of direct restoration using the palatal barrier technique.

Case Report

A male patient aged 12 years old, followed by his father, searched for dental care after fracture urgency treatment at teeth 11
and 21. Clinical and radiographic examination revealed that tooth 11 presented dentin protection. Tooth 21 presented only incisal shape loss, and direct resin composite restoration with a silicone guide was used to facilitate the proximal and palatal shapes reconstruction and also the restorative material insertion.

An initial photograph was taken [Figure 1], the color selection was performed with the vita classical scale and color A2 was found. Dental impressions were performed to diagnostic waxing-up confection for the case planning.

The next session, the wall/palate guide was prepared by condensation silicone from the diagnostic wax-up; all anterior palatal anatomy and incisal shape was copied. Absolute isolation was performed involving the whole anterior dentition.

The remaining dentin protective material was removed from tooth 11, a small bevel was performed [Figure 2], and the silicone guide was positioned. 37% phosphoric acid was etched for 30 s in enamel and 15 s in dentin. The acid was removed with an air-water-spray and the excess was removed with absorbent paper. The Optiond S (Kerr) adhesive was applied according to the manufacturer’s recommendations, and then the polymerization was carried out.

Enamel A2 shade (Premisa-Kerr) and TB translucent resin (Premisa-Kerr) were employed to enable the light passage at tooth 21. Tooth 11, the enamel A2 shade (Premise-Kerr) was inserted into the guide silicone and light cured for 40 s, creating the palatal enamel and incisal shape [Figures 3 and 4]. An A2 composite resin increment was inserted to reproduce the dentin (Premise-Kerr) and mammelons region was performed [Figure 5].

A thin translucent resin layer (Premise-Kerr) was carefully accommodated between mammelons region. Enamel A2 shade composite resin (Premise-Kerr) was used, and light cured for 40 s to obtain enamel vestibular anatomy.

The patient returned for the restoration finishing and polishing, in the next day. Multilaminated tips [Figure 6] and abrasive discs (Sof-Lex Pop-On, 3M ESPE) were used, from the highest granulation to the smallest one. FF tips were used to mimic light grooves in the enamel before the last abrasive disc, promoting natural appearance [Figure 7].

Discussion

The search for natural esthetics and the evolution of adhesive techniques assured the opportunity to obtain long-term functional and esthetic results.[4-6] There are different alternatives for clinical management of problems related to the shape, position, symmetry; proportion, texture and color of the anterior

Figure 1: Initial photograph of the case report

Figure 2: A small bevel was performed to improve the restoration of masking

Figure 3: Palatal enamel shape was inserted

Figure 4: Incisal enamel shape was inserted
These features can be easily evaluated from the initial photo and from a study model for planning case.

The composite resins provide satisfactory treatments results for even young and adult patients, but it is indicated to adults when the volume, length or number of composite restorations is limited. This study presented a young patient with good results using only composite resins.

Initial planning is essential for the best esthetic and functional results from restorative procedures. The use of some planning strategies enables greater dental structure preservation and result predictability.

Clinical cases of fractured anterior teeth, extensive class IV restoration, diastema closure and cosmetic shape can be easier executed with a matrix/walls obtained from diagnostic wax-up. This diagnostic wax-up is made from dental impressions, the heavy addition or condensation silicone involve the teeth incisal and the palatal shape. This matrix can be made from a plaster model or directly in the mouth, when the dental shape is suitable.

After the impression material curing, the mold must be removed from the plaster model; the incisal edge remain inside silicone matrix, and the vestibular excesses must be removed with a scalpel blade. After adjustments, the guide is placed to verify a proper seating.

The greatest advantage of silicone matrix is the possibility of suitable anatomy reconstruction of the incisal/proximal/palatal walls according to the polychromatic incremental technique.

### Final Considerations

Previous knowledge about the restorative materials and new techniques are essential for planning and execution of direct esthetic restorations in anterior teeth. This planning case from diagnostic waxing-up, silicone matrix and photographs enable better treatment predictability and satisfactory end results.

### References