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Esthetic composite restoration

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Abstract

Perfect anterior restoration acts as an advertisement for the skills of the dental professional. Most interventions in anterior maxilla are accomplished with the direct placement of composite resins. The skill of the dentist to achieve a natural anatomical shape and color match with the adjacent teeth are prerequisites to achieving a pleasing esthetic result, which can also be assessed easily by the patients. This case report describes minimally invasive restoration of the tooth trauma during the orthodontics using stratification technique.

Keywords: *composite resin, anterior maxilla, trauma.*

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Dentists should consider the quantity of remaining healthy tooth structures as well as functional and esthetic outcomes [1]. Composite resins today occupy a paramount position among restorative materials for they offer exemplary esthetic potential and acceptable longevity, with a much lower cost than equivalent ceramic restorations for the treatment of both anterior and posterior teeth [2-5].

In studies with direct veneers esthetic failures were more frequently noted, where colour alterations, surface staining, and marginal discoloration could negatively influence the patient's perception of the restoration [6, 7]. Demarco et al. referred in their systematic review that there is a lack of long term results from clinical trials regarding the performance of anterior restorations [8].

Tooth restorations is often required to optimize the esthetic outcome of orthodontic treatment, especially in the maxillary anterior region. Minor adjustments are usually performed using direct composite restorations, because the procedure is simple, fast, and cost-effective. Direct composite placement is also less invasive than indirect restorations [9, 10].

The aim of this article is to report the case of 21 tooth direct restoration after the trauma and abrasion as a result of the orthodontic device removal.

CASE REPORT

In 2012, a 13-year-old girl referred to the practice. There was a trauma to 21 tooth during orthodontic treatment. In addition, during the removal of the braces, a large amount of vestibular enamel was excised, which should be unacceptable in the daily practice of the dentist. The decision was to restore the missing tissue without additional excision of the enamel, i.e. the formation of bevels (Figures 1 and 2).

Using a polarized photo, the colour map was filled in – the colour passport of the future restoration (Figure 3).

Before starting the procedure, without etching and adhesive, using a composite of contrasting colour, a direct

Fig. 1. **Initial situation, frontal view**

Fig. 2. **Initial situation, occlusal view**

Fig. 3. **Colour determination using a polarized filter**

Fig. 4. **Direct mockup with the composite resin**

Fig. 5. **The silicone stent to register palatal wall location**

Fig. 6. **Tooth after isolation and preparation**

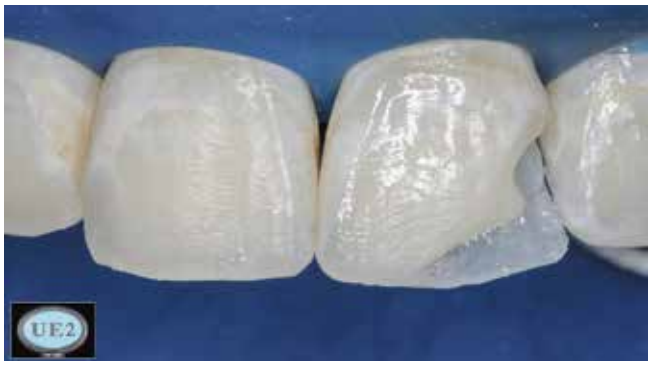

Fig. 7. **Restored palatal wall**

Fig. 8. **Restored proximal wall**

Fig. 9. **Dentine body was built with the stratification technique**

Fig. 10. **Opalescent OBN shade between mammelons**

mockup was developed. The main task of it is to create an anatomically correct palatine wall by the operator with a silicone index (Figure 4,5).

After local anesthesia and isolation with a rubber dam, preparation was performed, which consisted only in excision of infected tissues and enamel chips. Additional preparations (bevels, etc.) were not performed (Figure 6).

An adhesive preparation protocol was followed with the 4th generation Rock Bond adhesive system (Micerium S.p.A., Avegno, Italy). The processed silicone index was applied with a medium-bright composite enamel Enamel Plus (Micerium S.p.A., Avegno, Italy) 0.5 mm thick, the key was positioned in the oral cavity and cured, thus we got a palatal surface that will not need occlusal correction (Figure 7).

After the palatal wall restoring, the proximal wall was built using a contour mylar matrix, a plastic wedge and the same enamel composite (Figure 8).

Further, dentines of different chromaticity from UD5 to UD3 in the stratification technique, from more saturated to less saturated, the dentine body is built, the last dentine should create the outlines of future opalescence (Figure 9).

The spaces between the cones of the dentine body were filled with the opalescent OBN shade, the white inclusions were imitated with the shade of the IM composite, and everything was covered with the same enamel that was used for the palatine and proximal wall (Figures 10-12)

At a follow-up visit a week later, we can assess the colour, or rather the optics of the restoration. The doctor's work must be not only "invisible", but also as less invasive as possible (Figures 13,14).

After 5 years, the patient was recalled for a follow-up examination (Figure 15). By working with the right techniques and using the best materials, we can achieve excellent and long lasting aesthetic results in the most conservative way.

DISCUSSION

Direct composite restorations with enhanced optical properties have been refined to such a highly sophisticated level that they present a first line approach [11] delivering predictable and reliable outcomes [12] of aesthetic and

Fig. 11. **Characterization of the incisive edge**

Fig. 12. **Covering with the enamel composite**

Fig. 13. **Seven days follow-up**

Fig. 14. **Seven days follow-up polarized photo**

Fig. 15. **Photo at the 5-year recall appointment**

functional excellence. Clinicians commonly report that such techniques are time-consuming or complicated and do not offer predictability in terms of esthetics [13].

Heintze et al. in their systematic review showed that additional bevelling of the enamel did not result in less marginal staining or improved marginal integrity. Whether a (long) bevel improves aesthetics or increases the fracture resistance of Class IV restorations has not been systematically investigated [14], as in this case no bevel was created.

CONCLUSION

Direct anterior resin composite restorations may be used to augment the esthetic and less invasive outcome in cases of trauma and enamel tissue restorations after orthodontic treatment.

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