ASPECTS IN TREATING REDUCED EDENTULOUS STATUS BY MINIMALLY INVASIVE BRIDGE FOR A YOUNG PATIENT – CASE REPORT

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ABSTRACT

Aim of the study. For a young patient it is important to re-establish the integrity and the functions of dental arches, quickly and efficient, in optimum conditions, with many advantages. **Material and methods** The study balanced the possibilities to fabricate a minimally invasive bridge for a young patient in order to appreciate the characteristics of a Maryland bridge in treating a reduced edentulous status. **Results** The study revealed that a minimally invasive bridge placed in the posterior area of a lower arch, fabricated on a metallic framework and an aesthetic part made by resin composite material represent a favourable option as a temporary reconstruction. **Conclusions** The precision of such minimally invasive bridges and the variability of the materials and technologies that can be used, determine the young patients to accept them as a treatment for reduced edentulous status.

Key words: minimally invasive, Maryland Bridge, young patient

INTRODUCTION

For young patients the prosthetic treatment of the reduced edentulous should be regarded as a comparative analysis of the biological and functional advantages and disadvantages of the case. In the context of a fixed prostheses reconstruction and in addition to partially restoring the functions of the dento-maxillary system, there may be a number of disadvantages related to endangering the integrity of various dental structures (vitality of teeth, secondary caries and periodontal disease), and the cost for treatment[1-6].

The reduced edentulous status, irrespective of its aetiology, location on the maxillary or mandibular arch, expanse and topography, through evolution and complications, causes imbalances in the dental system with a dysfunctional syndrome, as a consequence.

The Maryland Bridge is a common reconstruction, with over 20 years of dentistry, being used as transient and sometimes permanent prosthesis. There are some advantages of this reconstruction compared with a fixed prosthetic bridge, as minimal teeth preparation so the abutment teeth are usually left intact, and the potential for pulpal trauma is minimized and also less periodontal irritation. There are also some problems related to this type of bridge - the longevity of the reconstruction, the limitation to replacing a single tooth, the transparency of the metal framework and the possibility of debonding the entire structure[7-12].

More recent studies give data indicating survival times that are good enough for these restorations to be considered permanent, whilst their non-invasive nature is an added benefit because, in most instances, there is no need to carry out significant preparation of the abutment teeth.[1]

MATERIAL AND METHODS

A young male patient (22 years old) claimed in the dental praxis a concern of dental space, after the recent absence of first lower molar, a temporary bridge in order to re-establish the integrity of the dental lower arch, the functions of mastication and aesthetics.

The clinical prosthetic preparation of dental structures was realised as for inlays cavities, at the surfaces of first lower left premolar and second lower left molar.

The functional impressions were registered using stock trays, with wash technique and silicone materials with two different consistencies (fig. 1). The technician poured out the working casts with a high-strength plaster stone class IV type (fig. 2), the casts were mounted into an articulator, and on the master cast was fabricated the wax pattern of the metal framework (fig. 3 and 4)

The next steps from technological workflow consists in spruing, investing and obtaining the mold cavity in order to fabricate the metal framework by casting with base metal alloy (Wirobond, Bego), then removing from the investment, finishing and polishing of the final metallic structure.

Figure 1. Upper and Lower Impressions

Figure 2. The master cast

Figure 3. The wax pattern – occlusal view

Figure 4. The wax pattern – vestibular view

Figure 5. Aspect of metallic framework

Figure 6. Occlusal aspect of metallic framework

RESULTS AND DISCUSSIONS

For aesthetic part of this reconstruction was used a resin composite material that was light activated and heat cured – SR Adoro (Ivoclar Vivadent, Germany) by the stratification technique. First, was applied (with a brush) the Adoro Opaquer layer which had the consistency of a paste and cured in Lumamat 100 (Ivoclar Vivadent, Germany) and then, light-cured using Quick Lamp for this purpose. (Fig.7 and 8).

Corresponding to the dentin layer was applied the SR Adoro Body, which is made with special instruments, and it is necessary to cure in the next stage, in Lumamat 100 Unit, for 5 minutes (Fig. (9).

The final layer SR Adoro Thermo Guard was light-cured with Quick Lamp, to ensure the complete curing of all layers (Fig. 10).

The Adoro System offers an excellent option for reconstruction on a metal framework of a single absent tooth, with all morphological and physiognomic aspects; the advantage of this composite is the subsequent finishing and polishing, similar to direct composite restorations.

The design for the Maryland bridge generally allows for a single path of insertion thus avoiding displacement along any other path except the path of insertion of the prosthesis. Adhesive bonding further strengthens the bond between the framework and the tooth structure, thus increasing the overall success rate of the restoration.[2]

Figure 7. SR Adoro Opaquer Layer

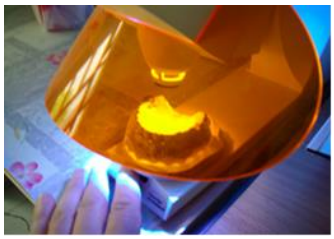

Figure 8. Light-curing with Quick lamp

Figure 9. SR Adoro Body Layer

Figure 10. Aspect of the bridge

According to the World Congress of Minimally Invasive Dentistry, "Minimally invasive dentistry is respecting the health, function, and aesthetics of oral tissue by preventing disease from occurring or intercepting its progress with minimal tissue loss." The Maryland Bridge requires a careful approach both clinically and technologically, because the involvement of the laboratory is essential in this reconstruction in the smallest details and in completing all stages of the workflow.

Knowing the characteristics, advantages and disadvantages of each prosthetic dental material allows an appropriate therapeutic solution specific to each clinical case. The

contribution of the dental laboratory is essential for the final success[3].

CONCLUSIONS

4. The option of treating the reduced edentulous status with minimally invasive bridges derives from minimal teeth preparation, pulp and periodontal tissues protection, and the characteristics that have proven the resistance and survival time on dental arches of these prosthetics reconstructions.
5. The precision of such minimally invasive bridges and the variability of the materials and technologies that can be used, determine the young patients to accept them as a treatment for reduced edentulous status.
6. For the success of the Maryland Bridge is important to contribute with maximum of skills and knowledge, both the prosthodontics specialist and the dental technician, considering the advantages of minimally invasive treatments.

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