



BIOMIMETIC RESTORATION AND PHOTOGRAPHIC DIAGNOSIS IN DIRECT ANTERIOR RESTORATION: A CLINICAL CASE REPORT

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INTRODUCTION: Modern restorative dentistry is based on the integration of adhesive systems and composite resins with superior optical properties [1, 2]. Furthermore, in complex anterior restorations, dental photography has evolved from a mere clinical documentation tool into a key element of the diagnostic and aesthetic planning process [3]. Advanced photographic analysis (cross-polarization, transillumination) allows for the mapping of the natural tooth's "optical anatomy" - opalescence, translucency, and individual characterizations [2, 4].

MATERIALS AND METHODS (CLINICAL CASE): Clinical Overview: A 20-year-old female patient presenting with the sequelae of dental trauma to the anterior incisors sustained during adolescence. The previous restoration exhibited aesthetic and functional failure (discoloration, altered anatomical contours, and marginal leakage) [Fig.1]

The first appointment involved: Removal of the pre-existing palatal splint and intraoral optical scanning (IOS) using the Medit i700. Processing of a digital diagnostic wax-up via the Medit Clinic CAD app, 3D printing of the resin model, and fabrication of a silicone palatal guide stent.

The second appointment involved: Local anesthesia, isolation of the operating field with a rubber dam, and plaque removal using glycine powder. Removal of the old restoration and preparation of the remaining tooth structure: a distinct palatal margin, a 45° interproximal chamfer/bevel, and a long bevel preparation on the facial aspect to optimize shade blending and enamel adhesion [5]. Adhesion: Selective enamel etching (37% H₃PO₄ for 20 seconds) and application of a two-step self-etch adhesive system (Clearfil SE Bond) [1]. Palatal Wall Reconstruction: Fabrication of the palatal shell using high-translucency composite resin, guided by the silicone stent. Dentin Anatomy and Characterization: Definition of the dentin framework using high-opacity dentin shades and application of specific tints [4]. Facial Closure and Finishing: Covering with a thin layer of micro-hybrid enamel composite, followed by polishing with goat-hair brushes and diamond pastes Shiny Mycelium [Fig. 2-3].



BIBLIOGRAPHY

- 1 Van Meerbeek B. et al. (2020). State of the art of self-etch adhesives. Dental Materials, 36(1): 2-19.
- 2 Vanini L. (1996). Light and color in anterior composite restorations. Practical Periodontics and Aesthetic Dentistry, 8(7): 673-682.
- 3 Devoto W. et al. (2010). Composite restorations in the anterior segment: clinical workflows and photo-documentation. Int J Esthet Dent, 5(1): 86-101.
- 4 Paolone, G., & Scolavino, S. (2020). Restauri diretti nei settori anteriori. Quintessenza Edizioni.
- 5 Magne P., & Belser U. (2002). Bonded Porcelain Restorations in the Anterior Dentition: A Biomimetic Approach. Quintessenza Publishing.

CONCLUSIONS: The synergistic use of composite resins with superior optical properties, biomimetic direct layering techniques, and digital/photographic diagnostic workflows enables the creation of anterior restorations with exceptional aesthetic and functional integration. This reproducible and cost-effective approach ensures maximum respect for and preservation of biological tooth structures (minimal intervention dentistry), while guaranteeing high stability and clinical survival over the medium to long term [2, 5].

