Biologically driven tooth preparation design in adhesive prosthesis

The preparation of a dental element is a key moment to the aesthetic-functional integration of a restoration. It should be understood as a continuation and confirmation of the diagnosis phase, as well as an operational step predisposing to the finalization of the entire diagnostic and rehabilitative process.
The guiding principle of the preparations is dictated by biology and can be described as the principle of minimal tissue invasiveness and in compliance with the endodontic and periodontal biological determinants. Besides being conservative, preparations must be "anatomical" or reproduce the most important structures of the original anatomy coronal tooth, in the context of a conformative approach to the diagnostic wax-up, as part of a reorganization plan.
A preparation thus obtained provides support to the restoration and ensures a uniform and controlled thickness of the same. This results in a functional resistance to loads and allows a predictable cementation protocol using photocuring cements which ensure adhesive and clinical ergonomics excellence. A leading role in the treatment of this subject plays the build-up, as an integral part of the functional design of the tooth preparation.
To the build-up are assigned three important functions: biological, aesthetic and biomechanical. The first is expressed in the seal between pre-prosthetic reconstruction and remaining tooth structure, fundamental both in vital teeth as in those not vital.
The second is linked to the possibility to correctly reconstruct the abutments from a chromatic point of view, an important parameter to simplify the laboratory procedures and enhance the aesthetic characteristics of new materials for the implementation of indirect restorations.
The biomechanical function, finally, is probably the most important for the prognosis of the tooth-restoration system. The build-up has to build, together with the remaining tooth structure, a resistance unit able to handle the occlusal loads in their different vector components.
These briefly summarized concepts suggest the need to think of individualized preparations according to the reconstructive requirements of each prosthetic element, either single, or placed in the context of a more extensive rehabilitation. Such targeted therapy is possible only through a rigorous diagnostic process that takes into account not only the aspects related to infection control, but also a careful biomechanical evaluation of the relationship between the remaining tooth substance and the incident forces arising from the function.

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