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Guest editorial

The Adhesive Aesthetic Dentistry and the Black's principles: what has changed over one century?

Since the advent of acid etching technique by Buonocore, in 1955, many efforts for developing materials and approaches in Restorative Dentistry has turned to adhesive aesthetic procedures. In this context, the principles of Evidence-based Dentistry has been increasingly employed and guided how the clinical practice should be executed. Over the 20th century, notably, Minimally Invasive Dentistry has emerged and driven the daily dental clinical practice. This has happened because of the importance of the diagnosis, risk caries assessment, including the arresting, prevention and healing (remineralization) of early lesions. The restorative treatment also preferentially become minimally invasive for cavitated lesions in dentin through step-wise excavation of the carious tissue combined with the maximum preservation of the healthy tissues. The evolution from a merely-curative to preventive-adhesive Dentistry has involved not only the systematic study of the biological, mechanical, aesthetic, functional and parafunctional aspects of the stomatognathic system, but also the assessment of the social-economic-cultural context of the individual by also considering their dietary habits. With the evolution towards the philosophy of comprehensive treatment of the patients' requirements, the dentists have still face an increasingly demand for aesthetic treatments. By observing the literature, one notes that aesthetic restorative treatment is many times executed without caries lesions or defective restorations. Thus, to achieve a comprehensive treatment focusing on both the requirement/anxiety of the patients and on the clinical assessment and treatment protocols, it is important that basic principles are followed.

The idea of guidelines on the preparation and restoration of cavities based on evidences coming from the clinical behavior assessment through scientific methods of performance following-up of a given operative technique or restorative material is not new. G. V. Black [1-3] was one of the first clinicians to document either the good or bad clinical behavior based on evidences scientifically demonstrated and proved. In his book on Operative Dentistry, from 1908, the author established and introduced guidelines and methods which were firmly based on the science of clinical observation. After Black, the Dentistry became scientific and preventive, with principles and concepts accepted universally. Currently, the fundamental principles of the cavities and restorative techniques of Black, which were unaltered for 70 years up to the advent of the adhesive Dentistry, have been readapted and improved. Therefore, some concepts were altered, but the fundamental Black's principles [1-3] are still valid. For example, it is cited the well-known "extension for prevention" stated by the author in 1905 and routinely used up to the beginning of the second half of the 20th century [1-4]. Currently, the "prevention of the extension" is advocated during the cavity preparation. For direct adhesive restorations, this approach states that there is no need of the internal mechanical retention by drills, but instead the requirement of micromechanical retention through acid etching and hybridization of dental tissues. For indirect procedures, the retention used in many ceramic systems comprises the internal conditioning with hydrofluoric acid. Although these procedures have been advocated with the use of relatively recent adhesive techniques, they had been initially proposed by Black in 1908 [1]. These examples demonstrate that, somehow, a conservative extension, a correct finishing of the margins of the adhesive cavities on enamel and/or dentine through acid etching are executed, therefore obeying the same principles differently.

Still today, in the light of new aesthetic restorative treatments using from opalescent low-contraction resin composites to ultra-thin, CAD-CAM ceramics, the seven basic principles are valid: outline, resistance, retention, and convenience form; removal of the remaining carious dentine; finishing of the enamel walls and margins; and cavity cleaning. However, it is important to observe that these Black's principles should not be solely employed, but instead applied simultaneously and adapted to the several restorative treatment approaches. Thus, the dentist must incorporate these same principles as a starting point to guide the execution of a restorative treatment. Currently, for a resin composite, the extension of preparation or the outline form is determined by the extension of either the carious lesion,

the restoration to be replaced, or the defect to be corrected. In cases of cosmetic remodeling and/or closure of diastemas, the outline form becomes extracoronary and it is defined by a set of procedures involving the analysis of facial, dental-facial and dental aesthetics; dental diagnostic wax-up; restoration mock-up; and clinical photographs. In posterior teeth, an adequate extension means that all efforts were dedicated to preserve the cusps and reinforcement area – such as marginal ridges –, predicting together with the outline form, the resistance form of the tooth and further restoration. The same concept of resistance is applied when preparations for indirect restorations are carried out, aiming to avoid biomechanical failures. To achieve a good adaptation of the restorative material to the cavosurface angles, it is important that the enamel and/or dentine margins are smooth and uniform. By dealing with indirect restorations, this finishing of the margins – which in the original guidelines of Black were carried out only on the enamel walls –, is of fundamental importance to achieve a good impression. It is understood as convenience form, any and all maneuvers that make ease the instrumentation and restoration of teeth, that is, from a simple execution of absolute/relative isolation to the insertion of matrixes and retraction threads. Finally, to result in a good clinical behavior, either a direct or indirect restoration must be firmly adhered to dental structures after the implementation of a proper retention form. By considering the retention form of a restoration, it is understood that this process is mediated by bonding agents that do or do not remove the smear layer by the action of either the phosphoric acid or acidic monomers, which means that a concern on the cavity cleaning must exist. Thus, it is possible to understand that the general principles of the cavity preparations stated for more than 100 years ago are still valid within the current Restorative Dentistry. Moreover, one can take advantage of the 20th-century Dentistry, considered old-fashioned by many but which required high manual skills and excellent visual accuracy.

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