Bioesthetic dentistry— a modern teaching array that embraces all aspects of esthetics and dental biomechanics, or how to restore smiles and function with conservative, often no-preparation, techniques

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Dentistry has undergone major developments over the last several decades, owing to a series of breakthroughs, starting with prevention and risk factor-oriented therapies, then adhesion and implantology. This has undoubtedly changed the way we treat our patients; for instance, preventive measures and implementation of dental coaching instead of decay-oriented treatments will help future generations to maintain their dentition at a much healthier level so that the need for complex treatments will finally drop. However, in parallel, patients' expectations and needs have evolved toward esthetics and metal-free, tooth-colored restorations, while modern times have made life more active and demanding. As a consequence, the incidence of formerly infrequent pathologies has risen tremendously; for instance, tooth wear (erosion and attrition) and cracked teeth have become common dental emergencies and requests for comprehensive treatments. In short, the modern dental practice is under high demand for ultimate esthetics while having to respond in parallel to challenging biomechanical conditions. There is no doubt that the profession now has to adapt to these new tasks and implement its global competence in modern treatment concepts and clinical protocols.

The courses at Edudentinternational are consequently focused on some of the most current topics in dentistry, covering the following in depth:

- anterior freehand bonding (anterior composite restorations in all their variations);
- biofunctional posterior adhesive restorations (direct, semidirect and indirect techniques);
- conservative (interceptive and restorative) treatment of tooth wear;
- anterior veneering techniques; and
- BEF (better, easier, faster) digital dentistry (this program starts in 2021).

Bioesthetics is the key philosophy of this education center. Bioesthetics refers to the comprehensive integration of biology and biomechanics (or biomimetics) into treatment planning, giving priority to conservative, often no-preparation, adhesive techniques. On the esthetic level, embracing the natural teeth and appearance of the smile, rather than utilizing stereotypes, is another key element of our teaching. We actually consider that finding individualized solutions to each patient's needs and expectations rather than applying a standardized treatment approach is a crucial factor in performing dentistry on a high quality and ethical level. This thinking process is deeply implemented across all topics covered in our programs.

Educators and their objectives

Teaching at Edudentinternational offers general and more specialized practitioners a global overview of evidence-based protocols in the aforementioned domains and provides the information necessary for delivery of the highest level of dental care to their patients. The strength of Edudentinternational programs lies in both the excellence of clinical teaching and a strong scientific background, following a modern evidence-based practice philosophy. In fact, at Edudentinternational,

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we have abolished classical (and declining) strict scientific evidence-based concepts (using merely scientific data), which have proved too often to be disconnected from clinical reality or simply are relevant to another environment. Academic, social and private environments largely differ from each other. Our teachers are both acclaimed clinicians and scientists. The scientific and clinical director of Edudentinternational programs is Dr. Didier Dietschi (PhD, Academisch Centrum Tandheelkunde Amsterdam, Netherlands; DMD, University of Geneva, Switzerland), who teaches at the University of Geneva and Case Western Reserve University. Edudentinternational is privileged to benefit from the cooperation of Dr. Pascal Magne (DMD and PhD, University of Geneva), who runs the program on anterior veneering techniques. Dr. Magne is an associate professor of esthetic dentistry at the Herman Ostrow School of Dentistry of the University of Southern California, Los Angeles, U.S.

Figs. 1–6

Education center and location

The education center is located at the Geneva Smile Center, a group practice where Dr. Dietschi works (www.geneva-smilecenter.ch). The center is ideally located close to the iconic water fountain, the Jet d'Eau, and within walking distance to all hotels, shops and restaurants in downtown Geneva. The very popular old town is only 10 minutes from the Geneva Smile Center and can be conveniently reached on foot to discover its many boutiques, galleries, bars and restaurants.

The center comprises a lecture room and dedicated workshop area. All workstations are equipped with ZEISS microscopes and provide attendees with a comfortable environment and complete instrumentation to perform all procedures. For participants, the concept is to arrive with a smile, strong motivation and their hands in their pockets, everything else being provided by the center. At the demonstration station, the microscope has 4K visual capability and a special light

Figs. 7–12

Fig. 13

Case 1 (Figs. 1–13): A typical example of bioesthetic, mainly no-preparation, rehabilitation in a case of amelogenesis imperfecta in an adult patient (46 years old). Apart from two minimally invasive ceramic veneers placed to resolve a more severe discoloration of the maxillary central incisors (which did not respond well to bleaching), the other hypoplasia lesions and discolorations were treated with a direct, no-preparation approach, after sandblasting as the only form of surface preparation.

setup that provides superb images and an unparalleled learning experience—what we consider an important objective and duty in order to fulfill attendees' expectations. The educators interact with the participants through the program; sharing knowledge and experience with attendees is a key factor in the success of Edudentinternational programs.

Overview of education topics

1. Anterior freehand bonding (anterior composite restorations in all their variations) and anterior veneering techniques

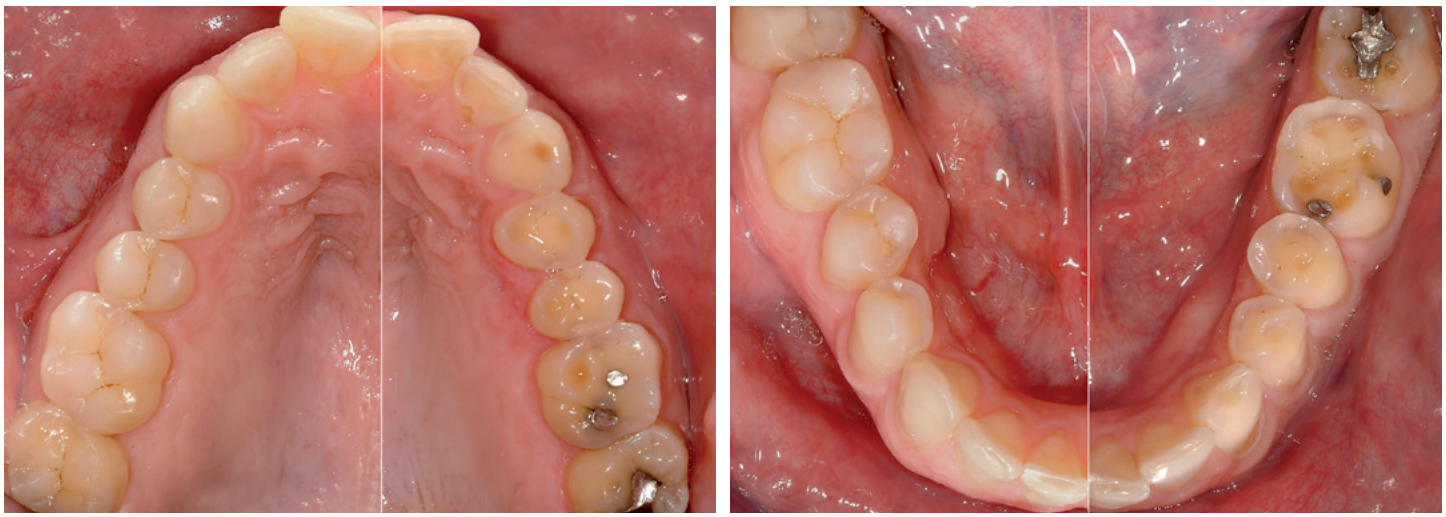
Facebook posts or shows at large meetings are visually spectacular and undoubtedly artistic and inspiring. From the patient's perspective, media and the internet provide plentiful images, triggering the desire for whiter, straighter teeth in the pursuit of a truly more attractive smile. From a practical standpoint, social media and shows unfortunately suggest that it would be systematically simpler to adopt an indirect approach using ceramics or CAD/CAM and certainly more demanding if we choose the direct way with composite, but we can achieve great results with both techniques. There is however a great deal of controversy that arises when integrating more elements into the equation, such as the patient's age, his or her psychological profile, his or her financial means (present and expected), his or her overall biofunctional status (caries, periodontal and functional risk factors) and his or her potential compliance with long-term follow-up and control of specific risk factors. Finally, one must measure the objective dental needs of the patient and correlate all the aforementioned factors without being led by commercial interests or dental fashion. Is the present reality close to such virtue? Clearly not. The time has come to reshape esthetic dentistry toward a different future, focused on biomechanical and biomimetic concepts, and using a little more common sense and ethics. A truly modern approach to smile rehabilitation is patient-focused (rather than dental fashion-oriented), specific, driven by the individual tooth (rather than following a monotherapy concept leading to multiple, up to 28, similar restorations) and aimed at natural beauty (rather than stereotyped artificial esthetics). Our programs on anterior restorations (composite and veneering techniques) thus depict conceptual and clinical aspects of anterior bioesthetic adhesive restorations aiming to enhance young and adult smiles with a focus on no-preparation and minimally invasive techniques using resin composites alone and in combination with ceramics, CAD/CAM restorations and all-ceramic bonded porcelain restorations.

2. Biofunctional posterior adhesive restorations (direct, semidirect and indirect techniques)

The reduction in incidence of caries and the growing concern of patients for potential toxicity of metals and dental esthetics have required the profession to develop restorative options adapted to

Case 2 **(Figs. 14–18):** A typical example of a no preparation smile rehabilitation using composite in a young patient (16 years old) after unsuccessful orthodontic space closure to treat lateral incisor aplasia.

Case 3 (Figs. 19–23): With proper management of composite layering and material selection, excellent long-term behavior of adhesive posterior restorations can be expected, even with a direct technique as illustrated here in this case of 17 years of post-treatment follow-up.



Case 4 (Figs. 24 & 25): Before and after views of both maxillary and mandibular arches after interceptive treatment of tooth wear, using a no-preparation approach and freehand composite placement.

new demands. Composites and adhesive techniques have thus become the foundation of modern restorative dentistry, owing to tremendous improvements in material mechanical performance, wear resistance and esthetic potential. Composite resins are currently used in a broad range of situations, including the treatment of initial decay to the restoration of extensive and serial cavities, including the esthetic and functional rehabilitation of patients with severe tooth wear. However, polymerization shrinkage of the resin matrix and in-mouth material application are still crucial issues (even with bulk filling technology) that impose certain limitations on the use of direct techniques. Therefore, restorative options such as semidirect, CAD/CAM (chairside or in-laboratory) and indirect techniques have to be considered for large and deep cavity configurations or nonvital teeth. The lecture thus provides an overview of decision criteria for the treatment of posterior teeth with direct or luted restorations.

The choice of material in consideration of tooth biomechanical status has to be discussed with reference to special biomechanical conditions such as cracked tooth syndrome and nonvital teeth. Actually, optimal restorative scenarios rely on proper evaluation of the residual tooth structure quality (vitality or nonvitality), pulpal status (symptom absence, pain on pressure, sensitivity to cold, or pulpitis) and crack extent in order to assess which material, preparation approach and restorative technique is to be applied. New, improved concepts related to tooth preparation and cavity lining, as well as luting procedures, are presented in this program, and these lead to a simplification of clinical procedures and superior results in indirect restorations.

3. Conservative (interceptive and restorative) treatment of tooth wear

Tooth wear represents a frequent pathology with multifactorial origins. Behavioral changes, an unbalanced diet, and various medical conditions and medications inducing acid reflux or influencing salivary composition and flow rate trigger tooth erosion. Awake and sleep bruxism, which nowadays are widespread functional disorders, induce attrition. It has thus become increasingly important to diagnose early signs of tooth wear so that proper preventive and, if needed, interceptive and restorative measures can be taken. Such disorders have biological, functional and esthetic consequences. After a comprehensive clinical evaluation, treatment objectives, such as a proper occlusal and anatomical scheme, as well as a pleasing smile line, are usually set on models of anterior teeth or a full-mouth wax-up, depending on the severity of tissue loss. Based on the new vertical dimension of occlusion set on the articulator, combinations of direct, semidirect and indirect restorations (using composite resins or monolithic high-strength ceramics) can help to reestablish proper anatomy and function. The use of adhesive and ultraconservative techniques has proven its potential, in particular for the treatment of moderate to advanced tooth wear. A modern approach to treating tooth wear involves specific and detailed treatment planning that considers etiology, risk factor control and the biomechanical status of each tooth to be treated.

The program on tooth wear reviews recent knowledge and clinical concepts related to preventive measures, various forms of early restorative interventions (using adhesive techniques) and restorative options (usually more complex and leading to a more extensive treatment approach). Their respective potential to restrict ongoing tissue destruction and to restore function and an attractive smile in the long run is explored through 20 years of clinical experience and related literature (modern evidence-based dentistry).

Case 5 (Figs. 26–31): A case of moderate tooth wear that was treated with a combination of direct (mandibular incisors and maxillary canines) and indirect, minimally invasive overlays (mandibular posterior teeth) and 360° veneers (maxillary incisors) following a selective treatment approach and defect- and function-oriented choice of material.