

EDITORIAL

THIS IS WHO WE ARE



Writing an editorial commemorating an anniversary is a tough task. By the time the list of acknowledgments and accolades, self-serving words and patting on the back, meaningless and boring reflections, and an agonizing grocery list of landmarks in time are completed, the reader is likely to be dozing off or moving on to less formal and more entertaining activities. It is the ceremonial and somewhat pompous nature of such editorials that make them such a turn-off.

So how can one discuss such an important event from a slightly different angle? Well, first try to understand the major reason for the QDT's longevity. After all, it is a busy market filled with multiple excellent scientific publications and numerous free pseudoscientific advertisement-based publications. The main reason for the QDT's long-lasting success is our readers, to be sure. Without a readership that has a profound interest and passion for true clinical and technical excellence, the QDT would not survive.

Pure scientific data are of paramount importance, but the profession needs a venue that emphasizes clinical and technical excellence, demonstrating how to execute clinical and technical procedures in depth, and in an uncompromised manner. While scientific publications provide the core around which the profession is forged, clinical reports also play a unique role. Those who tend to look down at clinical and technical publications are usually those who could not prepare a tooth or fabricate a restoration if their life were dependent on it. While clinical publications do not constitute science, they do constitute a state of mind that strives for and appreciates true excellence. On this forefront of clinical and technical excellence, QDT really shines.

Although we have received many compliments over the years, I have also heard that it is not right to focus only on the very high end, presenting outcomes that are literally unattainable in daily practice. One year I read a review of the book that was very positive in nature but also stated that such beautiful photos must have been manipulated by computer imaging. This is far from being the case; raising the bar gives everyone a goal to which they can aspire, a motivating target that keeps them pushing forward and improving. Eventually, this standard of excellence raises the clinical standard of care.

So what's next? As always, the previous generation expresses sincere concern when their time has come to pass the torch to the younger generation. You always hear that the younger generation does not show the same level of commitment and dedication that their predecessors have demonstrated. This notion, faulty across the boundaries of all professions, can easily be proven wrong by the QDT. The addition of young readers and authors is what is keeping QDT young and fresh, and it is a sure sign that the torch will continue to pass with ease.

At 30 it's just getting started.

A handwritten signature in black ink that reads "Avishai Sadan". The signature is fluid and cursive, with the first name "Avishai" written in a larger, more prominent script than the last name "Sadan".

Avishai Sadan, DMD
Editor-in-Chief
Avishai.Sadan@Case.edu

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QUINTESSENCE OF DENTAL TECHNOLOGY

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ADVERTISING SALES

William G. Hartman

ADVERTISING/EDITORIAL/ SUBSCRIPTION OFFICE

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4350 Chandler Drive
Hanover Park, Illinois 60133
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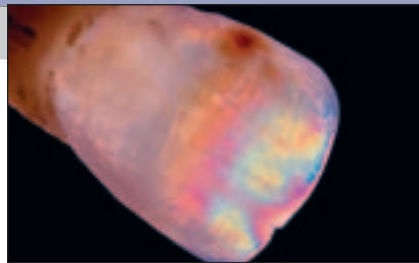
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For additional information, see page 118.

OPALESCENCE: THE KEY TO NATURAL ESTHETICS



Sillas Duarte, Jr, DDS, MS, PhD¹

Enamel and dentin have sophisticated optical characteristics.^{1,2} Creating esthetic restorations for a missing part of the tooth is an exciting challenge, because the restorative material used must interact with the rest of the mouth. Since restorative materials are monochromatic, a combination of materials with different translucencies and optical properties is fundamental to achieve a natural appearance for the restoration. The characteristics of translucency, opacity, opalescence, and fluorescence must be taken into consideration to exactly reproduce the contiguous tissues.³⁻⁶ In particular, opalescence is vital for repairing fractured incisal edges. Recent studies revealed that some resin composites and ceramics are able to replicate this interesting optical behavior.⁷⁻⁹ To better comprehend this phenomenon, a comparison of enamel and resin composite structures will be discussed.

¹Associate Professor, Department of Comprehensive Care, Case Western Reserve University School of Dental Medicine, Cleveland, Ohio, USA.

Correspondence to: Dr Sillas Duarte, Jr, Department of Comprehensive Care, Case Western Reserve University School of Dental Medicine, 10900 Euclid Avenue, Cleveland, OH 44106-4905, USA. E-mail: Sillas.Duarte@case.edu

ENAMEL BIOMINERALIZATION

Enamel is a tissue consisting of mineral and organic phases.¹⁰ During enamel biomineralization, extracellular matrix proteins control the formation of the inorganic component of hard tissues.¹¹ The structural proteins of the enamel matrix, such as amelogenin, ameloblastin, enamelin, and amelotin, have specific protein-protein interactions to produce a matrix capable of directing the highly ordered structure of the enamel crystallites.¹² Among the proteins, amelogenin regulates the form and size of the hydroxyapatite crystallites.¹² The amelogenin nanospheres allow the crystallite to grow in the preferred orientations; however, ameloblastin may inhibit crystallite growth.¹³ Further, lateral branches may grow out of the crystals, and crystal fusing often occurs, thus causing the crystallites to assume pyramidal shapes with their wide bases pointing toward the dentinoenamel junction (DEJ).¹⁴

Individual crystallites, approximately 100 nm in diameter, agglomerate in bundles that constitute the enamel rods.^{14,15} The crystallite organization within the rods is evident.¹³ The hydroxyapatite crystallites that are not part of a prism are named *interprismatic* or *interrod*. The interrod crystallites surround the prisms at an angle of approximately 60 degrees to their long axis, producing a “honeycomb” appearance.¹³



Fig 26a The interproximal contours of the teeth were blocked out with an opal dam.

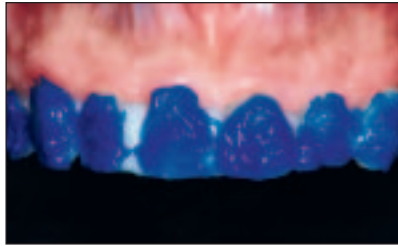


Fig 26b Total acid etching was performed.



Fig 26c The teeth were rinsed and the blockout material was removed.



Fig 26d The margins were un-etched in order to achieve low bond values, thus making it easier to prepare these margins later in the process. Note the etched and unetched enamel surfaces.



Fig 26e The bonding agent was applied to the enamel surfaces.



Fig 26f Flowable resin composite was placed on the tooth surfaces and the PDPs were fully bonded.



Figs 27a to 27c Six weeks after delivering the PDP, the esthetic and functional outcome was approved by the patient and tooth preparation proceeded as follows: **(a)** facial preparation with the depth cutter, **(b)** incisal reduction, **(c)** preparation to accommodate the thickness of the veneers.

proach allows for an extensive try-in and evaluation of the restorations before the teeth have even been prepared.²⁶

However, there are some drawbacks to this approach. In the author's experience, when the PDPs are fully bonded, there may be problems with the preparation of the gingival and interproximal margins. Therefore, to avoid acid etching these areas (thus producing a lower bond value), the interproximal margins should be isolated (eg, with an opal dam, as used for bleaching) and the adhesive

should be fully applied to prevent microleakage at the margins (Figs 26a to 26f).

Because the PDP is fully bonded, the patient can wear the restoration for as long as he or she needs to evaluate and approve the overall performance, including the occlusion, esthetics, and phonetics (Fig 27a to 27c).

When the patient returned for the final restoration, the preparation and proceeding steps were exactly the same as described above (Figs 28 to 31).

SELECTED CASE PRESENTATIONS

Case 1



Otto Zuhr, DDS, Dr med dent
Institute for Periodontology and Implantology
Munich, Germany

Uli Schoberer, MDT
Private dental laboratory
Seehausen, Germany

DENTSCAPE



Clinician: Jennifer Wynn, DDS

