With the esthetic zone being absolutely critical to a patient’s external appearance and inner emotions, orchestrating a bioesthetic result is mandatory. Too often, this is complicated when esthetic desires infringe on the health of the periodontal complex. This is often true when biologic width violations have occurred iatrogenically.

Many factors may contribute to these failures; the two main culprits being intracrevicular margin location and overcontoured restorations. Not only is plaque accumulation problematic, but the supracrestal fibres also become interrupted, causing the tissues to become further inflamed and esthetically unmanageable. Kois’ landmark study defined the total dentogingival complex (DGC) as clinically predictable at 3mm on the direct facial aspect, and at 3mm-5mm interproximally when measured from the free gingival margin to the osseous crest.

It is critical anteriorly that the gingival margin mimics the osseous scallop while maintaining the DGC.1 Further complicating these complex situations is the degree of inflammation in the soft tissue, affecting the clinical development of health and esthetic symmetry.

Dental lasers have evolved considerably as an adjunctive and alternative treatment to safely, conservatively, and reliably decrease bacterial levels and improve the hard and soft tissue contours. An ideal result

Often the patient is frustrated with his or her previous poor cosmetic results. However, to improve the periodontal framework in order to create an ideal result, they must be referred to yet another doctor. Even more challenging is the extended healing time created by reflective mucoperiosteal surgery. This not only affects the chronology of final restorative care, but also delays the patient’s ultimate satisfaction and happiness for a minimum of two to three months.

Fortunately, dental lasers have evolved considerably as an adjunctive and alternative treatment to safely, conservatively, and reliably decrease bacterial levels and improve the hard and soft tissue contours. Studies of Er: YSGG lasers by Rizoiu and others have shown that thermal coagulative results, as well as bony ablation characteristics are similar to a dental bur.2 From a patient-friendly standpoint, less need for suturing and shorter healing times improves case acceptance for doing ideal dentistry. In selected cases, such as the one presented in this article, minimally invasive laser procedures, with precise restorative planning and technique, can satisfy esthetic and functional parameters. Furthermore, patients can enjoy optimal results more comfortably and efficiently.

A conservative strategy was devised that would allow us to correct the problems and causes in a “multi-tasking” manner.

Case Presentation
A 38-year-old female patient presented for correction of what she termed her “tilted smile” (Fig 1). Given that she was starting a new sales career, she also wanted to make her teeth brighter and her smile much broader. The patient shared her frustration about previous dental consultations that had focused solely on orthodontic or surgical solutions without considering a more practical approach that would fit her busy life.

Her smile analysis estab...
lished a collapse of the incisors in the buccal corridor. Furthermore, the axial inclinations, irregular gingival margins, and incisal edges created a downward tilt to the patient's right due to tooth positioning. Close-up imaging showed healthy gingival tissues as well as a weakened right central incisor from a large composite (Fig 2).

Findings

A full clinical examination with radiographs and mounted models revealed the following:

- **Biomechanically,** the majority of her teeth remained strong despite previous dental care.
- **Periodontally,** soft and hard tissues were healthy.
- **Occlusally,** load testing was normal (after muscle relaxation) and there was obvious CR-CO anterior-vertical slide due to a premature contact at tooth #30.
- **Esthetically,** the width-to-length ratio of the upper centrals was 1:2, far from the ideal range of 0.75:1.0. Tooth shade was a Vita A2.

Treatment Plan

Given the patient's previous history and her desire for minimally invasive dental care, a conservative strategy was devised that would allow us to correct the problems and causes in a "multi-tasking" manner:

- **Muscle and bite therapy** with a Tanner appliance, followed by careful equilibration aided by the T-scan (Tekscan System; South Boston, MA).
- **Three-dimensional wax-up** on a Stratos articulator (Ivoclar Vivadent; Amherst, NY) (Fig 5).
- **Home bleaching** of the lower teeth with Opal (tradent; South Boston, MA).
- **“Closed flap” periodontal** modification with the Waterlase ErCr: YSGG (Biolase Technology; San Clemente, CA) while the first three items were being accomplished (the combination of these four steps was a tremendous time saver due to the laser's lower risk of soft tissue injury and allowed us to properly align the gingival margins (Fig 5).

Treatment

At the initial closed periodontal lift, the ErCr: YSGG laser was used in three modes (gingival sculpting, osseous recontouring, and bio-stimulation). Prior to anesthesia, the desired framework was planned and outlined using a fine marker (Fig 4). Furthermore, a stick-bite was used, not only to establish an ideal incisal plane, but also to properly align the ginvial margins (Fig 5).

With the settings at 2.0 Watts (W), 20 pulses per second, 20 per cent air, and 20 per cent water, a G-6 tip (600µ in diameter) was used to shape the labial gingival region. No tissue necrosis or significant bleeding occurred as a result of using the laser's relatively lower settings. All areas were “su-"ed” using a periodontal probe (Fig 6).

At the facial margins, os-"eous sculpting required great precision in order to maintain a 5-mm DGC. A specially tapered T4 tip (400µ in diameter) was used at 2.5 per cent higher wattage of 2.5W. Prior to usage, the tip was measured and marked to 3 mm in order to maintain controlled adjustments within the ginvial sulcus during probing movement of the tip (Fig 7). The resection was smoothed with a 7/8 curette (Fig 8). Using low-level laser therapy at a setting of 0.25 W, a decrease in the release of inflammatory histamine and increased fibroblasts for junctional epithelial growth was achieved by “frosting” the outer epithelium and injection sites (Fig 9). The patient was placed on a vigorous home-care regimen (Oxygel, Oxy-fresh; Coeur d’Alene, ID) and closely monitored for a

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An introduction to restoring implants for the GDP
This November, Mireeh Patel, BDS, MFGDP, MSc, FGC, will be running a one day course for GDPs on restoring implants, in association with BioHorizons. This London based course will be an essential introduction for all GDP courses currently being taught and will include practical and theoretical training on the key issues around restoration.

The course will cover occlusion, patient expectations, anatomy, aesthetics and gingival assessment, with additional guidance from Dr Patel on which prosthetic solution to use and when.

The day will conclude with a discussion around the treatment and resolutions of prosthetic complications.

This highly valuable course will be held at UCL Eastman CPD, 123 Gray’s Inn Road, London on 27th November 2010. CPD will be credited by BioHorizons and the course is competitively priced at £220.

For more information or to book your place contact BioHorizons now on 01344 752560 or info@biohorizons.co.uk or visit www.biohorizons.com

Get your career off to the right foot, care of DENTSPY and the BDA
As part of its continuing commitment to investing in better dentistry, DENTSPY is proud to once again sponsor the 2011 BDA / DENTSPY Student Clinician Research Awards. Held annually, this prestigious awards programme serves as a way to identify new talent within undergraduate dental students as well as supporting any promising research with the potential to improve the way that future dentistry is practiced.

 Held in three phases, the Awards Programme offers dental students the opportunity to further their career and gain recognition at local, national and international levels. Entrants compete, first within their home schools, and then nationally, for the top honour, which includes the chance to present their research project to panel of non-competition winners at the American Dental Association’s annual conference in October.

Committed to innovation within dentistry, DENTSPY is proud to be able to offer emerging talent within the profession the awards and the BDA and the DDG.

For more information, and entrance requirements, contact your local BDA/ DENTSPY Student Clinician Research Awards Representatives or visit http://www.bda.org/studentawards/competitions/

UCL Eastman graduate wins prestigious UK award
The UCL Eastman Dental Institute would like to congratulate Joanne Bratih, an orthodontic graduate student who recently won the prestigious J.K Williams medal.

The JK Williams medal is awarded annually in memory of John Williams, Consultant Orthodontist and outstanding teacher who was based at Wadhurst and Lewes and a former Board member of the Faculty of Dental Surgery. The winner is the individual achieving the most outstanding overall examination performance in all the tests of the Intercollegiate Membership in Orthodontics examination of the Royal College of Surgeons of England and the Royal College of Surgeons and Physicians of Glasgow (IMOrth) held in the academic year.

Joanne is the 7th winner of the award to be trained at the UCL Eastman Dental Institute. The 1st collective award involves a three-hour written examination, followed by the presentation of a paper to colleagues, a series of cases treated personally by the candidate, OSCEs and structured clinical reasoning exercises enabling the assessment of clinical knowledge, skills and communication abilities.

Following completion of her three-year training, Joanne plans to continue pursuing a career as a hospital consultant, and is hoping to start a post-CCT training post in October 2010.

For more details about the UCL Eastman Dental Institute, please visit www.eastman.ucl.ac.uk or telephone 020 7975 1038

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Delegates at the recent AADCD/BAD meeting, ‘Esthetics meets Aesthetics’ held in London, were fascinated by Luke Barnett, James Russell and Jurgen Vahlsang’s presentation about the latest developments in ultra-thin and no prep veneers.

Item that they covered included:
• The importance of orthodontics.
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Garrison Dental Solutions, innovators of such popular restorative products as Diamond Rapid Set Capsules – the way to go when restorations are needed. With a stylish new look and easy use, Garrison Medical has announced the launch of its newest product line, Prestige Medical. The Prestige Medical line is designed to look smart in any office, with a unique double bladed retraction cord packing instrument nicknamed ‘Bob’s Double Cord Packer’. This first-of-its-kind instrument has both orientations for use and has a variety of blades to choose from, including serrated and non-serrated blades on a single instrument. This allows the clinician to choose between a more traditional approach or a more modern approach.

The design minimises recesses making all surfaces hygienic and easy to clean. The kit is supplied with a complete set of 6 trays, a choice of printer or data logger and a 2 year warranty as part of the package.

For more information please contact Garrison Dental Solutions Office Europe by phone +49 2451 971 409, via email info@garrisondental.net or your local Garrison Dental Solutions representative.

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Tenax® “Double Cord” Pack
Garrison Dental Solutions has partnered with well-known lead oxide manufacturer Dr Robert “Bob” Marquez of American Tenax (ATX) to produce a unique double bladedretraction cord packing instrument nicknamed ‘Bob’s Double Cord Packer’. This first-of-its-kind instrument has both orientations for use and has a variety of blades to choose from, including serrated and non-serrated blades on one end and both orientations of ultra-thin non-serrated blades on the other. This configuration allows the clinician to simply twist the instrument maintaining it in the current field of view if wearing loupes or using a microscope while continuously packing cord all the way around the tooth.

Having both serrated and non serrated blades on a single instrument allows for the packing of all sizes and types of restoration cord with only one instrument. Traditionally blades with non-serrated tips were used to prevent injury to the sulcus while packing cord around small teeth and interproximally.

Garrison Dental Solutions, innovators of such popular restorative products as Diamond Rapid Set Capsules – the way to go when restorations are needed. With a stylish new look and easy use, Garrison Medical has announced the launch of its newest product line, Prestige Medical. The Prestige Medical line is designed to look smart in any office, with a unique double bladed retraction cord packing instrument nicknamed ‘Bob’s Double Cord Packer’. This first-of-its-kind instrument has both orientations for use and has a variety of blades to choose from, including serrated and non-serrated blades on a single instrument. This allows the clinician to choose between a more traditional approach or a more modern approach.

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Month while occlusal therapy and bleaching procedures were performed.

Four weeks after surgery, the tissues had healed and restorative care could be initiated. The patient’s teeth were prepared for veneers and a crown with mild soft tissue reshaping, to fine-tune our previous treatment. After taking impressions and bite registrations, prototype provisional (Luxatemp Plus, Zenith Dental Products, Englewood, NJ) were fabricated using the “shrink-wrap” technique. The patient was sent home with the same home-care regimen as mentioned previously, and instructed to “test-drive” her new smile for esthetics and function. She returned in a week to perfect the prototype’s occlusion, color, and morphology. Photographs and models were sent to the laboratory, providing a final blueprint for the porcelain restorations (Fig 10).

Satisfied Patient
Four weeks later, the provisional and cement were carefully removed from the teeth. All restorations were tried in individually and as a group to verify fit and esthetics. After the patient’s enthusiastic approval, the porcelain was bonded using the two-by-two technique and margins were smoothed and polished and occlusion balanced with the T-scan. A protective nighttime appliance was created to add longevity to the rehabilitation. Our very satisfied patient said that we had exceeded her expectations.

The use of a hard/soft tissue laser is a wonderful adjunctive tool for cosmetic and restorative dentistry. The case discussed here demonstrates that this type of laser technology gives dentists the ability to make significant soft and hard tissue changes while being minimally invasive. These changes not only improve the final esthetic outcome of the case but also provide the physiologic functional parameters required for successful dentistry.

Acknowledgments
The author thanks his office team and laboratory technician, Mr. Wayne Payne (Payne Dental Lab, San Clemente, CA), for continually enhancing the lives of many patients like the one presented here. He also is thankful to his family, who allow him to contribute to the education of other dentists and their teams.

References