Cover Story

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Introduction

I am honored to have my patients Tina and Janette on the front cover of this issue of the *Journal of Cosmetic Dentistry*. I always feel privileged when patients trust me with their oral and dental health care, particularly when it involves significantly changing their appearance. I was especially honored that Tina referred her own mother to me. The following is the story behind the smiles featured on this issue's cover.

The discoloration, along with the crooked appearance of her lateral incisors, was a constant source of embarrassment.

Tina

In March 2001, 37-year-old Tina, the office manager for a tractor dealership in a nearby town, initially came to me hoping to find a solution to a lifelong problem of living with dingy, tetracycline-stained teeth. The discoloration, along with the crooked appearance of her lateral incisors, was a constant source of embarrassment. It was not surprising that she felt so self-conscious that she hardly ever wanted to smile.

Treatment Goals

After a detailed discussion and review of my treatment archives, a thorough examination and smile analysis was completed. Diagnostic records, including several photographs, were gathered. During the interview and photographic session it was apparent that Tina barely displayed her lower teeth when speaking or even smiling broadly (Fig 1). My preliminary diagnosis was that restoring 10 upper teeth and achieving whitening on the incisal third of the lowers would give us a great solution (Fig 2). After viewing a wax "blueprint" of my proposed smile design, Tina agreed to restore teeth ##3-14 (the first biscuspids were missing). Among my goals for Tina's smile, besides the obvious elimina-

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Dentistry courtesy of Dr. Nasser Barghi.

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Figure 1: Tina; before, full-face smile view.

tion of the discoloration, were to do the following:

- correct the flared appearance of the lateral incisors
- de-rotate the cuspids
- eliminate spacing
- restore wear
- reduce negative space in the buccal corridors
- improve anterior/posterior gradation
- optimize the occlusion
- idealize the smileline
- develop a more pleasing proportion and arrangement to the anterior sextant.

When striving for excellence and lifelike results, advanced levels of cosmetic dentistry can sometimes be difficult and very challenging; and severe tetracycline cases rank near the top of the list for many of us. As we hear from many of our patients, Tina had longed for a bright white smile her entire life, but had delayed treatment due to her valid fear of having teeth that looked "capped and artificial." Because I am Accredited by the AACD, Tina felt that she could rely on me to provide her with an excellent result. I have always believed that I am only as good as my latest effort, so I wanted to surpass Tina's expectations and make it truly dazzling for her!

Treatment

A pressed ceramic was definitely going to be my first choice as a restorative material. Tina's new smile design would involve modifying the maxillary arch form by making changes to the width, angulation, shape, and contours of the teeth. Moderate recontouring of the lower teeth, especially the anteriors, was necessary to facilitate my additional goal of incorporating occlusal rehabilitation (sufficient cuspid rise, no excursive interferences, etc.) into my treatment plan. In order to overcome the handicap of the dark underlying tooth structure and still produce brilliance and translucency in the final restorations, I knew that my preparations would reach deep into the dentin. Considering the potential problems associated with ceramic veneers placed primarily on dentin (debonding, sensitivity, etc.), combined with my intent to optimize the occlusion, I felt that full-coverage restorations would provide more strength, longevity, better retention, and a superior esthetic outcome. Today, zirconium cores have the ability to mask stained dentitions and some expert ceramists can even fabricate porcelain-fused-to-metal (PFM) restorations that may provide esthetic alternatives in these situations. However, in my opinion, there is still no restoration that rivals the unparalleled beauty of a pressed ceramic that is cut back and meticulously colored and layered by today's world-class ceramic artists. Its fluorescence, vitality, and natural depth of color can absolutely defy detection from the natural dentition. A pressed ceramic also permits the transmission of light throughout the entire tooth. This "fiberoptic" effect allows maximum illumination of the root structure and overlying gingiva, which imparts a more natu-

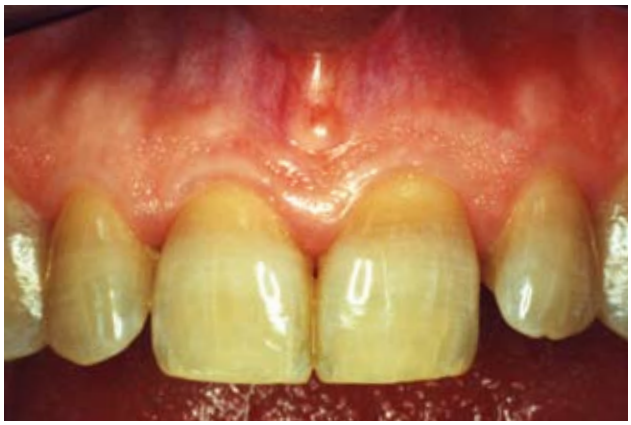

Figure 2: Tina; before, 1:1 retracted view.

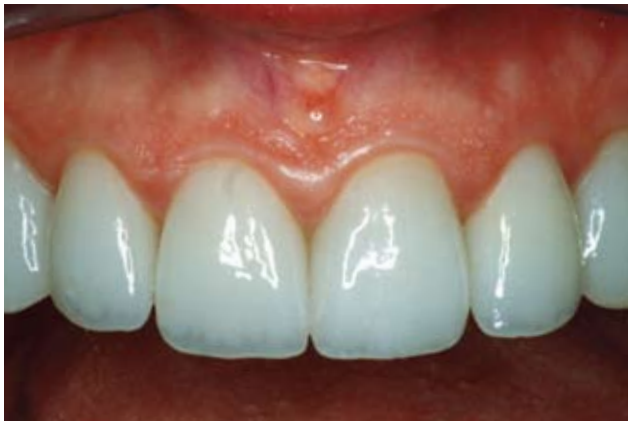

Figure 3: Tina; after 1:1 retracted view.

Figure 4: Tina; after, full-face view.

ral appearance to the discriminating eye.

For Tina, I chose an Empress O2 ceramic ingot (Ivoclar Vivadent; Amherst, NY). As there was severe staining in the middle and cervical thirds of the teeth, selection of another ingot or improper management of the selected ingot in the laboratory may have required the tedious, time-consuming subopaquing of the prepared teeth with a microhybrid composite. However, a combination of preparation design allowing for at least 1 mm of porcelain in critical areas, with margins tucked ¼ to ½ mm beneath the gingival crest; and the careful cutback and artistic layering of the ingot, eliminated any need for subopaquing the teeth and gave us a highly luminous restoration with just enough opacity to not appear overly white. Adhering to contemporary standards, a purely light-curing adhesive luting composite (Variolink shade white, Ivoclar Vivadent) was utilized, combined with a self-etching primer (Prompt L-Pop [3M ESPE; St. Paul, MN]), and a light-curing single-component adhesive (Excite, Ivoclar Vivadent) to fuse each restoration into place. Tina now feels that her smile is one of her best assets, and seven years later it continues to maintain its strikingly natural appearance and lasting beauty (Figs 3 & 4).

Janette

Tina recently referred her 75-year-old mother, Janette, to me. The first thing Janette said to me was music to every dentist's ears: *"I've waited a long time to fix my smile and now I am able to do it. I saw what you did for my daughter and I hope you can do the same for me. I trust you—everything is in your hands. When can we get started?"*

Janette presented to my office with a combination of wear, erosion, discoloration, spacing, generalized

Figure 5: Janette; before, full-face smile.

malalignment, and shifting of teeth, as well as old amalgams and obsolete PFMs. Even if orthodontics had been a considered option, there were numerous concerns that orthodontics could not address. Tooth #7 was congenitally missing, allowing tooth #8 to drift distally; while tooth #6 had drifted mesially almost into the position of tooth #7. Tooth #10 was undersized, as were the central incisors. There was a thick band of connective tissue mesially adjacent to tooth #9 that seemed to serve as a "retainer," preventing any shifting from occurring in the upper left quadrant. Although there was a diastema between #6 and #8, the large diastema between #8 and #9 was a huge distraction, while three of the four bicuspids (#4, #5, and #13) were "dished in," which further highlighted and directed even more attention to the esthetic discrepancies in the anterior region. There were also some minor asymmetrical gingival contours that would need to be addressed. Eleven upper teeth were visible during a broad smile, including the unsightly PFMs on the first molars. After a complete examination including a photographic survey (Figs 5 & 6) and review of the diagnostic models, a restorative and esthetic treatment plan was developed involving 11 teeth. The details of the specific treatment goals were incorporated into a preliminary wax blueprint and reviewed with Janette.

Treatment Goals

Treatment goals discussed with my ceramist were as follows:

- create the illusion of an anterior sextant by converting the first bicuspid (#5) to a canine and the canine (#6) to a lateral incisor
- expand the right buccal corridor and also build out tooth #13 to create a more harmonious panoramic view of the entire esthetic landscape
- lengthen, strengthen, and restore wear
- soften (feminize) the smile to some degree by maintaining open incisal embrasures graduated properly, etc.
- correct the reverse smileline
- eliminate the obvious spacing
- idealize the anterior/posterior gradation.

The worn, uneven lower anteriors would be whitened and recontoured not only to improve their appearance and complete the new smile, but also to optimize the occlusion, helping to impart healthy longevity to the teeth and restorations.

Treatment

A subtle but vital key to the overall success of this case was one that is often downplayed or sometimes omitted altogether; that important key was the establishment of an esthetically pleasing horizontal plane to the lower anterior sextant. Recontouring a jumbled mandibular incisal plane not only improves appearance, but also facilitates the creation of balanced protrusive contacts and removal of detrimental laterotrusive interferences, which can compromise the integrity of the porcelain in

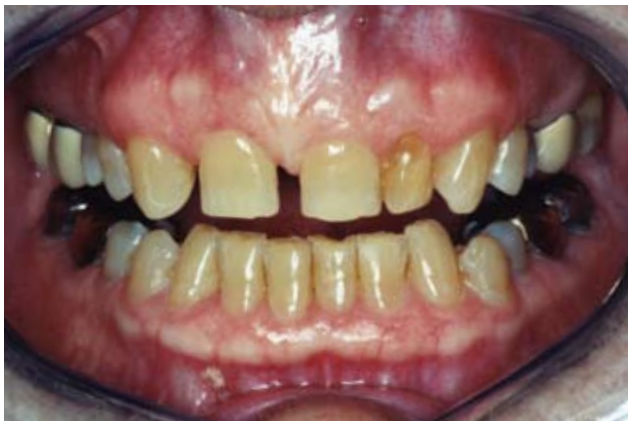

Figure 6: Janette; before, 1:2 retracted view.

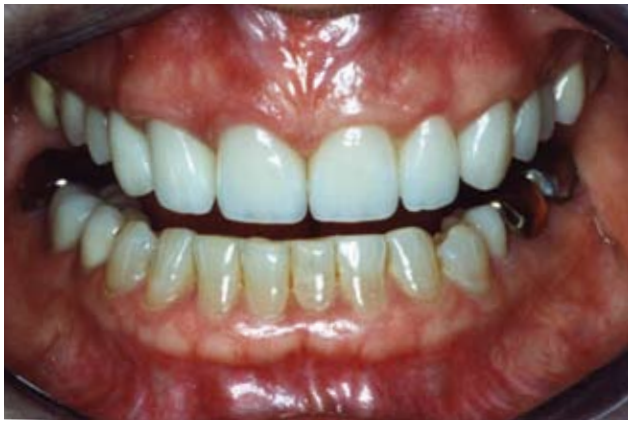

Figure 7: Janette; after, 1:2 retracted view.

Figure 8: Janette; after, full-face smile view.

the maxillary anterior region. For a smile makeover to be truly complete and comprehensive, additional consideration must be given to irregular, uneven mandibular teeth, even if they can be whitened to complement the color of the upper restorations. Cosmetic dental patients are obviously dynamic individuals that do not go around with static smiles on their faces, displaying primarily their upper teeth all the time; rather, they reveal their lower teeth continually as they laugh and talk. As cosmetic dentists, it can be frustrating to observe nightly news anchors reporting the latest happenings with nicely restored upper teeth which, as they continue to speak, merely draw more attention to the contrasting, unsightly lower anteriors.

At this stage of her life, Janette was not interested in orthodontic therapy, but was not opposed to the extensive recontouring of teeth ##22-27 to help achieve our goals of optimizing the esthetics and occlusion. The recontouring was performed at a separate appointment, with Janette sitting upright and level with her teeth slightly parted so I could have the proper visual perspective. I stood directly in front of her, constantly rechecking the horizontal plane of her face. A stick-bite, stick-bite photograph, and a model of the recontoured lower teeth were made to be used to develop the smile line and establish the vertical position of the midline in the definitive wax blueprint.

Exposure of dentin, postoperative sensitivity, and removal of important contours and centric stops are always critical concerns associated with less-than-conservative recontouring of virgin teeth for any purpose (and it certainly was not my intention to incorporate anything iatrogenic into Janette's treatment plan). Therefore, anterior bitewing radiographs were initially taken to

verify significant shrinkage and retraction of the pulp chamber in every lower anterior tooth. I would be the most aggressive on tooth #22, so I began there using no anesthetic and copious amounts of water, with Janette continuously affirming that she felt zero discomfort from either the handpiece or the air and water, until the entire procedure was completed on all of the involved teeth. As we all know, exposed dentin can not only be or become sensitive, but it also wears at an accelerated rate compared to enamel, which is another reason why in this case I selected a leucite-reinforced pressed ceramic that is much kinder to the opposing dentition. Composite was added to the lingual surfaces of the upper anteriors to remain until the provisionals and, ultimately, the final restorations could permanently reestablish the centric stops that were either compromised or removed by the lower recontouring and polishing.

I wanted to lighten Janette's smile in order to create a healthy, vibrant appearance. To ensure that it would be "age appropriate" I selected a shade of A-1 with a higher value (as opposed to Chromoscop 020 for Tina). I improved the gingival symmetry in the anterior region using an electrosurge, and was somewhat more aggressive above #5 in order to help convert it to a "cuspid."

During the preparation phase, I was careful in the interproximal areas adjacent to the diastemas to place the margins as far below the gingivae as reasonably possible without violating the biologic width. These margin positions allowed my ceramist to create a gradual sloping transition of the porcelain into the interproximal contact areas, which enabled maximum displacement/compression of tissue by each restoration, helping form the most optimal "papillae" between ##6-9. In addition, relatively normal outline forms could be developed with interproximal emergence profiles that not only would be more hygienic, but also would not have irregular contours that might annoy the tongue.

To accomplish the magnitude of changes involved in Janette's treatment, I elected to utilize Authentic (A1+ ingot) (Jensen Industries; North Haven, CT) pressed, colored/layered, bonded restorations on teeth ##4-13. After applying a coat of G-Bond (GC America; Alsip, IL) to each preparation, I light-cured the restorations into place using Single Bond (3M ESPE) and RelyX shade A3 (3M ESPE) veneer cement. Teeth #3 and #14 received Procera Z crowns (Nobel Biocare; Yorba Linda, CA) placed with Fuji Plus resin-reinforced glass ionomer luting cement (GC America). Janette finally had a smile that was bright, healthy, and completely whole (Figs 7 & 8).

Patients' Comments

Tina

"All my life I have had dark, yellow, discolored teeth due to tetracycline staining. I smile a lot and am generally a very happy person, but I was never comfortable with my smile because of the unnatural, ugly color. This led me to look into ways to change my smile so that I would be happier when I looked in the mirror. Bleaching had no effect and I started reading about other methods to alleviate the problem. My aunt told me that a friend of hers had used Dr. Oppenheim and that the results were outstanding.

I can honestly say that the money I spent having my smile done is the best money I have ever spent. It has made all the difference in the world. Most people think I am a lot younger than I really am because my smile brightens up my face so much. I no longer try to hide my mouth when I smile and laugh. It's a joy to like the smile I see in the mirror, especially after all the years I had to live with the smile I had.

I only wish I hadn't waited so long. I guess it really didn't occur to me until a few years ago that I might actually be able to do something about the one thing that bothered me so much."

Janette

"All of my adult life I was ashamed of my teeth. I had large spaces between my front teeth and when I smiled, I was embarrassed. One dentist told me there was nothing that could be done. But I wasn't satisfied with that answer. My daughter had her smile done by Dr. Oppenheim and both of us were so pleased that I decided to see him to find out what he could do for me. He performed miracles. Today I am very satisfied and smile all the time."

Summary

Each of these cases presented its own challenges. I am very grateful, however, that I was able to help both Tina and Janette feel proud of their smiles. I am happy to have been able to share both of these cases with you, and encourage all *JCD* readers to share their stories on how they changed someone's life by restoring their smile.

AACD Acknowledgment

The American Academy of Cosmetic Dentistry recognizes Dr. Thomas E. Oppenheim as an AACD Accredited Fellow, an Accreditation Examiner, and a Give Back A Smile™ (GBAS) volunteer who is presently restoring the smile of a GBAS survivor.

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