

# *Esthetic* Smile Design

## A Multidisciplinary Approach to Diastema Closures

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### Abstract

Dental students and practitioners alike should develop treatment strategies focused on providing patients with functional, physiologic, and esthetic restorations. Although this is the foundation for proper treatment, the aspect of esthetics is frequently not considered a high priority. As dental standards rise, greater emphasis is being placed upon esthetics along with functionality. Esthetics can be considered the difference between good dental care and dental excellence. The modern dentist must navigate between various types of restorative options, smile guidelines, and patient preferences to meet patient expectations and achieve exceptional esthetic results.

**Key Words:** multidisciplinary, treatment planning, ceramics, esthetics



After reading this article, the participant should be able to:

1. Understand the advantages of multidisciplinary treatment planning.
2. Appreciate the benefits of utilizing a smile evaluation form.
3. Follow a structured systematic approach to esthetic treatment beginning with the desired endpoint in mind.

To achieve the desired esthetic results, a combination of dental modalities was deemed necessary and included orthodontics, implant therapy, and restorative treatment. ”



## Introduction

In the following case, a comprehensive treatment plan was created to address the chief concerns of the patient, who was a first-year dental student. The initial treatment plan was completed with the use of a smile evaluation form (Figs 1 & 2).<sup>1,2</sup> To achieve the desired esthetic results, a combination of dental modalities was deemed necessary and included orthodontics, implant therapy, and restorative treatment. After the orthodontic treatment was accomplished a new smile evaluation form was completed to help determine the appropriate final treatment plan. Lastly, the final restorations were placed. By using multiple benchmarks—such as the smile evaluation forms and revisions of provisionals—to gauge patient preferences, the clinicians were ultimately able to achieve an esthetic result that exceeded the patient's expectations.

## Chief Complaint

The patient was first seen for a restorative consultation in her first year of dental school. The consult was provided by the Undergraduate Honors in Aesthetic Dentistry Program at the NYU College of Dentistry (NYUCD). The smile evaluation form was used as an adjunct to radiographs, photographs, and study casts to determine possible treatment plans to address the patient's chief complaint. She had already been through much of the first-year dental curriculum and realized that she wanted to "close all the spaces on both the upper and lower arches and make them whiter" (Figs 3-6). The patient had heard about porcelain veneers and thought she could address all of her esthetic concerns with these "simple restorations." As a future dentist she wanted to exemplify to her patients the importance of having a beautiful smile.

In the Honors Aesthetic Clinic, all treatment begins with carefully listening to and understanding the patient's esthetic goals, followed by detailed records to visualize the path to the end result. According to Spear and Kokich, "If the treatment planning sequence proceeds from biology to structure to function and finally to esthetics, the eventual esthetic outcome may be compromised."<sup>3,4</sup> This philosophy has been embraced by the Undergraduate Honors in Aesthetic Dentistry Program, such that each case begins with esthetics

Figure 1: Smile evaluation form, page 1.

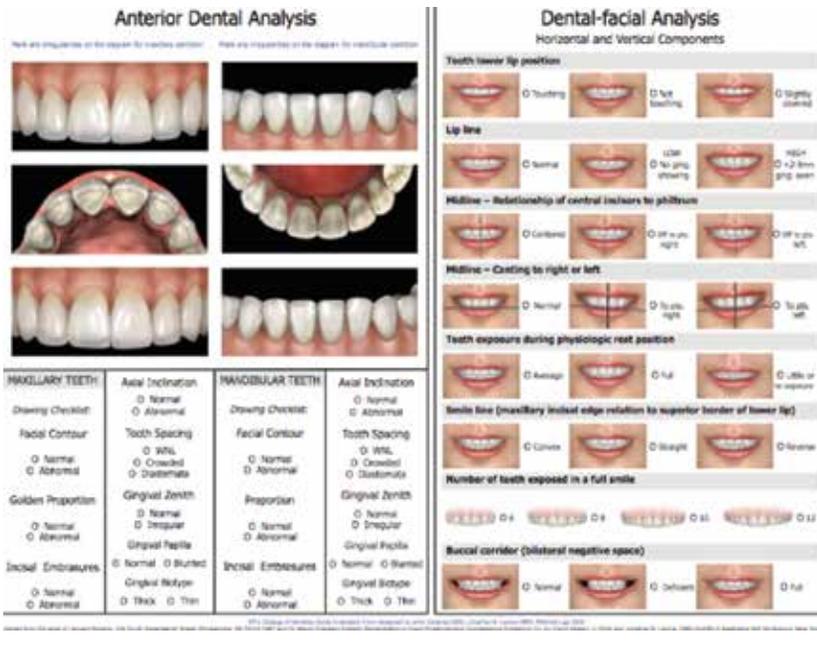
in mind, followed by the function, structure, and physiology that would be required to achieve the best possible esthetic result. After filling in this patient's smile evaluation form it became apparent that, to produce an excellent esthetic result, orthodontic and implant components had to be considered, contrary to the patient's assumption that her case would be just a "simple restorative process."

## Facial Analysis

The facial analysis utilized the smile evaluation form (Fig 7). The patient presented with a normal horizontal interpupillary line and commissural line. From the profile, her face was slightly convex. When analyzing from the profile in relation to Dr. Robert Ricketts' esthetic plane (an imaginary line drawn from the tip of the nose to the tip of the chin),<sup>5</sup> her maxillary lip appeared 5 mm from the plane and her mandibular lip appeared to be 3 mm from the plane. Her nasiolabial angle appeared greater than 90 degrees.

## Occlusal Analysis

The occlusal analysis (Fig 8) also utilized the smile evaluation form. The patient's facial midline was normal and was coincidental with her mandibular dental midline; her maxillary dental midline was 1 mm to the right of the facial midline. Her lower-third facial height was slightly larger than the other thirds of her face. The patient denied any parafunctional or dysfunctional habits. She had an end-on overbite and overjet, with several teeth in cross bite. Her maxillary arch was U-shaped and symmetric, with 8 mm of spacing. Her mandibular arch was also U-shaped but asymmetric, with 13 mm of spacing including a missing mandibular right first molar, which had been extracted when she was a child. Following this analysis the patient was referred to the NYUCD Orthodontic Department for a consultation and comprehensive orthodontic workup.



The smile evaluation form was used as an adjunct to radiographs, photographs, and study casts to determine possible treatment plans to address the patient's chief complaint. ”

Figure 2: Smile evaluation form, page 2.



Figure 3: Initial full-face image.



Figure 4: Initial profile (right and left).



Figure 5: Initial smile, non-retracted.



Figure 6: Initial retracted image.

### NYU College of Dentistry Smile Evaluation Form

Patient Name: \_\_\_\_\_ Chart #: \_\_\_\_\_ Date: \_\_\_\_\_ Faculty Start Sig: \_\_\_\_\_ #: \_\_\_\_\_

Are you happy with the way your teeth appear when you smile? YES  NO  (circle one)

If NO, what is it about your smile you would like to change? *"I would like to close the spaces and fix my smile"*

Patients requests and expectations: *"I want pretty, natural looking teeth"*

Preferences:  White Aligned Teeth  Natural Teeth with Slight Irregularities

#### Facial Analysis



**Lips**  
 Thick  
 Medium  
 Thin

**Inter-Pupillary line**  
 Normal  Started down RT LT

**Commissural line**  
 Normal  Started down RT LT

**Facial midline**  
 Normal  Off to Patients RT LT



**E-plane**  
 Max 5 mm  
 Min 3 mm

**Nasal-Labial**  
 > 90 degrees  
 < 90 degrees  
 = 90 degrees

**Skeletal Pattern**  
 Skeletal Class I  
 Skeletal Class II  
 Skeletal Class III

**Profile**  
 Normal  
 Convex  
 Concave

#### Occlusion/Orthodontic Evaluation



**UFH/LFH**  
 Lower Facial Height [Sn-Me]  
 WNL  
 Excess  
 Deficient

**Abnormal Functions**

<input type="checkbox"/> Digit sucking e.g. thumb	<input type="checkbox"/> Lip sucking/biting
<input type="checkbox"/> Object biting/sucking	<input type="checkbox"/> Mouth breathing
<input type="checkbox"/> Tongue Thrust Swallow	<input type="checkbox"/> Clenching
<input type="checkbox"/> Grinding / Bruxism	<input type="checkbox"/> Other _____

**Midline**  
 Upper and lower midlines coincide with the facial midline  
 Upper dental midline is deviated to the  L (circle)  
 Lower dental midline is deviated to the  R  L (circle)

**Overbite**  
 WNL [0-30%]  Moderate [31-99%]  Severe [70-100%]  
 Anterior Open Bite \_\_\_\_\_ mm  Dental  Skeletal

**Overjet**  
 WNL [1-2 mm]  Moderate [3-5mm]  Severe [more than 5mm]

<b>Maxillary</b>	<input checked="" type="checkbox"/> Spacing	<b>Mandibular</b>	<input checked="" type="checkbox"/> Spacing
<input checked="" type="checkbox"/> Crowding	<input checked="" type="checkbox"/> Dental	<input type="checkbox"/> Crowding	<input type="checkbox"/> Functional shift
<input type="checkbox"/> Anterior Crossbite R or L	<input type="checkbox"/> Dental	<input type="checkbox"/> Skeletal	<input type="checkbox"/> Functional shift
<input type="checkbox"/> Posterior Crossbite R or L	<input type="checkbox"/> Dental	<input type="checkbox"/> Skeletal	<input type="checkbox"/> Functional shift

**Classification of Occlusion/ Malocclusion**  
 Normal Occlusion  CI I malocclusion  
 CI II Div 1  CI II Div 2  CI

#### Phonetic Analysis

**M**  "M" Sound  
 Space between lips visible  
 Max 3 mm  
 Min 2 mm

**E**  "E" Sound  
 Interlabial space occupied by maxillary teeth  
 < 60%  
 > 60%

**S**  "S" Sound  
 Normal  
 Lip  
 S-Sound Deficiency

**FV**  "F" & "V" Sounds  
 Max. Incisor in relation to lower lip  
 Edge 2 mm to lip

**Swallowing**  
 Normal  
 Abnormal

Figure 7: Patient's initial smile evaluation form.



Figure 8: Occlusal analysis.

## Orthodontic Analysis and Treatment

The patient presented to the orthodontic clinic and was evaluated using orthodontic parameters including diagnostic photographs, models, lateral cephalometrics, and panoramic imaging (Fig 9). The patient had a symmetric face, competent lips, and an orthognathic straight profile. Her molar angle classification was Class III on the left side and was unclassified on the right side due to the missing mandibular right first molar. Her right canine was Class I and left canine was super Class I. She had generalized spacing with 8 mm in the maxillary and 13 mm in the mandibular. Her overbite was end-on with 0 mm of overjet.

Cephalometric analysis revealed a Class I skeletal pattern with a normodivergent profile, and proclined maxillary incisors and mandibular incisors that were within normal limits. Primary considerations for this orthodontic treatment were the shallow overjet and overbite.

The patient had a tooth size discrepancy; her maxillary incisors were small and closing them would not yield a desired esthetic result. Alternatively, closing the spaces on the maxillary and mandibular arches would yield a Class III malocclusion with an anterior crossbite. Lastly, retroclining the dentition would have yielded a concave facial profile, which would exacerbate with age.

### Orthodontics

The objectives and goals of the orthodontic phase were to level and align both arches, achieve Class I canine relationships, maintain molar relationships, close the spaces on the mandibular arch using an elastic chain and sliding mechanics, open space for an implant using an open NiTi coil spring (Dentsply; York, PA), distribute the spaces evenly on the maxillary arch while coinciding the midlines, and develop an overjet and overbite in an ideal position for the veneer preparations. First, the mandibular arch was bonded with brackets and arch wire. This was completed in order to retract the lower incisors, and straighten and retrocline the anterior segment (Fig 10). Once this was accomplished the maxillary arch was bonded with brackets and treatment continued (Fig 11).



**Figure 9:** Lateral cephalometric and panoramic imaging, pre-orthodontics.



**Figure 10:** Phase One of orthodontics.



**Figure 11:** Phase Two of orthodontics.

This case emphasizes the importance of communication and collaboration between the orthodontist and restorative dentist. Orthodontics alone may focus on a final outcome that has all spaces eliminated, while a different set of diagnostic parameters utilized by the restorative dentist may require a specified amount of balanced spacing to allow adequate space for restorations. The orthodontist and Honors in Aesthetic Dentistry team periodically consulted each other to make sure the orthodontic treatment would end at an adequate position for the restorative treatment to begin.

### Reevaluation Post-Orthodontics

After 20 months of orthodontic treatment it was determined that the maxillary spacing was adequate and the brackets and arch wire were ready for removal (Figs 12-14). Upon completion of orthodontic treatment, the patient was given a maxillary Essix retainer (Dentsply) to wear full time until the restorative aspect of treatment began. A fixed lingual arch wire retainer bonded with composite was placed from canine to canine on the mandibular arch. In the posterior region, in the area of the missing lower right first molar, brackets were kept on #29 and #31 along with a fixed space maintainer with a closed coil. This space was to be maintained for future implant placement as well as during the four months of integration following the placement of the implant, to eliminate relapse or loss of space (Fig 15).



**Figure 12:** Post-orthodontics, full face.

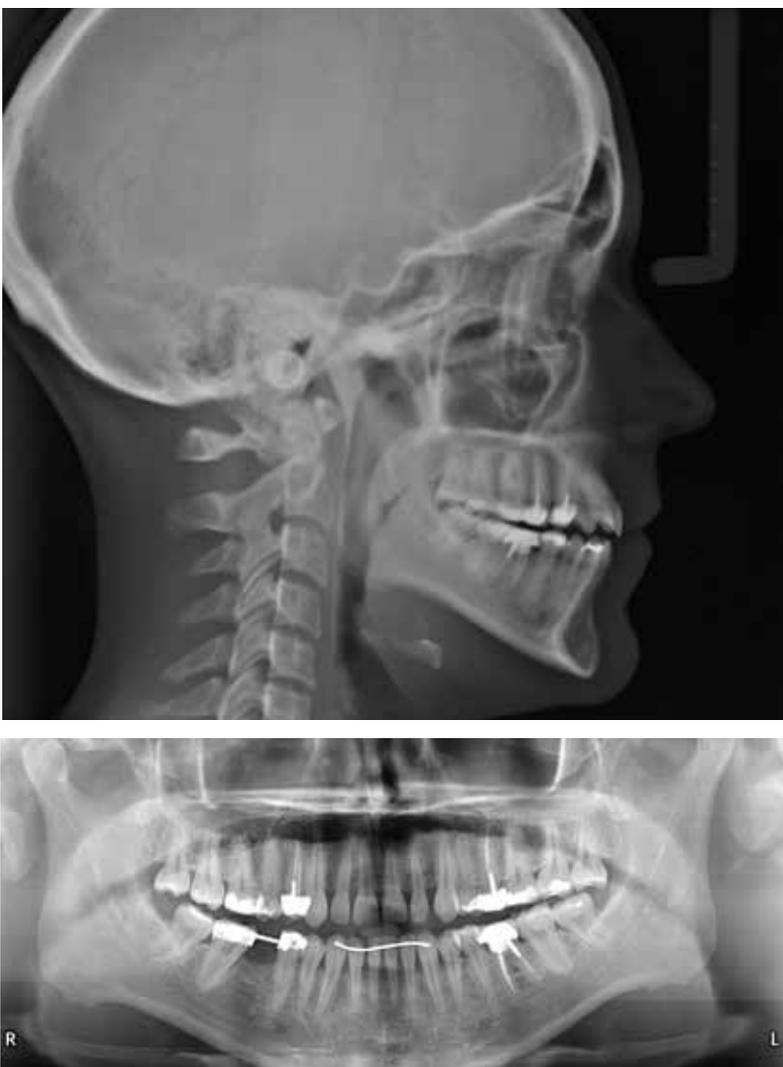
This case emphasizes the importance of communication and collaboration between the orthodontist and restorative dentist. ”



**Figure 13:** Post-orthodontics smile, non-retracted.



**Figure 14:** Post-orthodontics, retracted.



**Figure 15:** Lateral cephalometric and panoramic imaging, post-orthodontics.

On the mandibular arch, all of the spaces were closed while maintaining the midline. The maxillary midline was approximately 0.5 mm off the facial midline. It was determined that it could easily be corrected to coincide the facial midline with the final restorations and did not warrant additional orthodontic treatment. Adequate overbite and overjet were created. The axial inclinations were satisfactory but not ideal. Teeth #7, #9, and #10 were slightly distally inclined but did not require a continuation of orthodontic treatment as they would be corrected when the final restorations were placed.

### Finalized Treatment Plan

Once the braces were removed a new smile evaluation form was completed (Fig 16), new diagnostic models were created, and a diagnostic pre-therapeutic wax-up was fabricated (Fig 17). This wax-up would serve multiple purposes. First it would act as a blueprint for treatment. From a duplicate model, a buccal reduction guide, incisal reduction guide, and a temporary matrix (Fig 18) were fabricated from vinyl polysiloxane (VPS) impression material (Reprosil, Dentsply) to be used during preparation. The patient had a full buccal corridor and wanted to achieve a full and uniform maxillary shade change utilizing the final restorations. It was determined that, to reach the

# NYU College of Dentistry Smile Evaluation Form

Patient Name: \_\_\_\_\_ Chart #: \_\_\_\_\_ Date: \_\_\_\_\_ Faculty Start Sig: \_\_\_\_\_ #: \_\_\_\_\_

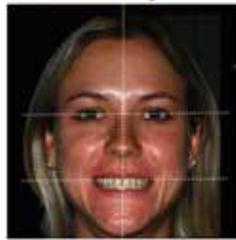
Are you happy with the way your teeth appear when you smile? YES  NO  (circle one)

If NO, what is it about your smile you would like to change? \* I would like to close the spaces and fix my smile \*

Patients requests and expectations: \* I want pretty, natural looking teeth \*

Preferences:  White Aligned Teeth  Natural Teeth with Slight Irregularities

### Facial Analysis



- Lips**
- Thick
  - Medium
  - Thin

- Inter-Pupillary line**
- Normal
  - Slanted down
- RT LT
- Commissural line**
- Normal
  - Slanted down
- RT LT
- Facial midline**
- Normal
  - Off to Patients
- RT LT



- E-plane**
- Max 5 mm
  - Man 3 mm
- Nasal-Labial**
- > 90 degrees
  - < 90 degrees
  - = 90 degrees

- Skeletal Pattern**
- Skeletal Class I
  - Skeletal Class II
  - Skeletal Class III
- Profile**
- Normal
  - Convex
  - Concave

### Occlusion/Orthodontic Evaluation



- UFH/LFH**  
Lower Facial Height [Sn-Me]
- WNL
  - Excess
  - Deficient

**Abnormal Functions**

- Digit sucking e.g. thumb
- Object biting/sucking
- Tongue Thrust Swallow
- Grinding / Bruxism
- Lip sucking/biting
- Mouth breathing
- Clenching
- Other \_\_\_\_\_

**Midline**

- Upper and lower midlines coincide with the facial midline
- Upper dental midline is deviated to the **(R)** L (circle)
- Lower dental midline is deviated to the R **(L)** (circle)

**Overbite**

- WNL [0-30%]
  - Moderate [31-69%]
  - Severe [70-100%]
- Anterior Open Bite \_\_\_\_\_ mm  Dental  Skeletal

**Overjet**

- WNL [1-2 mm]
- Moderate [3-5mm]
- Severe [more than 5mm]

**Maxillary**

- Crowding
- Spacing
- Anterior Crossbite
- Dental
- Posterior Crossbite R or L
- Dental

**Mandibular**

- Crowding
- Spacing
- Skeletal
- Functional shift
- Skeletal
- Functional shift

**Classification of Occlusion/ Malocclusion**

- Normal Occlusion
- CI I malocclusion
- CI II Div 1
- CI II Div 2
- CI

### Phonetic Analysis

**(M)**



- "M" Sound**
- Space between lips visible
- Max 3 mm
- Mand 2 mm

**(E)**



- "E" Sound**
- Interlabial space occupied by maxillary teeth
- < 80%
  - > 80%

**(S)**



- "S" Sound**
- Normal
  - Lisp
  - S - Sound Deficiency

**(FV)**



- "F" & "V" Sounds**
- Max. Incisor in relation to lower lip
- Edge 2 mm to lip

**Swallowing**

- Normal
- Abnormal



Figure 16: New smile evaluation form.



Figure 17: Diagnostic wax-up.



Figure 18: Matrixes.

It was paramount to the patient that the preparations be as minimally invasive as possible.

patient's ideal esthetic goals, ##4-13 had to be treated. Teeth #5 and #13 had previously been treated using porcelain-fused-to-metal crowns. The final planned restorations would consist of eight feldspathic porcelain veneers and two lithium disilicate crowns. Two weeks prior to preparation of the maxillary arch, the mandibular arch was bleached in office (Zoom Whitening, Philips Oral Healthcare; Stamford, CT) to better match the future maxillary restorations. After insertion of all restorations, retention was achieved using a clear Essix retainer.

## Implant

Post-orthodontics and prior to the restorative aspect of the case a cone beam computed tomography (CBCT) was studied. Based upon the CBCT it was determined that the patient had a knife-edge ridge and that there would be sufficient space to augment the ridge and place an implant. A tapered 4.3 x 10-mm implant was placed (Nobel Biocare; Kloten, Switzerland) with healing cap; this was in place for five months along with the brackets and closed coil to maintain the space until the implant was to be restored (Fig 19).

## Preparation and Provisionalization

It was paramount to the patient that the preparations be as minimally invasive as possible. This was considered in the beginning of the treatment plan, which was why the patient opted for orthodontic therapy. Conservative enamel-sparing preparation design yields restorations with a maximum longevity.<sup>6</sup> Bond strengths of resin cements to enamel are higher than to dentin, which contributes to the increased longevity and higher predictability in conservative preparations.<sup>3,4</sup>

Teeth ##4-13 were prepared on the facial with a 0.5-mm depth-cutting bur (Rosenthal Apa Bur Block 5007901U0, Brasseler USA; Savannah, GA). Since we wanted to achieve a longer appearance, we were able to have a very minimal incisal preparation. Preparation finish lines were refined with chamfer on the facial at the level of the free gingival margin (Two Striper Diamond #799, Primer Dental; Plymouth Meeting, PA). It is important to note that interproximally the teeth were not finished with a chamfer but rather prepared straight through, removing any undercut and without a definitive finish line (Fig 20). The preparations were impressed with medium- and light-body VPS impression material (Aquasil Ultra, Dentsply). Provisional restorations were fabricated utilizing the putty matrix (Dentsply) from the diagnostic wax-up and using Luxatemp and Luxaflow shade B1 (DMG America; Englewood, NJ). The provisional restorations were considered a "test drive" for the patient. Adjustments were made 24 hours after initial insertion; photographs were taken and models made when the patient was satisfied (Fig 21). Photographs and diagnostic impressions of the provisional restorations were taken and analyzed, and desired changes were communicated to the dental laboratory.

## Laboratory Fabrication

Feldspathic porcelain veneers were selected as the restorative material because it is the most esthetic restorative material and also requires the least amount of tooth reduction.<sup>7</sup> Lithium disilicate was selected as the crown material because of its strength and esthetic qualities. Photographs of the maxillary preparation shade and final shade after bleaching of the mandibular arch were taken into consideration when selecting the final shade of the maxillary restorations.

The eight feldspathic veneers were fabricated on dies that were first overlaid with platinum foil. Using enamel ceramics (Softspar Creation, Pentron; Orange, CA) of different translucencies, a final product was created. The cores for the two lithium disilicate crowns were milled using CAD/CAM milling technology. Feldspathic porcelain was added to the core of the crowns when the veneers were fabricated. The veneers were created using different dentin and enamel shades to achieve optimal esthetics and match the shade of the mandibular teeth. The veneers and crowns were glazed, the platinum foil was removed from the veneers, and then the restorations were etched with hydrofluoric acid (Tri-Dynamics Gel for Ceramics, Patterson Dental; St. Paul, MN) prior to being delivered for insertion.



**Figure 19:** Pre-orthodontic space, post-orthodontic space, post-implant placement.



**Figure 20:** Preparations.



**Figure 21:** Provisionals.



**Figure 22:** Restorations prior to insertion.

While every practitioner may plan a case in a different way, it is important to keep the esthetic outcome at the forefront of the treatment plan. ”

### Insertion

Upon delivery from the laboratory (DSG Americus Dental Laboratory; Queens, NY), the restorations were examined on the master cast for fit, integrity, accuracy, and consistency of shade (Fig 22). The patient was scheduled to return and the provisionals were removed, preparations were cleaned, rinsed and dried, and the restorations were tried in. An Optragate (Ivoclar Vivadent; Amherst, NY) was placed to retract the lips and keep a controlled, moisture-free, uncontaminated field. The restorations were tried in with water placed on the internal aspect of the veneers. This allowed us to visualize the margin integrity, fit, contour, length, and shade of all restorations prior to inserting them permanently. The parameters were evaluated and it was determined that the shade did not require any alteration for insertion, so a translucent shade of luting resin (Choice 2, Bisco; Schaumburg, IL) was used to place the restorations.



**Figure 23:** Postoperative full-face image.



**Figure 24:** Postoperative smile, portrait image.

The restorations were cleaned with phosphoric acid 35% (Ultradent; South Jordan, UT) for 20 seconds. Each restoration had previously been etched with hydrofluoric acid by the laboratory; however, phosphoric acid was used to remove any debris on the restorations that might have occurred during try in. Additional hydrofluoric acid was not used so as to avoid creating porcelain salts, which can weaken strengths between the intaglio surface of the veneer and the tooth.<sup>8</sup> The restorations were then silanated (Bis-Silane Parts 1 and 2, Choice 2, Bisco) and a thin bond coat (Porcelain Bonding Resin, Choice 2) was placed on the intaglio surfaces of the veneers and covered while the teeth were prepared for the bonding process. The teeth were etched with 35% phosphoric acid (Ultradent) for 20 seconds. All-Bond Parts 1 and 2 (Choice 2) were combined, applied to the teeth, and air-thinned. Translucent luting resin (Choice 2) was applied to the restorations and the restorations were placed on the teeth. The excess was cleaned with bristle brushes and the restorations were light-tacked at the gingival margins (Valo Curing Light, Ultradent). The excess was flossed away and the restorations were light-cured for 45 seconds. The occlusion was adjusted accordingly. The restorations were polished and the incisal edges were recontoured slightly. The patient returned 48 hours later for further adjustments and for photographs to be taken (Figs 23 & 24).



Figure 25: Postoperative portrait.

## Maintenance

It is important for the restorative dentist to think about post-orthodontic retention. It was decided that the best form of retention would be an Essix retainer, fabricated after the completion of the restorative treatment. On the mandibular arch, a lingual arch wire was placed from canine to canine, and a bracket and spring was placed in the area of the missing right first molar to maintain the space during integration and until the implant is ready for the restorative therapy.

## Discussion

In his book *The 7 Habits of Highly Effective People*, Stephen Covey writes that we must “begin with the end in mind.”<sup>9</sup> This idea can be applied to dentistry in a multitude of ways. Prior to picking up a handpiece, the practitioner must visualize the desired esthetic outcome of a case. Utilizing different diagnostic modalities and different specialties will help envision the future restorations prior to the start of treatment. Planning and diagnostics are in a sense more important than the actual preparation. While every practitioner may plan a case in a different way, it is important to keep the esthetic outcome at the forefront of the treatment plan.

## Summary

Postoperatively, the maxillary and mandibular dental midlines now coincide with each other as well as with the facial midline. The axial inclinations of the teeth treated are close to ideal. The patient has a full buccal corridor. All spaces have been closed. The patient has a Class I canine relationship on both the right and left side. With the final placement of the implant crown the molar relationships will be improved. Adequate overbite and overjet have been achieved. The overall facial esthetic has been improved with the restorations, which are both functional and esthetic. The patient and the dentists agreed that their wishes for an optimal clinical and esthetic result had been realized<sup>10</sup> (Fig 25).

## Acknowledgments

The authors thank Oleg Gorlenko (DSG Americus Dental Laboratory; Queens, NY), who served as liaison between NYUCD’s Undergraduate Honors in Aesthetic Dentistry Program and the laboratory. Dr. Miro took the portrait photography in this article; Dr. Calamia and Dr. Miro took the case photography.

The occlusion was adjusted accordingly. The restorations were polished and the incisal edges were recontoured slightly. ”

## References

1. Calamia JR, Levine JB, Lipp M, Cisneros G, Wolff MS. Smile design and treatment planning with the help of a comprehensive esthetic evaluation form. *Dent Clin North Am.* 2011 Apr;55(2):187-209.
2. Calamia JR, Levine JB, Lipp M, Cisneros G, Wolff MS. Smile design and treatment planning with the help of a comprehensive esthetic evaluation form. In: Calamia JR, Trushkowsky RD, Wolff MS, editors. *Esthetic and cosmetic dentistry for modern dental practice: update 2011.* St. Louis: Mosby; 2011. p. 187-209.
3. Spear FM, Kokich VG. A multidisciplinary approach to esthetic dentistry. *Dent Clin North Am.* 2007 Apr;51(2):487-505.
4. Spear FM, Kokich VG. A multidisciplinary approach to esthetic dentistry. In: Calamia JR, Wolff MS, Simonsen RJ, editors. *Successful esthetic and cosmetic dentistry for the modern dental practice.* St. Louis: Mosby; 2007. p. 487-505.
5. Spear F. Evaluating facial esthetics: the esthetic plane. *Daily Digest.* Available from: <http://www.speareducation.com>.
6. Calamia JR, Calamia CS. Porcelain laminate veneers: reasons for 25 years of success. *Dent Clin North Am.* 2007 Apr;51(2):399-417.
7. Gürel G. Porcelain laminate veneers: minimal tooth preparation by design. *Dent Clin North Am.* 2007 Apr;51(2):419-31.
8. Alex G. Preparing porcelain surfaces for optimal bonding. *Compend Contin Educ Dent.* 2008 Jul-Aug;29(6):324-35.
9. Covey SR, Covey SM. *The 7 habits of highly effective people.* New York: St. Martin's Griffin; 1998.
10. Kokich VO Jr, Kiyak HA, Shapiro PA. Comparing the perception of dentists and lay people to altered dental esthetics. *J Esthet Dent.* 1999;11(6):311-24. **JCD**

The patient and the dentists agreed that their wishes for an optimal clinical and esthetic result had been realized. ”



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# AACD Self-Instruction Continuing Education Information



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This continuing education (CE) self-instruction program has been developed by the American Academy of Cosmetic Dentistry (AACD) and an advisory committee of the *Journal of Cosmetic Dentistry*.

## Eligibility and Cost

The exam is free of charge and is intended for and available to AACD members only. It is the responsibility of each participant to contact his or her state board for its requirements regarding acceptance of CE credits. The AACD designates this activity for 3 continuing education credits.

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The self-instruction exam comprises 10 multiple-choice questions. To receive course credit, AACD members must complete and submit the exam and answer at least 70% of the questions correctly. Participants will receive test results immediately after taking the examination online and can only take each exam once. The exam is scored automatically by the AACD's online testing component. The deadline for completed exams is one calendar year from the publication date of the issue in which the exam appeared. The exam is available online at [www.aacd.com](http://www.aacd.com). A current web browser is necessary to complete the exam; no special software is needed.

Note: Although the AACD grants these CE credits, it is up to the receiving governing body to determine the amount of CE credits they will accept and grant to participants.

## Verification of Participation (VOP)

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For members of the Academy of General Dentistry (AGD): The AACD will send the AGD proof of your credits earned on a monthly basis. To do this, AACD must have your AGD member number on file. Be sure to update your AGD member number in your AACD member profile on [MyAACD.com](http://MyAACD.com).

All participants are responsible for sending proof of earned CE credits to their state dental board or agency for licensure purposes.

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## Questions and Feedback

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The 10 multiple-choice questions for this Continuing Education (CE) self-instruction exam are based on the article, "Esthetic Smile Design: A Multidisciplinary Approach to Diastema Closures," by Andi-Jean Miro, DDS; Jill Varriale, DMD; and John R. Calamia, DMD. This article appears on pages 96-109.

The examination is free of charge and available to AACD members only. AACD members must log onto [www.aacd.com](http://www.aacd.com) to take the exam. **Note that only Questions 1 through 5 appear in the printed and digital versions of the jCD; they are for readers' information only.** The complete, official self-instruction exam is available online only—completed exams submitted any other way will not be accepted or processed. A current web browser is necessary to complete the exam; no special software is needed. The AACD is a recognized credit provider for the Academy of General Dentistry, American Dental Association, and National Association of Dental Laboratories. For any questions regarding this self-instruction exam, call the AACD at 800.543.9220 or 608.222.8583.

1. The dental modalities necessary to achieve the desired esthetic results in this case were

- a. orthodontics and restorative treatment only.
- b. smile evaluation and restorative treatment only.
- c. orthodontics, periodontics, and restorative treatment.
- d. orthodontics, implant therapy, and restorative treatment.

2. In NYU's Undergraduate Honors in Aesthetic Dentistry Program, the smile evaluation form

- a. completes the required esthetic evaluation.
- b. is only used in the initial treatment-planning phase.
- c. is used as an adjunct along with other information to determine treatment.
- d. carries more weight than the verbalization of the expected goals of the patient.

3. Each case in the program begins

- a. with biological structure and function as the highest priority.
- b. by selecting the appropriate ceramic required to restore the case.
- c. by utilizing a universal preparation and reduction protocol.
- d. with the eventual esthetic goal in mind.

4. What would be the likely outcome of treating the case presented with only orthodontics?

- a. Closing the spaces with orthodontics would have been an acceptable esthetic option.
- b. The patient's tooth size discrepancy would not be an esthetic problem.
- c. Closing the spaces on both sides would yield a Class III occlusion with crossbite.
- d. The patient's facial profile is not a consideration when orthodontics is used as the sole treatment modality.

5. The case presented emphasizes what important concept?

- a. That it is the orthodontist's decision to decide how to manage special relationships in restorative cases.
- b. That excess spaces should be set up for esthetics with occlusion being a secondary consideration.
- c. The importance of collaborative communication between the orthodontist and the restorative dentist prior to and during treatment.
- d. That it is necessary for the dentist to evaluate spacing only once orthodontic treatment is complete.

To see and take the complete exam, log onto [www.aacd.com/jcdce](http://www.aacd.com/jcdce). Click "Dental Professionals", "Journal of Cosmetic Dentistry", "jCD CE", and log in.