A healthy 44-year-old man presented for improvement of his smile. Clinical examination revealed a number of esthetic challenges. Specifically, this penicillin-allergic patient had substantial exposure to tetracycline as a child and subsequent tooth discoloration. Additionally, the removal of a number of teeth as a child led to the drifting of his remaining dentition. At the time of examination, his midline was noted to be 4 mm left of midsagittal. It is worthy to note that the patient was unaware of the midline issue until it was pointed out. He was astonished he had not noticed himself. Nocturnal bruxism, coupled with the muscle tone in the masticatory muscles. However, given his history of bruxism and his rather steep anterior guidance, the patient was instructed to wear an occlusal splint at night after the case was completed. Periodontally, the patient was deemed to be stable and all remaining teeth showed good hard and soft tissue support. The patient’s temporomandibular joint (TMJ) status was unremarkable. As a result, it was decided to recontour the lower anteriors to create room for palatal ceramic on the upper front teeth. Another concern was the potential for phonetic change. The proposed addition of a thickness of ceramic to the palatal aspect of the maxillary anterior teeth, albeit slight, carried an increased risk of change, especially the “s” sound. It was hoped that the lightened lowers could serve as an esthetic shade target for the maxillary anteriors.

The patient opted for in-office whitening (Illuminé™, DENTSPLY International, York, PA) supplemented by home-applied whitening gel in custom bleaching trays. A modest improvement in shade was achieved (A2 from A3-5). The patient proceeded with preparation 5 months after the whitening procedure and it was noted that the shade improvement remained stable over that time. Under local anaesthesia, teeth Nos. 6 through 11 were prepared for ceramic restoration (Figure 2). A diode soft tissue laser (Diolase, American Medical Technologies, Irvine, CA) was used to judiciously correct minor irregularities in the heightening. Studies have shown, however, that a lasting improvement can sometimes be achieved. Nevertheless, the patient was cautioned that the degree of improvement could not be predicted. It was hoped that the lightened lowers could serve as an esthetic shade target for the maxillary anteriors.

Laboratory perspectives from the inside out.

A diagnostic wax-up was prepared on models. Impressions for the models were taken with a polyvinyl material, then mounted on a semi-adjustable articulator. An additional set of mounted models was prepared and mounted to record the pretreatment condition.

During the model work, the functional and esthetic challenge of the maxillary anterior became more obvious. Given the dark shade of the teeth, substantial labial tooth structure would most likely have to be removed to allow room for adequate ceramic thickness. However, with the palatal wear, it was noted that any amount of preparation would leave too little tooth structure for support of the restorations. As a result, it was decided to recontour the lower anteriors to create room for palatal ceramic on the upper front teeth. Another concern was the potential for phonetic change. The proposed addition of a thickness of ceramic to the palatal aspect of the maxillary anterior teeth, albeit slight, carried an increased risk of change, especially the “s" sound. It was hoped that the lightened lowers could serve as an esthetic shade target for the maxillary anteriors.

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Figure 5A  GC Initial™ porcelain was applied as a first dentin layer.

Figure 5B  After the first bake, chroma and incisal porcelain was applied.

Figure 6  Sample smile selection chart acts as a guide for choosing shape, texture, and color.

Figure 7  Courtesy of Dr. Mike Gillis, Halifax, NS, excellent communication tools sent to the laboratory assisted the technicians in the preparation of the final restorations.

Figure 8  The second porcelain build-up was applied for maximum color.

Figure 9  Preoperatively, the patient had discoloration, an open diastema, fracture, and an unesthetic appearance. To demonstrate the new and improved emergence of the dentition, the technician used a computer program to shade the affected areas in the postoperative photograph.

Figure 10  Right side before-and-after views, postcementation.

Figure 11  Left side before-and-after views, post-cementation.
 gingival contour. Tissue retraction was achieved and both the final upper and opposing impressions were taken with Aquasil™ (DENTSPLY International). A maximum intercuspidation bite registration was obtained (Blu-Bite™, Henry Schein, Melville, NY).

Provisional restorations were made directly with Structur® Premium B1 (VOCO America, Sunnyside, NY) in a PVS/silicone matrix (Figure 3). This matrix was fabricated using the approved esthetic wax-up. Once the material was set, excess was cleared from the margins with a sharp instrument. During the preparation appointment, the goal was to provide provisionalization that would suffice functionally and have reasonably good esthetics. Several days after the preparation appointment, the patient returned for provisionalization. Occlusally, the provisionals showed no interferences with the envelope of function and the lower anteriors had a positive occlusal stop against the cingulum area of the upper anteriors. Phonetics were checked and all sounds were normal. The patient had good anterior guidance and no teeth were found to be in excursive interference. Esthetically, the patient was very satisfied. The provisionals were polished and all sounds were normal. The patient was assigned to a real risk of phonetic changes occurred.

The thicker palatal contour of the maxillary anteriors included a distinct occlusal stop that was idealized to the adjusted incisal edge of the lower anteriors. The semi-adjustable articulator and interchangeable provisional and preparation models were helpful to the laboratory in giving an excellent occlusal result.

The midline discrepancy posed a great esthetic challenge. Despite a recommendation to include an orthodontic phase of treatment, the patient declined. He was advised that complete correction would be impossible. Ker et al1 found that a majority of individuals found dento-facial midline discrepancies of up to 2.9 mm to be acceptable. The same study suggested that cants of up to 4% were esthetically acceptable by most. Restoratively, the laboratory was able to migrate the midline to a better position and the patient was satisfied. Great care was taken to not introduce a cant to the midline. Interchangeable models proved helpful in this regard.

REFERENCES