

# Orthodontic Camouflage

By Timothy Shaughnessy, DDS

*Dr. Shaughnessy will be a featured clinical speaker at the upcoming AOS Annual Meeting, Oct 19-22.*



**Figure 1**  
Pre-treatment  
Photographs



**Figure 2**  
Pre-treatment Cephalometric Radiograph



**Figure 3**  
Pre-treatment Panoramic Radiograph

The prevalence of Class III malocclusions is relatively low, less than 5% in the white population.<sup>1</sup> For most practitioners, the small percentage of Class III treatment represents a large clinical challenge. Protraction facemask therapy has been advocated in early treatment of Class III malocclusions with maxillary deficiency.<sup>2-6</sup> However, efforts to restrain mandibular growth at an early age rarely succeed because later mandibular growth often negates early correction. Most facemask patients significantly improve in the short term, but current data suggest that approximately 25% eventually require orthognathic surgery anyway. Better selection of patients for facemask treatment should improve the effectiveness and efficiency of this method.<sup>7</sup>

The severity of Class III malocclusions ranges from dentoalveolar problems with anterior posturing of the mandible to true skeletal problems with significant maxillomandibular discrepancies.<sup>8</sup> Orthognathic surgical correction is typically recommended to non-growing patients with larger dentoskeletal Class III discrepancies not amenable to

orthodontic camouflage. Dentoalveolar compensation, or camouflage treatment, can be a viable alternative for non-growing patients with milder Class III discrepancies.<sup>9</sup> It should be emphasized that one should not commit to camouflage treatment in growing patients with progressive Class III deformities. Serial cephalometric radiographs are recommended for this determination. The following case highlights the concept of Class III camouflage treatment.

## Case Report S.M.

A 27 year-old woman sought treatment for correction of her "underbite." (Figs. 1 & 2) Her medical history was noncontributory other than seasonal allergies. Her dental history included root canal treatment and crown restoration of the maxillary right first premolar and the mandibular left first molar. (Fig. 3) Third molars were extracted ten years earlier. Facial aesthetic evaluation revealed mandibular prognathism and lower lip protrusion. This was consistent with the cephalometric variables highlighted in Table 1.<sup>10</sup> The maxillary dental midline was approximately 2-3mm to the right of the mid-facial axis.

Dentally, the patient presented with maxillary anterior crowding and a unilateral right Class III dentition. A crossbite relationship extended from the mandibular right second premolar to the mandibular left second premolar.

## Treatment Options

Two treatment alternatives were discussed with this patient at the consultation appointment. The first option included extraction of the maxillary left first premolar for midline correction, resolution of crowding and decompensation in preparation for a mandibular setback procedure. Two other orthodontists had recommended surgical correction previously. A second treatment option proposed by me was a non-surgical approach involving dentoalveolar compensation to camouflage the skeletal discrepancy. This would include the additional extraction of mandibular first premolars followed by space closure for anterior and posterior crossbite correction. The patient chose the non-surgical option with the asymmetric extraction of the three first premolars.

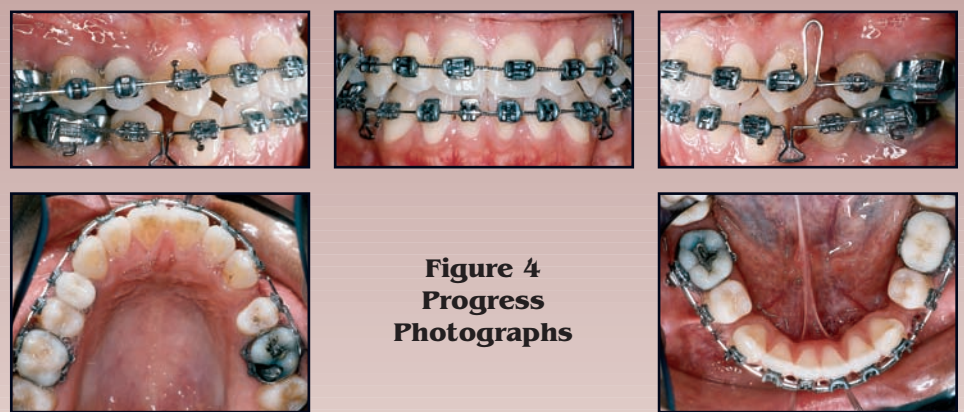
# of a Class III Discrepancy

## Treatment Objectives

The primary treatment objective was to correct the anterior crossbite, achieving normal overjet and overbite, Class I canine occlusion bilaterally and anterior guidance functionally. Secondary objectives included alignment of the maxillary anterior teeth and midline correction. A final objective was to decrease lower lip protrusion and the relative appearance of mandibular prognathism.

## Treatment

The maxillary left first premolar and mandibular first premolars were extracted in preparation for comprehensive orthodontic treatment. The dentition was treated with .018 Ormco Mini-Diamond brackets (Roth prescription) and Ultima molar bands. Round nickel-titanium (NiTi) archwires were used for initial alignment, followed by 16 X 22 NiTi archwires for initial torque control. A 16 X 22 stainless steel (SS) closing loop archwire was fabricated eight months into treatment for mandibular space closure. Unilateral left space closure followed four months later as positive overjet began to develop. Space closure was supplemented with Class II elastics for the final two activations of the closing loop archwires to



**Figure 4  
Progress  
Photographs**

avoid mildly excessive overjet.(Fig. 4) For minor finishing bends and settling of the occlusion, 16 X16 SS archwires were used. Total time in treatment was 28 months. Removable retainers were provided for nighttime wear.

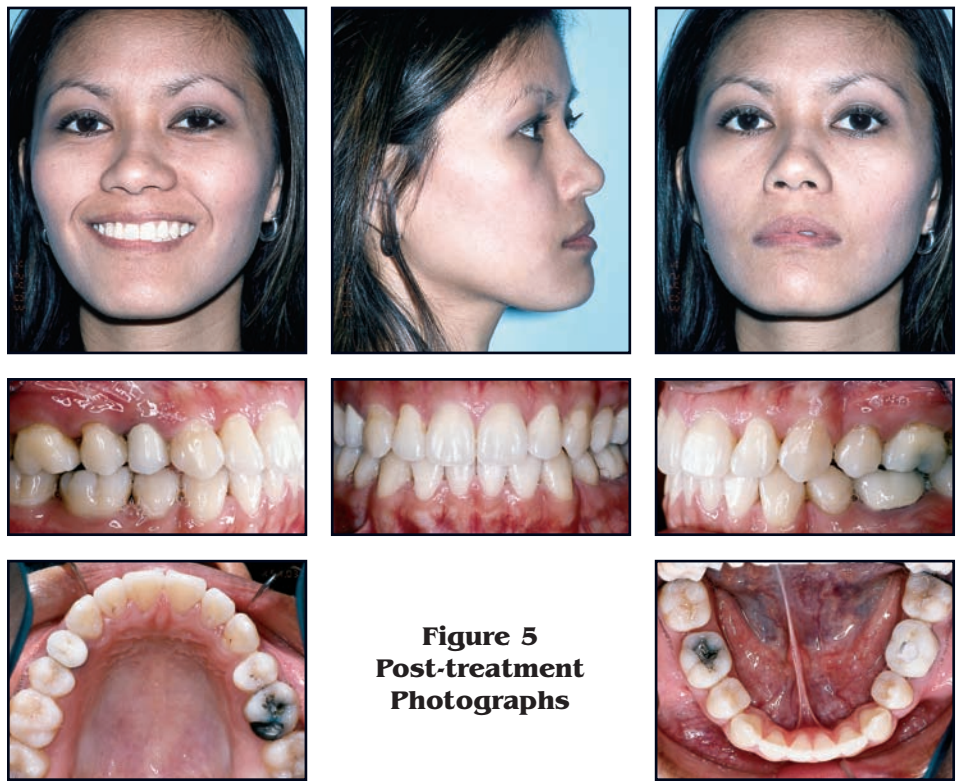
## Treatment Results

Figures 5 & 6 show facial aesthetics improved. The mandible appears less prognathic, the lower lip less protrusive. The patient is very pleased with her appearance. Midlines are coincident with each other and the midsagittal plane. Intra-orally, anterior and posterior crossbites have been corrected. Canine relationship is Class I with an overjet/overbite relationship within the

range of normal. Final occlusion is quite acceptable and has canine guidance in lateral excursion. Teeth are well aligned and space closure is complete.(Fig. 7) Cephalometric superimposition illustrated retraction and retroclination of the mandibular incisors. The lower lip followed the mandibular incisors anteroposteriorly at a ratio of 1 to 2.(Fig. 8)

## Discussion

Many would be comfortable with the surgical alternative to this case. Without the advantage of seeing the final records in advance, it is probable that some would have even considered orthodontic camouflage of this Class III discrepancy



**Figure 5  
Post-treatment  
Photographs**



**Figure 6  
Post-treatment Cephalometric Radiograph**



**Figure 7  
Post-treatment Panoramic Radiograph**



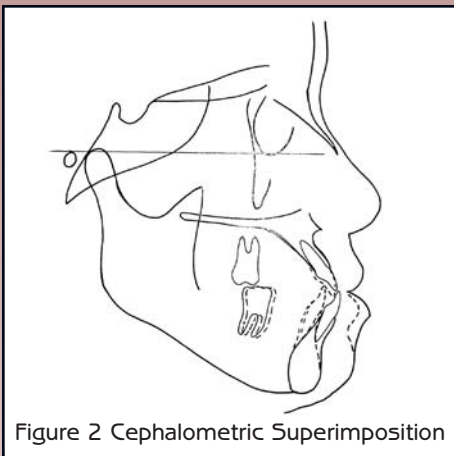


Figure 2 Cephalometric Superimposition

a compromise. This did not turn out to be the case. Some patients with large skeletal discrepancies want dramatic change so greatly that the risk of surgery is perceived to be worth it. Others, like this patient with smaller skeletal discrep-

ancies, felt surgery was not worth the cost, discomfort, inconvenience or risk.

It has been shown that for adult Class II patients at the orthodontic/surgical borderline, orthodontic treatment alone produces an outcome that is, on average, about as well received aesthetically as that of the surgical alternative.<sup>11</sup> Furthermore, there were no significant differences in craniomandibular function or incisor stability. It is noteworthy that 3 of 26 surgical patients studied by Cassidy et al experienced extensive relapse. They concluded that for borderline patients who can be treated either way, orthodontics probably is a better strategy. I am not aware of a similar study of borderline Class III patients, however this case illustrates that camouflage treatment does not necessarily mean compromise.



### Dr. Timothy Shaughnessy

Dr. Shaughnessy completed orthodontic training at the University of North Carolina and established a specialty practice in Marietta, Georgia. He has served as Assistant Professor in Orthodontics at Emory University, is a Diplomate of the American Board of Orthodontics and lectures extensively.

### Pertinent Cephalometric Measurements & Norms

Measurement	Norm
SNA (degrees)	84 — 82
SNB (degrees)	86 — 80
ANB angle (degrees)	-2 — +2
Facial plane (degrees)	94 — 89
Growth axis (degrees)	+4 — 0
FMA (degrees)	24 — 24
Mandibular length (mm)	135 — 127
Maxillary length (mm)	98 — 97
Unit difference (mm)	37 — 30
LFH (mm)	69 — 69
A-point to nasion perpendicular (mm)	+3 — +1
Pogonion to nasion perpendicular (mm)	+7 — -2 to +2
Lower incisor to A-Pogonion line (mm)	+10 — +2

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