

Case Report FG

Orthodontic treatment to correct major dental asymmetries

The correction of major dental asymmetries in adults can be challenging. Many adult patients modify their behavior to compensate for skeletal disharmonies, functional shifts and missing teeth. Some skeletal components, including the temporomandibular joint, also adapt in non-growing patients. Extracting premolars will not always correct a marked asymmetry and orthognathic surgical procedures are frequently inappropriate. In the case of Patient FG, extraction of a mandibular central incisor resulted in improved function and esthetics in a relatively short time with minimal expense and trauma.

By Diane M. Doppel, DDS, MSD

Case FG presented as a 25 year 10 month old male of Mediterranean descent. He had a straight facial profile, a protrusive lower lip, competent and unstrained lips at rest, no mentalis strain, an obtuse labiomenal fold and a nasiolabial angle of approximately 90°. He had a Class III subdivision left malocclusion with crossbite relationships between all central incisors, left lateral incisors and left first premolars. He had an overjet of -2 mm with an absence of all functional shifts and an overbite of 2 mm with a flat Curve of Spee. In the transverse plane, the maxillary midline was 2 mm to the right of the facial midline and the mandibular midline was 3 mm to the left of the maxillary midline. The maxillary dentition was 3 mm ahead on the left, while the mandibular dentition was 3 mm forward on the right. The maxillary incisors, although slightly proclined and bodily forward, were in pleasing relationship to the face. The mandibular incisors were slightly proclined and bodily forward in disharmony with the face. There was a 2 mm arch length deficiency in the mandible, and a 3-3 Bolton excess of 1.2 mm; there was no arch length deficiency in the maxilla. There was no evidence of root resorption and the third molars had previously been extracted. The patient was highly motivated and demonstrated great interest in improving his oral health.

Cephalometric analysis revealed a normal anteroposterior position of the maxilla and a mildly protrusive mandible with normal chin prominence. The mandibular plane angle was

slightly increased, the ANB angle was -1, and the interincisal angle acute at 112°. Facial height was of normal proportion.

Treatment objectives included the correction of all crossbites leading to improved occlusal function. The facial profile would be maintained with some improvement of the lip relationship. Following orthodontic treatment, the patient could be referred for restorative care to improve dental esthetics.

Treatment plan

The following treatment plan was designed to fulfill the treatment objectives and satisfy the

Figure 1
Pretreatment facial
photos at 25 years 10
months.

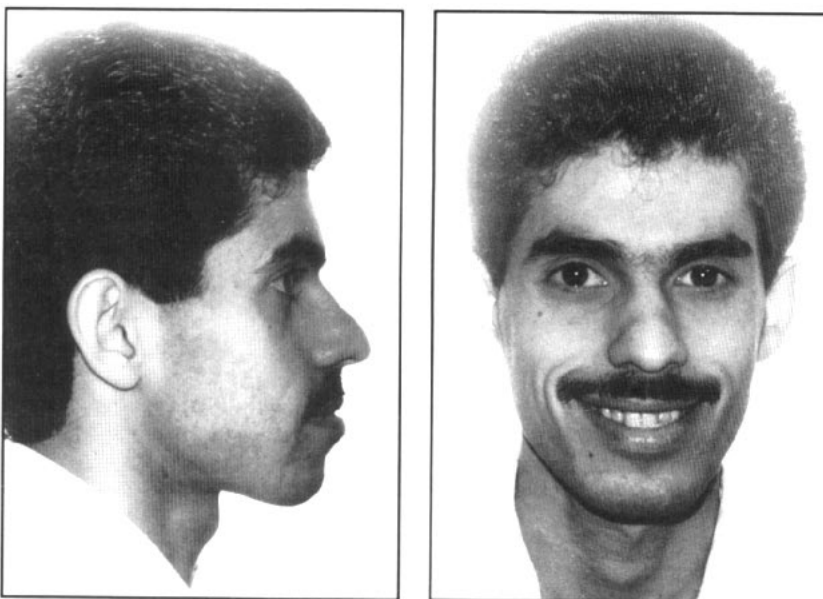


Figure 1

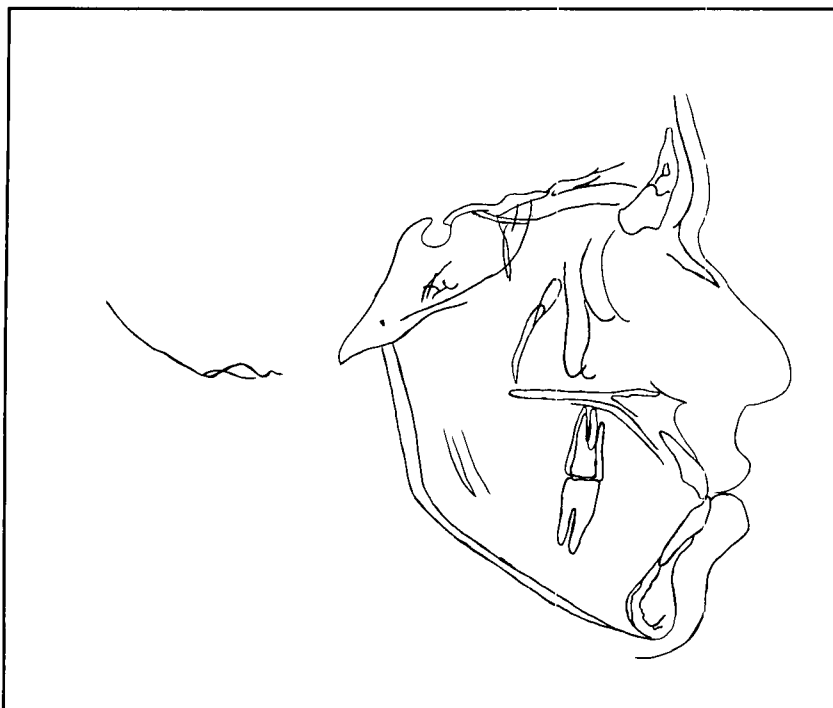


Figure 2



Figure 3

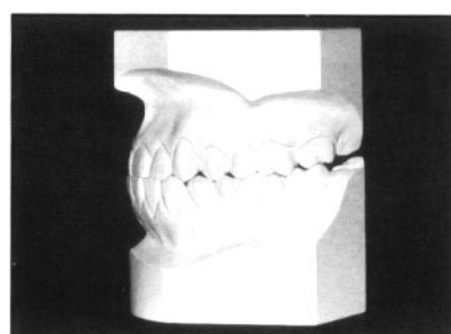
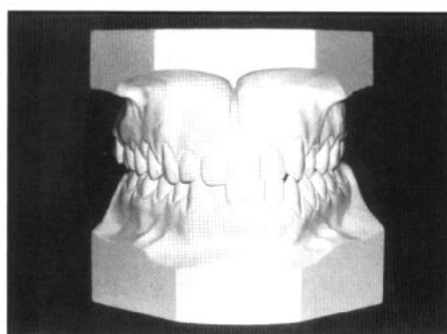
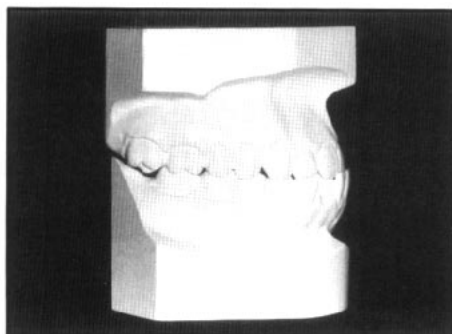
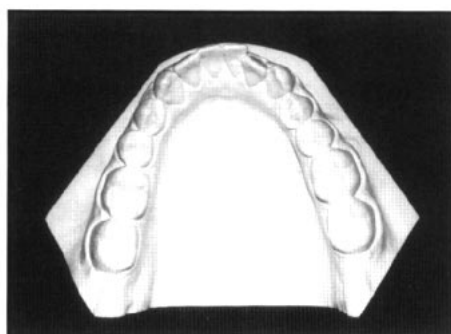
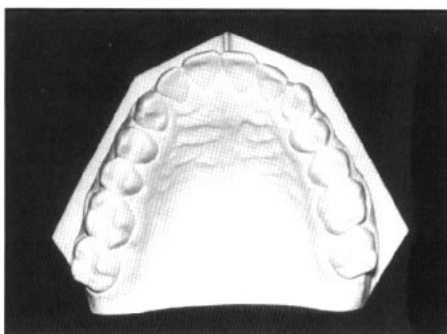


Figure 4

Figure 2
Pretreatment cephalometric tracing.

Figure 3
Pretreatment panoramic radiograph.

Figure 4
Pretreatment study casts. Note the asymmetric posterior dental relationships.



patient's chief complaints regarding esthetics and poor function, in a timely manner with minimal trauma.

1. Refer the patient for restorations and extraction of the mandibular right central incisor.
2. Place full orthodontic appliances.
3. Align the dentition, closing the mandibular extraction site.
4. Use Class III and anterior cross elastics as needed to correct the overjet and overbite and obtain harmonious interdigitation.
5. Reproximate mandibular teeth as necessary.
6. Establish final occlusal relationships with midlines corrected.
7. Retain to maintain corrected dental relationships using a maxillary Hawley retainer and a mandibular bonded lingual 3-3 retainer. Change to a removable mandibular retainer after 2 years, if patient requests, decreasing wear to 1 to 3 nights per week.

Treatment progress

Cooperation was excellent: the patient had no missed appointments, oral hygiene was good and elastic wear was excellent. Active treatment was completed in 11 months.

Anterior cross elastics were worn for 5 months, Class II elastics on the left for 2 months and Class III elastics on the right for 1 month. Reproximation of the mandibular right lateral incisor to second premolar was required to obtain ideal interdigitation. The original Bolton tooth size analysis predicted a 1.2 mm lower anterior excess and the canine was substituted for the lateral incisor in the final occlusion.

Results

The patient had an excellent response to treatment, resulting in an esthetically pleasing, mesognathic anterior divergent profile with improved lip balance and a pleasant smile. The Class III subdivision left molar and canine relationships were maintained with improved functional relationships. The overjet was increased to 2 mm and the overbite was maintained at 2 mm with good alignment resulting. The mandibular midline is coincident with the maxillary midline which is deviated 2 mm to the right of the facial midline. All crossbites were corrected and a symmetrical arch form obtained. The maxillary right second molar may need to be removed in the future due to lack of opposing occlusion. There is no evidence of root resorption and periodontal health has been maintained.

Functional analysis reveals good functional occlusion with centric occlusion coincident with centric relation. There is bilateral canine rise without balancing interferences in lateral excursive movements and in protrusive function there is posterior disclusion.

Retention

A maxillary Hawley retainer and a mandibular bonded 3-3 retainer were placed at the completion of treatment and recall appointments were planned for 3- to 6-month intervals. Maxillary retainer wear will be reduced to night wear only after 9 to 12 months. After 2 years of successful mandibular fixed retention, the 3-3 retainer will be replaced by a removable type if

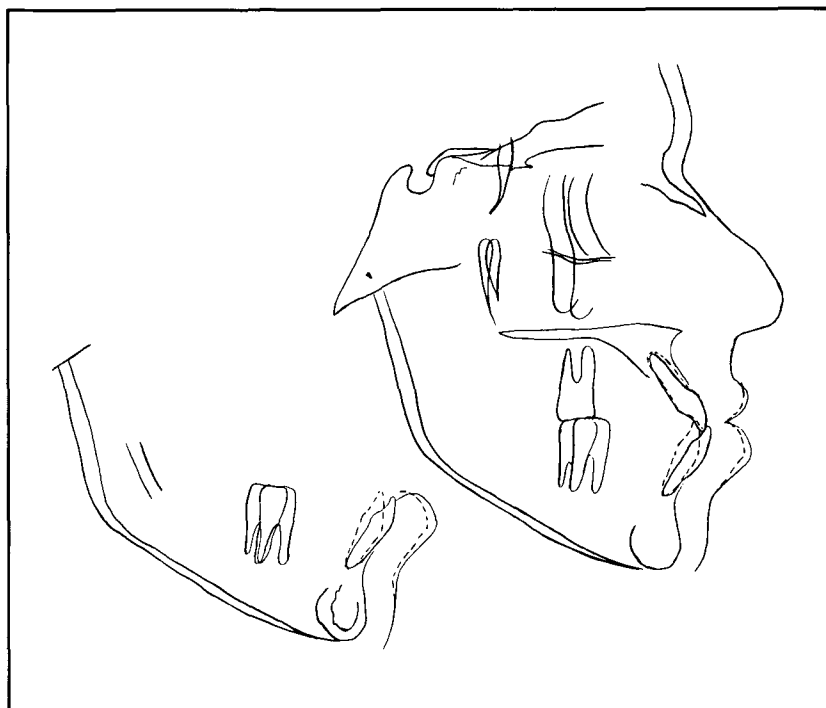


Figure 5

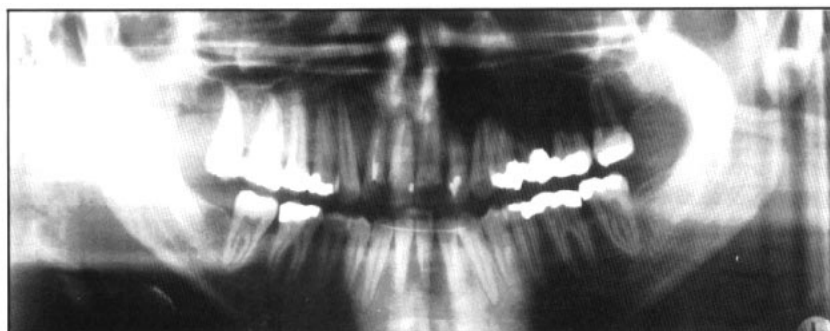


Figure 6

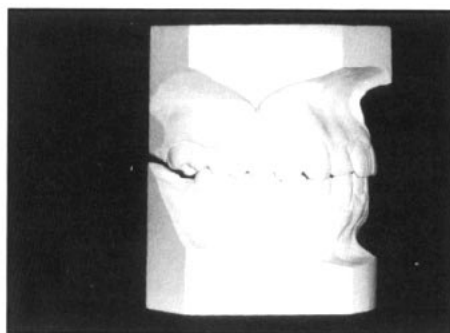


Figure 7

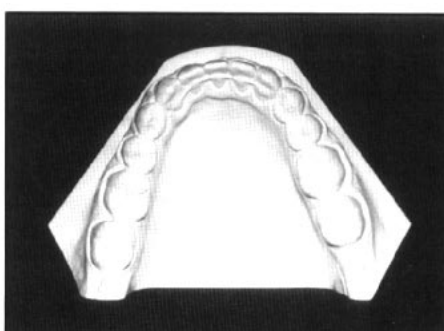
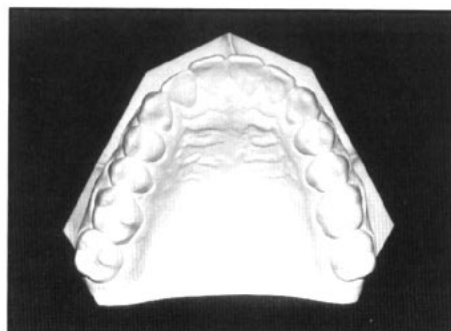
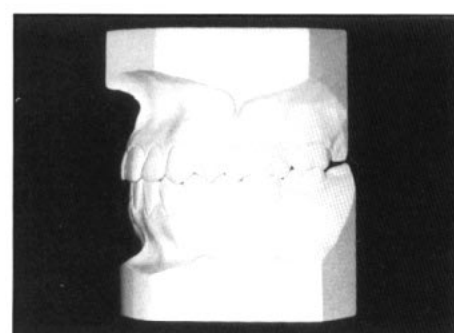
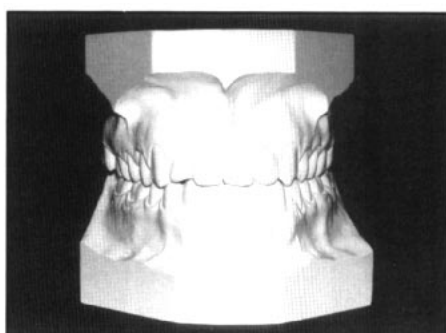


Figure 5
Superimposed cephalometric tracing at 25 years 10 months and 26 years 10 months. Note retraction of mandibular incisors.

Figure 6
Final panoramic radiograph with bonded retainer in place.

Figure 7
Posttreatment study casts.

Doppel

Figure 8
Posttreatment occlusion with compromised (Class III) molar relationship on the right side.

Figure 9
Posttreatment facial photos at 26 years 10 months. Note that both midlines are slightly to the patient's right.



Figure 8

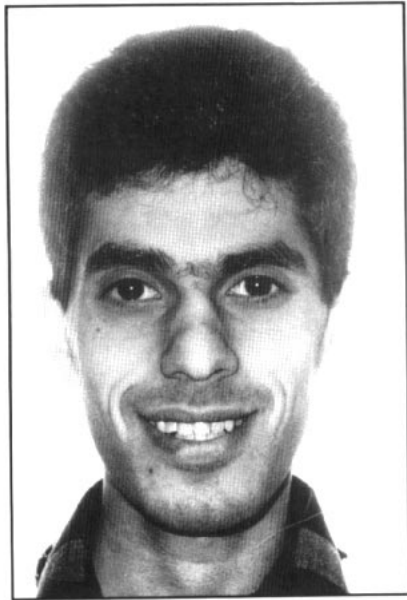


Figure 9

the patient requests. Wear of the removable retainer will gradually be reduced to 1 to 3 nights per week.

Evaluation of the patient after the completion of treatment revealed an overall improvement in the patient's functional relationships as well as dental and facial esthetics. The compromise of leaving the midlines deviated posed no problem to the patient and alleviated the need for lengthy treatment or surgical correction. The treatment plan followed provides for the possibility of a very stable occlusion.

Author Address

Dr. Diane M. Doppel
1551 Medical-Dental Building
Seattle, WA 98101

D.M. Doppel is in private practice in Seattle, Wash.