ABO CASE REPORT

Treatment of a patient with a Class I malocclusion with bialveolar protrusion, mild upper and lower crowding, and mild mandibular prognathism

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Fig 1. Pretreatment facial photographs.

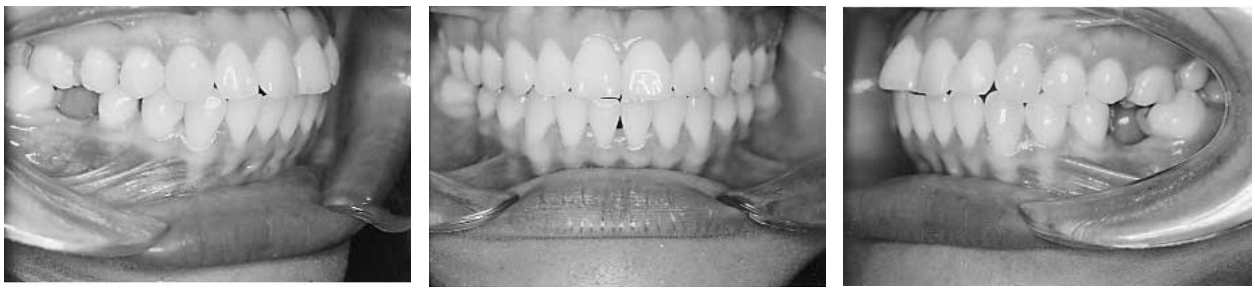

Fig 2. Pretreatment intraoral photographs.

DIAGNOSIS
History and General Clinical Background

The patient, a 23-year 9-month old white woman, was a dental assistant. Her chief goal was "to reduce the projection of the lips."

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The medical history was unremarkable. The patient was aware of the significant lip projection associated with her malocclusion. She was concerned about her appearance and anxious to begin orthodontic treatment.

The dental history revealed that the patient had lost both mandibular first molars before the age of 10 years as the result of large carious lesions. She had multiple restorations. Her oral hygiene was excellent and remained so throughout treatment. A tongue thrust

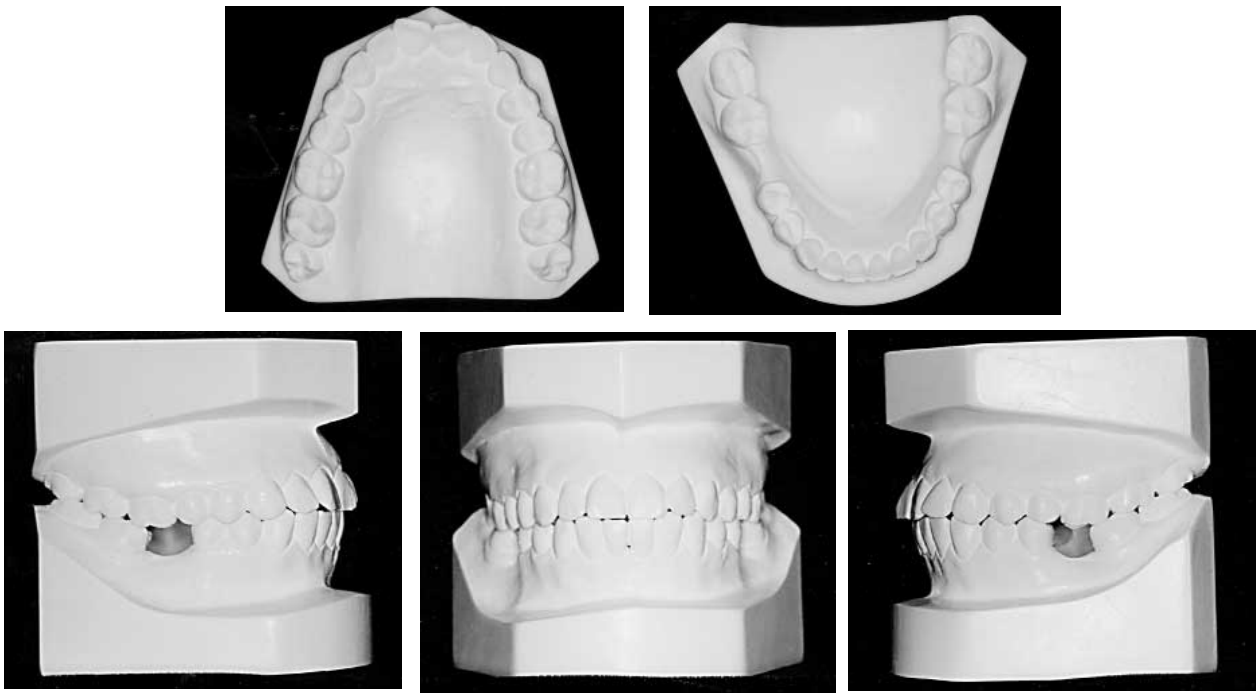

Fig 3. Pretreatment casts.

Fig 4. Pretreatment panoramic radiograph.

Fig 5. Pretreatment cephalogram.

habit was present. The cause of the malocclusion was both environmental and hereditary.

The patient's face is symmetric. The facial photographs (Fig 1) illustrate protrusive upper and lower lips and a prominent mandible. Dentally, the patient exhibits a Class I mutilated occlusion (Fig 2). All maxillary teeth are present, and the mandibular first molars are missing (Figs 3 and 4). The cephalometric evaluation (Figs 5 and 6) confirms a bialveolar protrusion with proclined and procumbent maxillary and mandibular incisors (Table I).

TREATMENT OBJECTIVES

1. Reduce the proclination and procumbency of the maxillary and mandibular anterior segments to improve esthetics, speech, and function.
2. Align and level the dentition.
3. Upright the mandibular second molars for future crown and bridge premolar size reconstruction.
4. Achieve a good functional Class II molar, Class I canine occlusion with proper overjet and overbite.
5. Achieve a nice smile and improve the sagittal lip projection, and maintain a good facial balance, both vertically and horizontally.

TREATMENT PLAN

The maxillary second premolars were extracted in order to have space to retract the maxillary anterior seg-

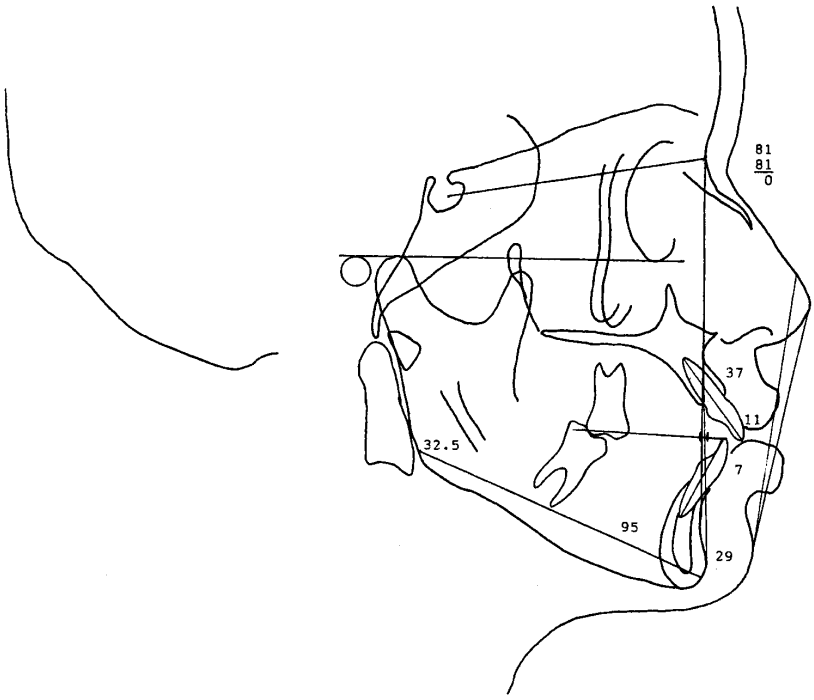

Fig 6. Pretreatment cephalogram tracing.

Fig 7. Posttreatment facial photographs.

ment. Uprighting of the mandibular second molars for future prosthetic work was proposed and recommended. A high pull headgear was to be used for proper vertical control during treatment. Results of the mandibular second molar uprighting were expected to be good based on the patient's excellent periodontal condition and oral hygiene habits. The ability to achieve the proposed esthetic and functional results was favorable because the patient's compliance was going to be excellent. Orthodontic results were to be retained with maxillary and mandibular removable retainers, replacement of the missing mandibular first molars, and a lingual mandibular canine to canine bonded retainer.

TREATMENT PROGRESS

A high pull headgear was inserted early in treatment for vertical control and anchorage. Pretorqued, preangulated 0.018 × 0.025 inch edgewise appliances

Fig 8. Posttreatment intraoral photographs.

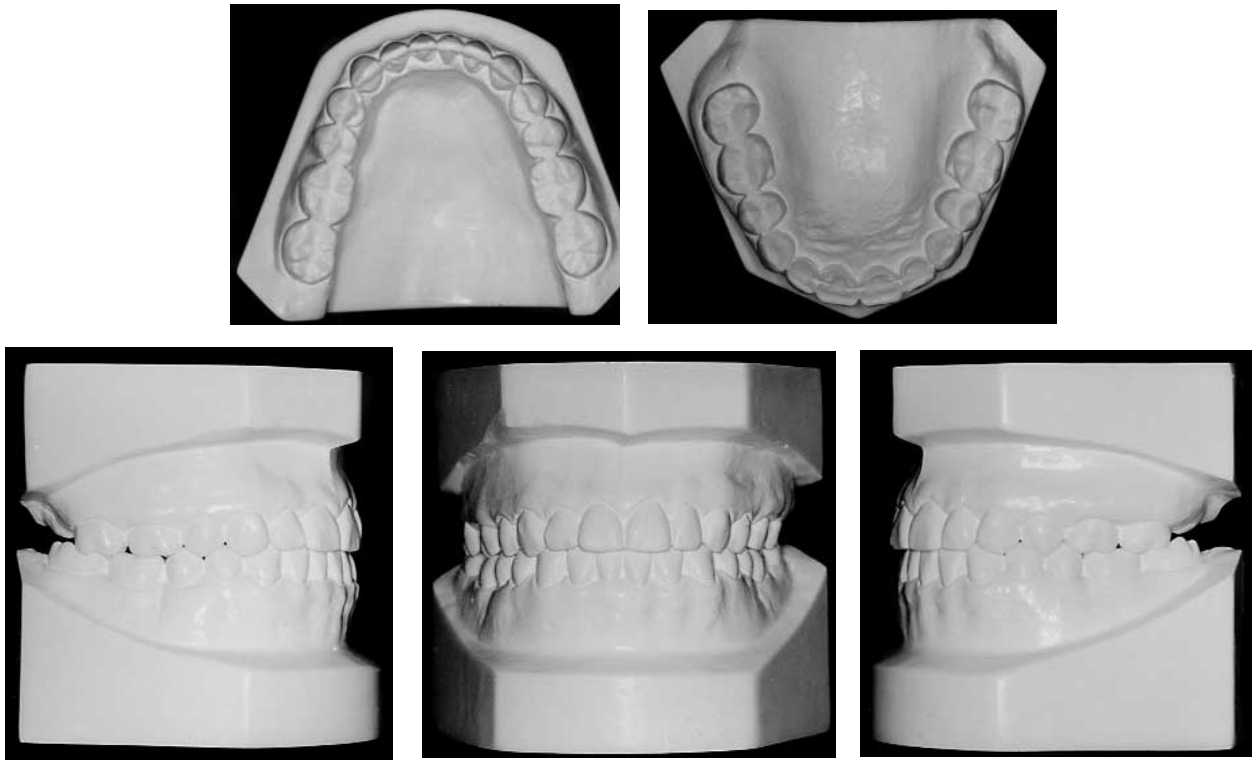

Fig 9. Posttreatment casts.

Fig 10. Posttreatment panoramic radiograph.

Fig 11. Posttreatment cephalogram.

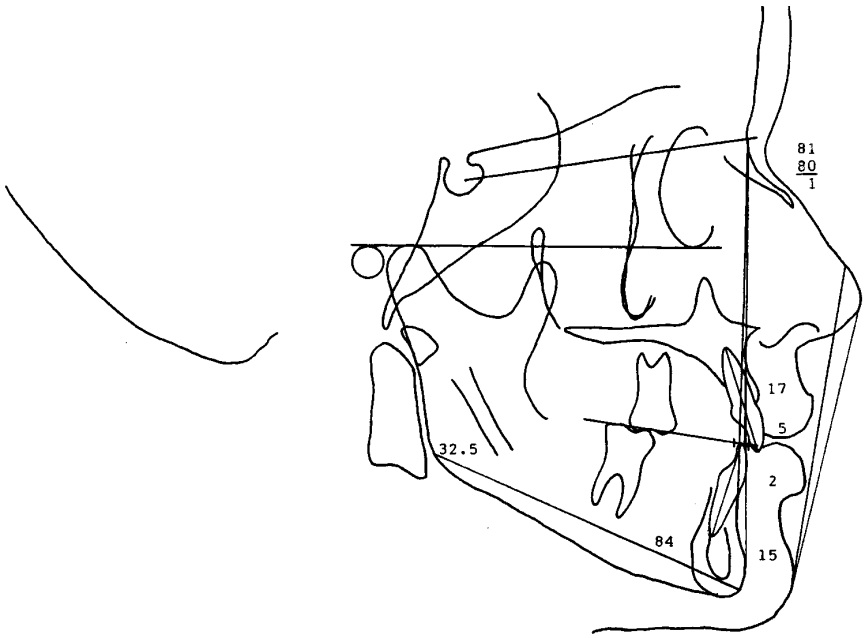

Fig 12. Posttreatment cephalogram tracing.

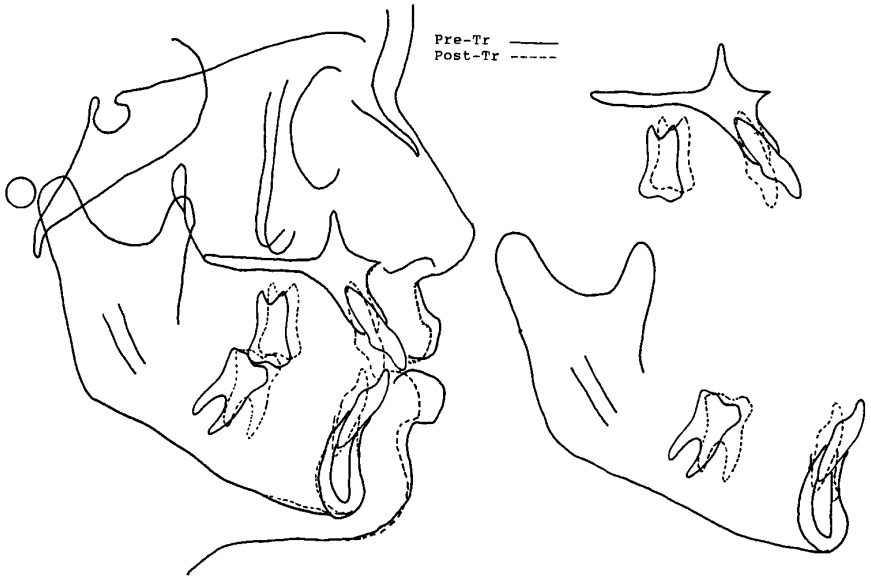

Fig 13. Superimposition tracings.

were placed. The maxillary spaces were closed with elastomeric chains and Class I elastics. Treatment progress was good; because the mandibular alveolar bone in the remaining edentulous space was healthy, treatment goals were reevaluated. After a periodontal consultation, an attempt was made to close the space. The remaining maxillary spaces were closed with 0.016×0.022 stainless steel closing loops supported with Class II elastics from the mandibular second molars to the maxillary loops. An 0.016×0.022 stainless steel utility arch with an increased anchorage bend was used to upright the roots of the mandibular second molars. Total treatment time was 31 months.

RESULTS ACHIEVED

Posttreatment facial photographs (Fig 7) show an improved facial profile with a sagittal reduction in lip protrusion. The smile line was also improved. Dentally,

a Class II molar, Class I canine relationship with ideal overjet and overbite was achieved (Fig 8).

The posttreatment dental casts (Fig 9) show good dental interdigitation. Fortunately, the mandibular spaces were closed with acceptable root parallelism (Fig 10). No evidence of disease or root resorption is observed.

The final cephalogram (Fig 11) shows the dental movements accomplished to correct the malocclusion. The posttreatment cephalogram tracing (Fig 12) shows tipping of the maxillary and mandibular anterior teeth and intrusion of the maxillary first molars. Facial and dental changes are best observed in the superimposition tracing (Fig 13).

RETENTION

Maxillary and mandibular removable retainers, as well as bonded 0.0175 twisted wire lingual to the maxillary anterior teeth, and 0.0195 twisted wire lingual to the mandibular anterior teeth were placed at the completion of active treatment. Instructions for the removable retainers were 24 hr/day for the first year, then nighttime wear. The stability of the mandibular space closure is a concern. The patient was informed and is being monitored closely.

FINAL EVALUATION

The result obtained is esthetically pleasing and provides nice occlusal function in centric and eccentric movements. Better interdigitation of the posterior segments could be achieved by equilibrating posterior interferences. The angulation of the mandibular incisors to mandibular plane could be improved. The periodontal condition was excellent during and after treatment.