Case Report

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CASE I

A fifteen and one-half year old female presented an Angle Class II, Division II malocclusion. Both dental arches had collapsed affording no room for the eruption of both mandibular second bicuspids and a maxillary left second bicuspid (Fig. 1).

HISTORY

The patient had mumps at age nine and measles at ten. At eleven she had fallen and cut her lip badly, requiring ten stitches. At age twelve a dentist had removed a maxillary right first bicuspid in order to allow room for an erupting cuspid.

Lip musculature was very hypertonic. While sitting "relaxed," the patient would alternately clench her teeth and then relax for a few moments. This cycle was performed almost continuously.

There was a history of some discomfort and clicking of the right temporomandibular joint. Both maxillary central incisors could be felt to move slightly when the patient occluded her

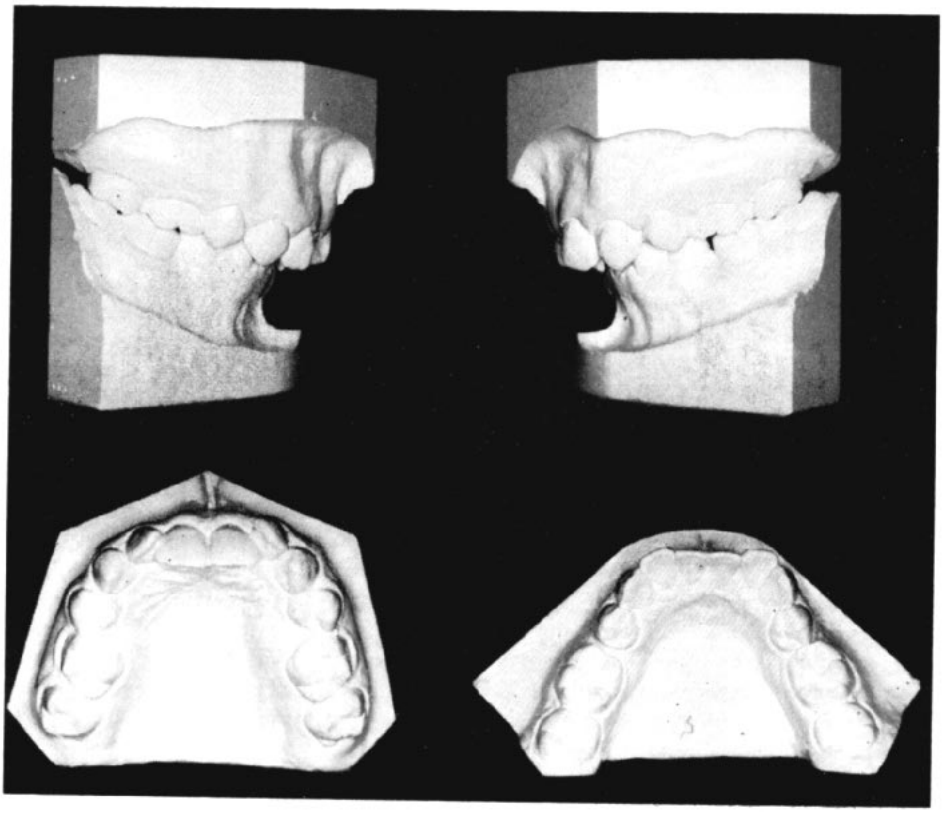

Fig. 1 Models at beginning of treatment.

teeth from rest position. A slight posterior mandibular displacement could be observed upon closing as there was premature contact of the maxillary central incisors. A palpable "jump" occurred in the temporomandibular joint area when the teeth were brought into full closure from the point of premature contact. Occasionally one or both joints would click or snap during this movement. Cephalometric appraisal indicated a rather low mandibular plane angle and a poor A-B facial skeletal pattern.

Etiology

The childhood fall and/or the mandibular arch collapse may have been the contributing factor to the malocclusion. The removal of the maxillary right first bicuspid tooth at least offered the cuspid room to erupt into the arch.

Plan of Treatment

Two steps were planned: Step I—Following removal of the three remaining first bicuspid teeth a mandibular lingual holding-arch would be placed and also a maxillary bite plate. Wire spurs from each appliance would maintain the extraction space for the three unerupted second bicuspids. The maxillary bite ledge was employed hoping that some reduction of the deep overbite could be obtained.

Step II. Full edgewise appliances would help reduce the overbite and also correct the axial inclination of the maxillary central incisors. Class II elastics would correct the Class II buccal occlusion. No definite retention plans were made at the onset of treatment other than a concern over being able to maintain a corrected overbite with a rather low mandibular plane angle plus the loss of four teeth.

Progress

In eight months time the bite ledge fortunately encouraged a four mm reduction of the original overbite and also encouraged the mandible to assume a new path of closure three mm anterior to the original path formerly dictated by the occlusion of the teeth.

This anterior "repositioning" could be readily seen on the bite ledge as the mandibular incisors initially wore definite depressions in the plastic. Several months later the "wear marks" could be seen moving anteriorly, eventually leaving second definite "wear marks" three mm anterior to the initial marks.

During the eight month period of waiting for the eruption of the three second bicuspids, six office visits were scheduled for observation and also to make bands. Full edgewise bands were placed after the mandibular lingual arch was removed and the dentist had checked the patient's teeth.

Active treatment required sixteen months. Appointments were scheduled once per week for three months in an effort to gain control of the overbite, then every two weeks for thirteen months. Fear that continuing the use of Class II elastics would jeopardize the axial inclination of the mandibular incisors, plus the fact that the patient was leaving for college in an area where there was no orthodontist, prompted early removal of appliances and employment of a rubber positioner.

Retention

The positioner was used three hours per day for four months, then two hours per day for seven months. Two years following removal of appliances the positioner was used for half an hour each weekend. The second set of records was made twenty-one months after the removal of active appliances (Fig. 2).

Results

Correction of the malocclusion certainly improved dental function. The

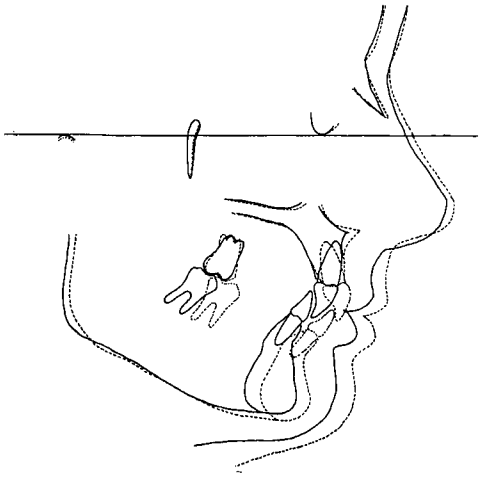

Fig. 3 Tracing prior to treatment and twenty-one months after removal of appliances. Superimposed on SN, registered on N.

CASE I

	15 yrs. 6 mo.	19 yrs. 6 mo.
SNa	84	84
SNb	76	79
Diff.	8	5
SN to Mand. pl.	28	27
FH to Mand. pl.	29	30
$\overline{1}$ to $\underline{1}$	164	129
$\overline{1}$ to Mand. pl.	96	102
$\underline{1}$ to SN	73	100
Occ. pl. to FH	18	22

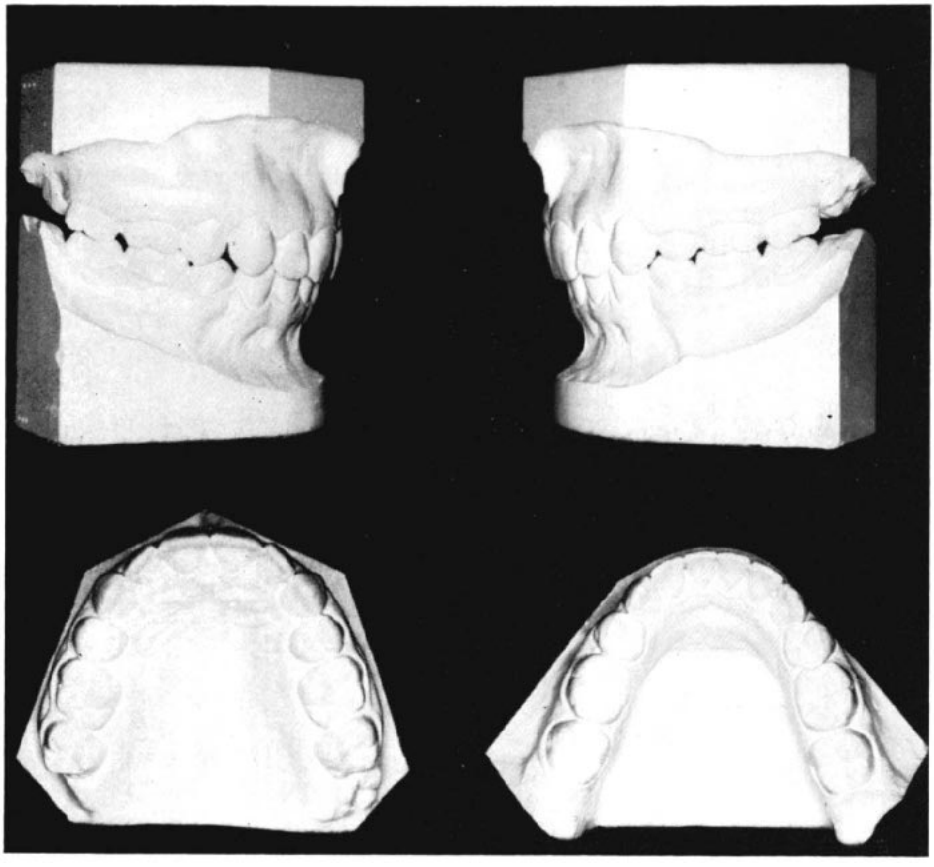

Fig. 2 Models twenty-one months after removal of appliances.

joint clicking and discomfort stopped during the first step of the treatment plan. Lip musculature seemed slightly less hypertonic. The soft tissue profile was scarcely altered.

Cephalometric appraisal (Fig. 3) indicated a lessening of the initial anterior-posterior jaw relationship and an increase in facial height. There was little indication that any growth had occurred during and/or following treatment.

Observation and Conclusion

Intraoral dental radiographs taken almost two years after active treatment indicate a very slight apical resorption of the maxillary central incisor roots. If the mandible had not initially moved anteriorly as it did, cervical traction would certainly have been used throughout active treatment. Correction would then have been quite difficult to attain.

Case II

A nine and one-half year old girl presented a Class II, Division I malocclusion with a collapsed mandibular arch. A Class II facial skeletal pattern was present.

History

The patient's buccal occlusal relationship on the left side was more or less a Class I and on the right side a Class II. The mandibular cuspids had no room in the arch and had erupted buccally, fortunately with an anterior axial inclination (Fig. 4).

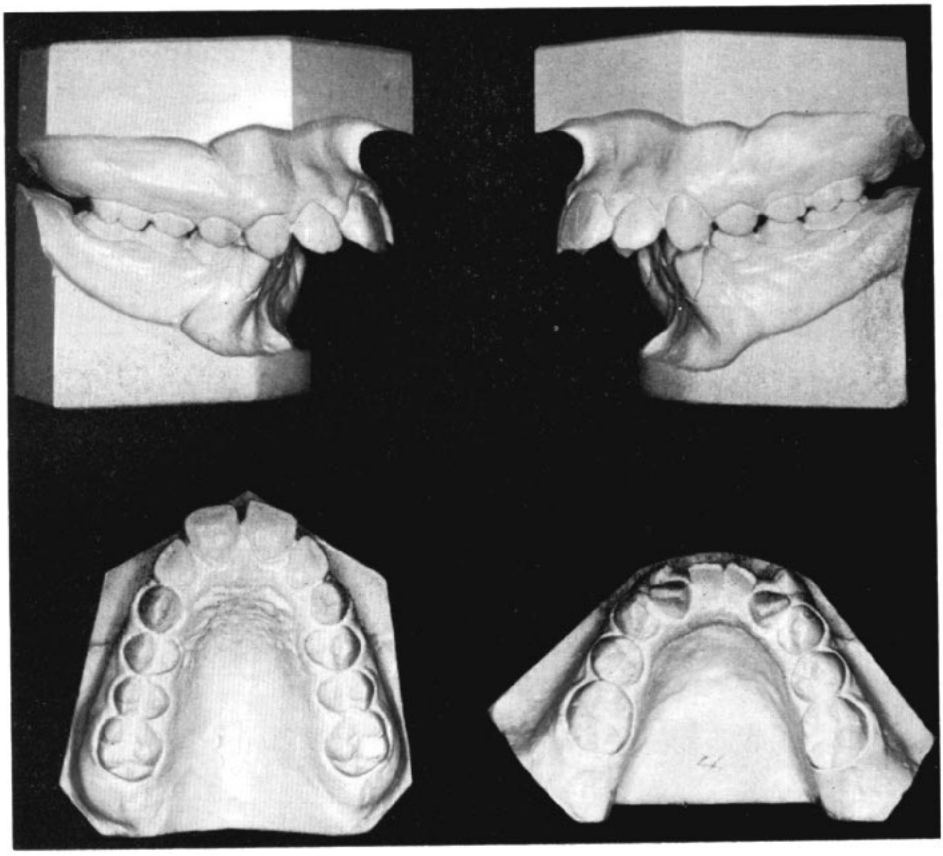

Fig. 4 Models at beginning of treatment.

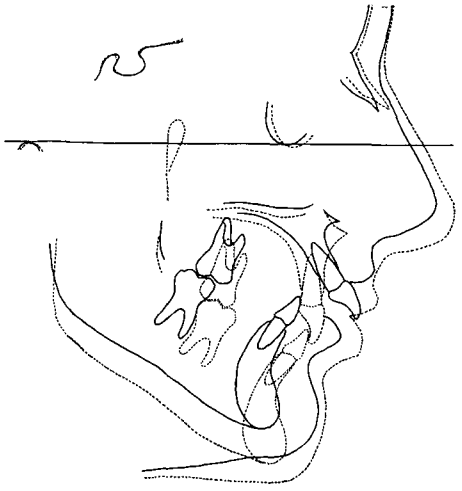

Fig. 6 Tracing prior to treatment and twenty-six months after appliance removal. Superimposed on SN, registered on N.

CASE II

	9 yrs. 6 mo.	14 yrs. 2 mo.
SNa	80	79
SNb	72	74
Diff.	8	5
SN to Mand. pl.	35	38
FH to Mand. pl.	33	34
$\overline{1}$ to $\underline{1}$	112	142
$\underline{1}$ to Mand. pl.	92	93
$\underline{1}$ to SN	120	88
Occ. pl. to FH	13	20

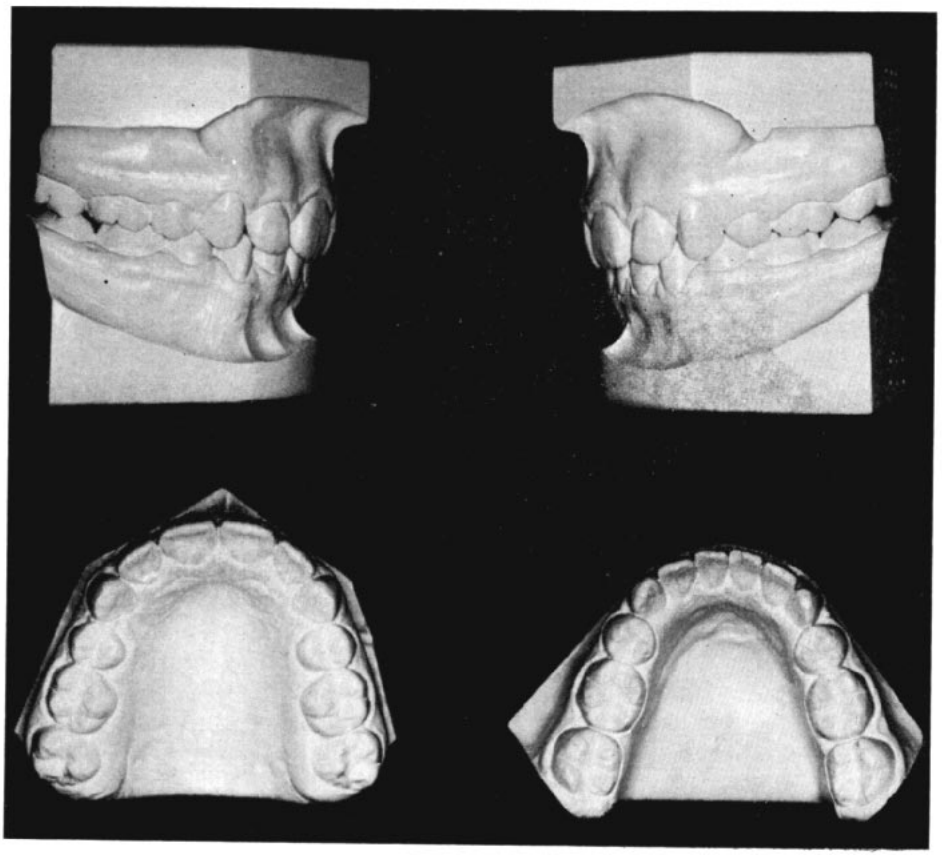

Fig. 5 Twenty-six months after removal of appliances.

Lip closure was all but impossible and swallowing involved some effort. All but three of the deciduous molars had been removed by age seven. There was no finger sucking history and no indication of any posterior mandibular displacement.

The patient had mumps at age seven and her tonsils removed at age eight.

Etiology

The early loss of the deciduous molars may have caused the collapse of the mandibular arch. Abnormal lip function could account for the axial inclination of the maxillary incisors.

Plan of Treatment

Two phases were undertaken: Step I. Removal of four bicuspids. Cervical traction would be applied to the maxillary molars. A palatal plate with cuspid springs would initiate distal tipping of the cuspids. A mandibular lingual arch with spurs would maintain the position of the second bicuspids. Bands with elastic hooks were to be placed on both mandibular cuspids. When cervical traction was applied, Class III elastics would be placed from the mandibular cuspids to the maxillary molars. During the daytime very light elastics would be used from the mandibular molars to the cuspids. This step would take one year. Office visits made during this twelve month period would be for minor adjustments and making bands for the remaining teeth.

Step II. A full edgewise appliance would be placed. Cervical traction would again be utilized in an effort to prevent the forward movement of the maxillary molars and also to assist in retracting the maxillary incisors. A rubber positioner would be used for an indefinite length of time following removal of the appliances.

Progress

The first phase (Step I) of treatment required six appointments during twelve months time. For the second phase (Step II) of treatment eighteen months treatment time and twenty-two office visits were required. Cervical traction was used a minimum of eight hours per day during Steps I and II.

During the last six months of treatment when a Class I buccal occlusion had been established, lingual root torque force was applied to the maxillary incisors.

In spite of using light Class II elastics on the right buccal teeth throughout the second step of treatment, the initial midline discrepancy could not be changed into an overtreated state.

Retention

Appliances were removed and directions were given to use the rubber positioner a minimum of four hours per day. After four months use, the time was reduced to one hour per day. The patient's family lived almost one hundred miles away. A set of study models were made and given to the patient. She was instructed to compare her teeth weekly with those of the models. She could then use her own judgment as to how often the positioner was needed. After eight months the patient had reduced the use of the positioner to twice a week. Two years following the removal of appliances the patient has maintained her corrected occlusion using the positioner a half hour, once a week. Fig. 5 shows the models twenty-six months after removal of active appliances.

Results

The occlusion (omitting the occasional help from the positioner) appears stable. There is still a midline discrepancy present. The intraoral radio-

graphs indicate some apical resorption of the maxillary incisor roots.

Unlike Case I, preceding this, favorable skeletal growth was largely responsible for achieving correction (Fig. 6).

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