Case Report

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The patient was of normal stature and development for a girl of eleven and a half years. From the history gained, it appeared to the operator that the growth pattern was even and reflected the normal life of a happy well-adjusted child. Communicable diseases prior to treatment were mumps, measles, chicken-pox and whooping cough. Tonsils and adenoids had never been removed.

There were two brothers in the family, ages thirteen and fifteen, who portrayed the same robust characteristics and facial pattern of their sister. These characteristics were easily traced to the father who was of German extraction and bore the features of his early Teutonic origin: broad forehead, round face and well-developed chin. He still enjoyed all his natural teeth. His dentures were in Class I occlusion with partially blocked out maxillary laterals and some irregularity of the lower incisors. The mother was short in stature with a normal facial pattern. It was impossible to establish her dental history as she had been wearing full dentures for several years. From her appearance, however, it could be assumed that she had possessed a Class I occlusion.

ETIOLOGICAL FACTORS

Premature loss of the lower deciduous cuspids at nine and a half years. Delayed eruption of the upper right central: this tooth erupted only a few weeks previous to the time that impressions were taken.

CASE ANALYSIS

The patient had a well-developed cranium with a broad forehead, round face and well-formed chin (Fig. 1). The facial musculature was of strong tone with firm and rather thin lips. The tongue was of normal size and did not seem to possess any unusual activity. The bone development in both maxillary and mandibular dentures was regular.

Dental caries was at a minimum being confined to three small occlusal fillings. The malocclusion was typed as Class I (Angle) with crowding and overlapping in the cuspid and incisor region of each denture.

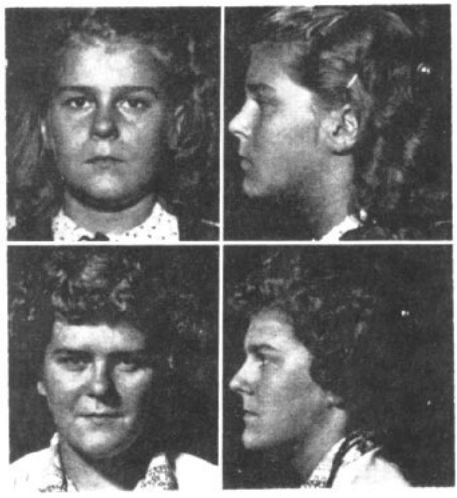

Fig. 1. Facial photographs before treatment (above) and after treatment (below).

OUTLINE OF OBJECTIVES AND TREATMENT PLANNING

I should like to explain that five months had elapsed between the time the original casts (Figs. 2 and 3, left) were made and treatment was instituted. During this interval the lower second deciduous molars had been lost and the second pre-molars had fully erupted. The lower second molars had erupted and the first permanent molars

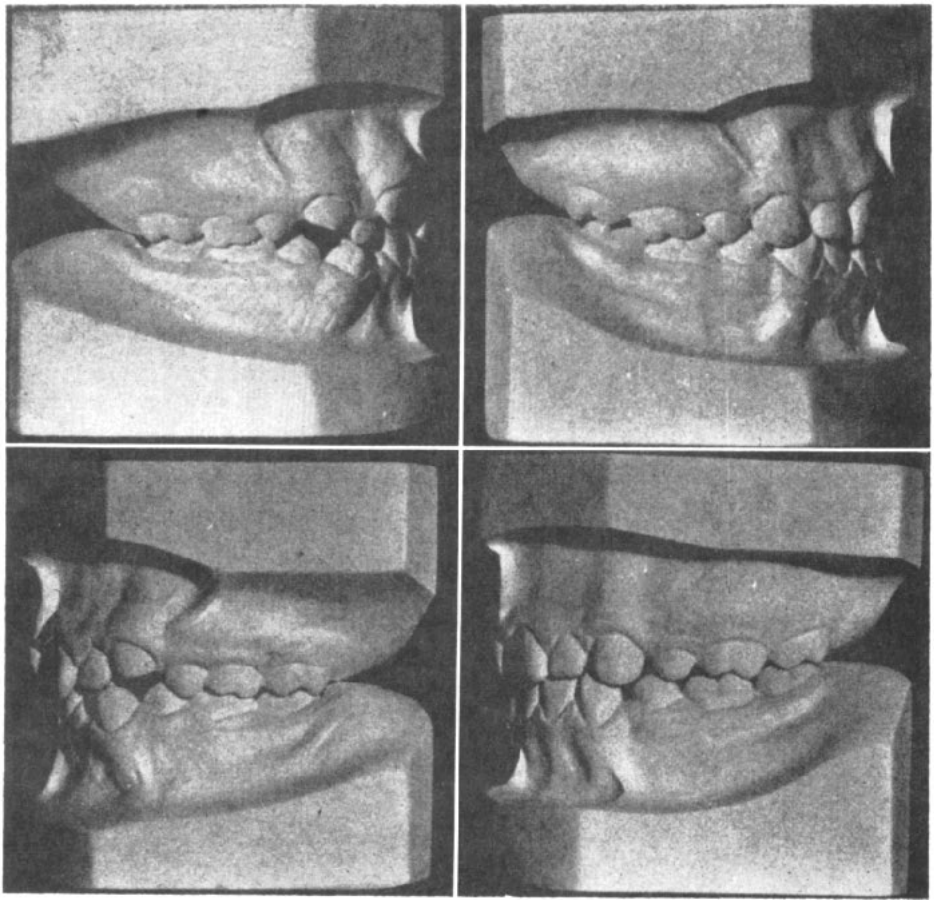

Fig. 2. Plaster casts before treatment (left) and twenty-one months after removal of all appliances (right).

had drifted mesially. The upper second deciduous molars were still retained and the x-rays revealed that the upper second permanent molars were impacted under the crowns of the first permanent molars. To relieve this situation it seemed advisable to have the second deciduous molars extracted at once.

It was decided to remove four first pre-molars in order to alleviate the crowding in the anterior segments. The patient and her parents readily agreed to this procedure. As the buccal segments were in good Class I relationship and there was no cross-bite involvement, the general tooth movement appeared quite routine. It was a question of uprighting the cuspids and moving these units distally into the spaces created by the first pre-molar extractions. This should create sufficient space to align the maxillary and mandibular incisors.

Treatment Procedure

October 2, 1949 was the first appointment to actually start treatment. At this time separation wires were placed beween the first and second

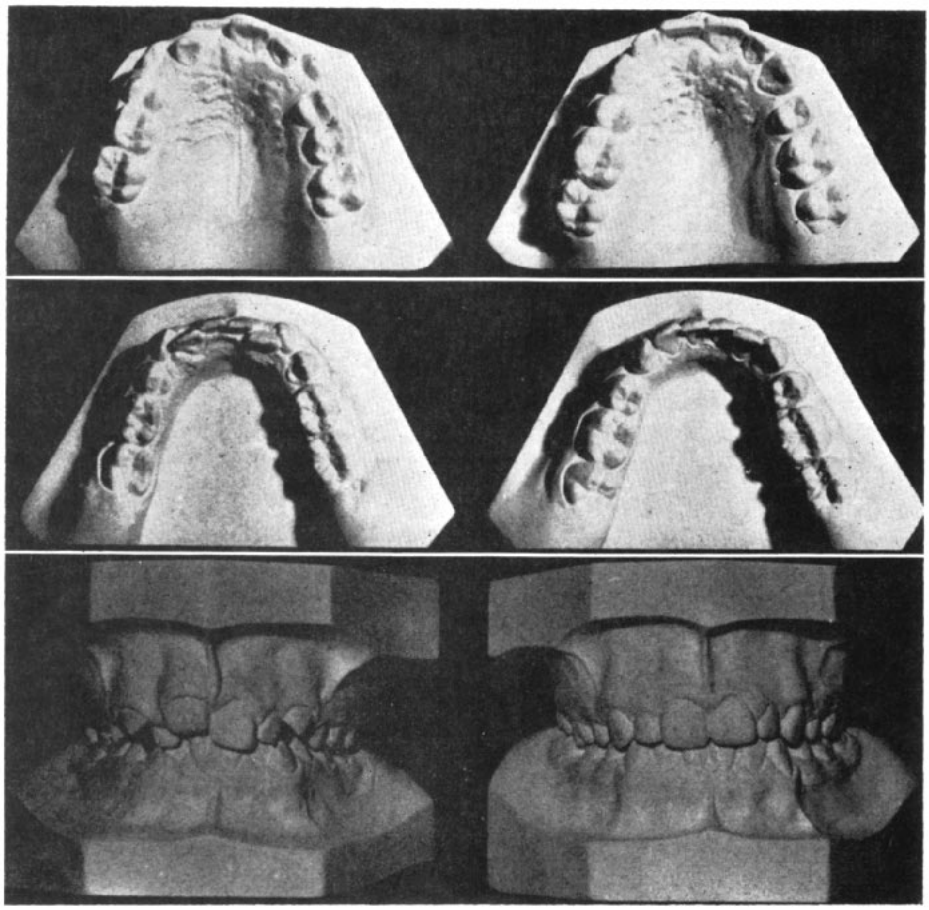

Fig. 3. Occlusal and frontal views of plaster records before treatment (left) and twenty-one months after removal of all appliances (right).

mandibular molars. The family dentist was asked to extract the two lower first pre-molars. During the next two weeks, edgewise bracket bands were constructed and cemented to the lower first molars, second pre-molars and cuspids. The lower second molars were used as terminal teeth, and carried bands with rectangular sheaths attached horizontally.

October 17, 1949, a full .016″ round arch was inserted to level off the mandibular buccal segments. This was worn for three weeks. At the next appointment this was removed and sectional arches, .021″x.025″, were placed in the buccal segments. Closed vertical loops were incorporated in these arches about midway in the space created by extraction of the first pre-molars. Tieback spurs were positioned just distal to the first molar brackets. The anterior parts of these sectional arches were seated in the cuspid brackets and a right angle downward bend made in the end to contact the mesial surface of the bracket. The closed loops were opened about one and one half mms by tieback ligatures attached to the second molar sheaths. The patient

was dismissed for a three-week period. Subsequent activations of these sectional arches were made at three-week intervals until the cuspids occupied about one half the space of the first pre-molars.

December 23, 1949, edgewise bracket bands were placed on all the maxillary teeth with the exception of the first pre-molars. The second molars, being terminal units, carried rectangular sheaths. A full .012" spring steel arch wire was ligated into the upper denture with a light tie to the right lateral. In three weeks this arch was replaced by an .014" steel arch wire for further alignment and leveling-off. Alignment of the upper incisors sufficiently unlocked the lower incisors to tolerate edgewise bracket bands.

February 2, 1950, bands were placed on the lower incisors, sectional arches were removed, and a full .014" steel arch inserted. This treatment was supplanted by .016", .018" and .020" steel arches at three-week intervals. Very light tiebacks were exercised during this alignment period. April 29, 1950, a full .021"x.025" arch with closed vertical loops was substituted in the mandibular denture. The vertical loops were placed about three mms distal to the cuspid brackets and tieback spurs were attached at a convenient distance mesial to the buccal sheaths. Mild tipback bends were incorporated in the areas of the molars and first pre-molars. The loops were activated one and a half mms at three-week intervals until the remaining first pre-molar spaces were closed. July 18, 1950, the final arch was inserted in the mandibular denture. This .021"x.025" steel wire was constructed to arch form and included tieback spurs and mild tipback bends for the molar and second premolars. Light tieback ligatures were used to maintain space closure.

I shall now resume treatment procedures used in the maxillary denture. The two first pre-molars had been extracted two weeks previous to this date.

January 28, 1950, the .014" alignment arch was removed and .021"x .025" sectional arches, with closed vertical loops, were inserted in the buccal segments. The closed loops were located about four mms distal to the cuspid brackets and tieback spurs were positioned a convenient distance mesial to the buccal sheaths. Mild tipback bends were incorporated to prevent mesial tipping of the molars and second pre-molars. By the use of tieback ligatures the closed loops were activated about one and a half mms. This course of activation was carried out at three-week intervals until the cuspids were in close approximation to the second pre-molars. It should be explained that there was now generous spacing in the maxillary incisor area. May 22, 1950 the maxillary sectional arches were replaced by a full .016" steel arch. This was followed by .018" and .020" steel wires at three-week periods to correct all rotations and complete the alignment. August 9, 1950: in order to close the spaces an .021"x.025" full arch was placed. This arch carried closed vertical loops about midway between the cuspid and lateral, and intermaxillary hooks were attached distal to each cuspid. Tieback spurs were placed just distal to the first molar brackets and ligature tie wires were applied to open the loops about one and a half mms. During this interval of treatment, light intermaxillary elastics were worn to augment the upper incisor space closure.

December 12, 1950 — All anterior spaces were now nicely closed and the overbite was favorably reduced. The looped arch was replaced by a plain 0.21"x.025" with passive tipback bends and light tieback ligatures. Light in-

termaxillary force was continued to complete normal interdigitation. During the next three months the patient was seen at regular intervals to check the appliances and note progress of the case.

February 28, 1951 — All bands were removed and an impression taken for a Hawley retainer. This retainer was worn continuously for four months. No retention was used in the mandibular denture. The active treatment time consumed in this case was one year and five months.

Conclusion

Final models (Figs. 2 and 3, right) and photographs (Fig. 1) were taken one year and nine months after all appliances had been removed.

A study of this exhibit will bring out many imperfections, but, on the whole, the dentures of this young lady seem to be standing up under the test of time. This, after all, is the factor we should aim for in our orthodontics.

Note

The writer is deeply indebted to Dr. Harry L. Bull, Jersey City, New Jersey, for the principle of the sectional arch and the closed vertical loops. This device was an important detail in the management of this case.

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