Case Report

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This case is of a Class II, Division 1, classification, presenting several features that even upon first examination made doubtful the probability of a favorable prognosis. First, there was a slight mesial drift of the teeth on the mandibular base. Second, the muscular tonicity was very poor. Third, the patient's two brothers and two sisters have severe conditions of malocclusion. The one redeeming feature was the patient's desire for treatment, affording assurance of co-operation.

History: The patient was a girl of sixteen, large for her age and in good health. The prenatal history revealed that the period of gestation was entirely normal with an uneventful delivery. She was breast fed for the first five months, at the end of which time because of a lack of breast milk, the child was placed on a bottle supplemented with fruit juices and puréed vegetables. About this time she started to suck her thumb and continued the habit until nearly six years of age. After her third year, as she disliked vegetables, her diet consisted of a maximum of carbohydrates and a minimum of calcium and vitamins. However, she did have an abundance of fruit juices. During this stage her health was good and she showed a steady rapid growth. At an early age her tonsils were removed, but apparently adenoidectomy was not performed. She had the following childhood diseases: mumps, whooping cough and measles.

Family History: The general health of her parents has been excellent. Her father has satisfactory occlusion, the mother is adentulous and cannot accurately recall the type of her occlusion. While her brothers and sisters are all healthy and robust, all have severe malocclusions, Class II, Division 1.

Dental and Orthodontic Examination: The face was of a round type, the musculature hypotonic. In repose her lower lip rested between the lower and upper anterior teeth. The tongue was of normal size and the patient exhibited a perverted swallowing habit. The osseous development appeared to be normal although she had considerable dental caries. The lower left third molar was congenitally missing. As was previously stated, there was a bodily drifting of the lower teeth forward on the mandibular base, accompanied by a similar drifting of the teeth on the maxillae.

Case Analysis: There is no record of the patient's deciduous dentition. However, it would seem reasonable to suppose that the condition was present at that stage of development as the child was a constant thumb sucker until five or six years of age. This was one of the etiologic factors contributing to the malocclusion. She might have been a mouth breather as a child, but when first observed actual mouth breathing was not in evidence. Due to the malposition of the upper and lower teeth, the lower lip rested labially to the lower anterior segment and lingually to the upper, except

when an effort was deliberately made to keep it from that position for esthetic reasons. All of the above outward and visible habits added to the intensity of the malocclusion. In that the patient's brothers and sisters all have teeth in malocclusion, there may be a strong inherited or biologic causative factor that contributed to this condition.

Outline of Objectives: The objective in treatment was to obtain, first, functional occlusion between the teeth in the mandibular and maxillary arches; second, to develop normal lip function, and lastly, to correct faulty swallowing habits.

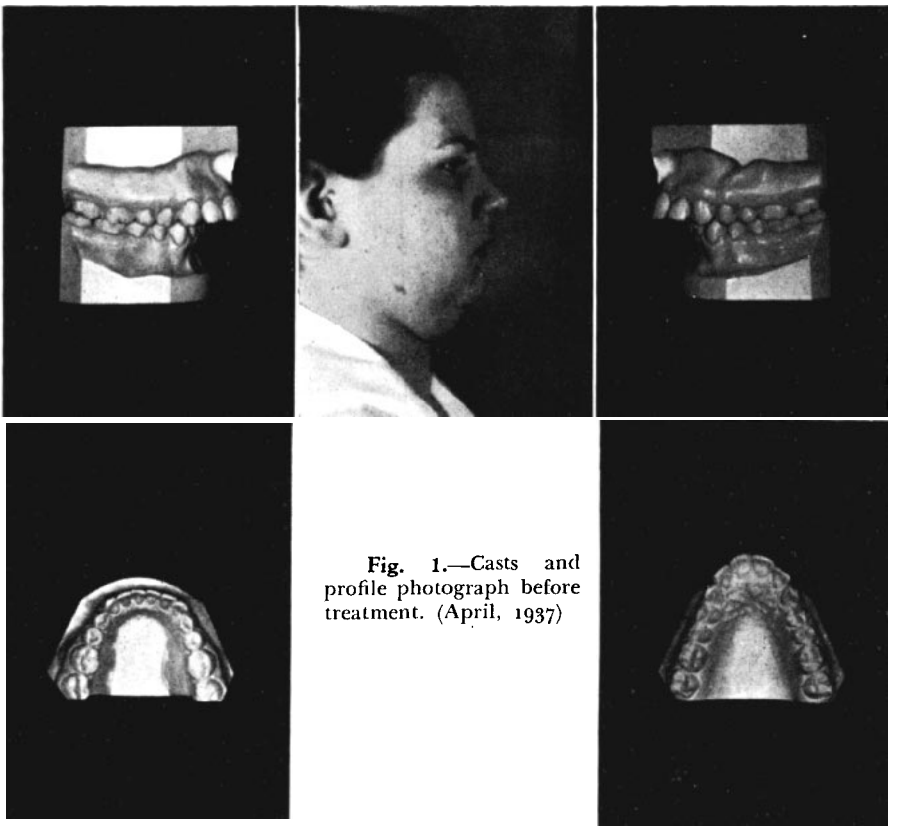

Fig. 1.—Casts and profile photograph before treatment. (April, 1937)

Outline of Methods of Obtaining Tooth Movement: Edgewise bracket bands were placed upon all the lower teeth including the first molars, with rectangular tubes on the second molar bands. A round .016 stainless steel wire arch was formed with tie spurs anterior to the buccal tubes. This arch was used for two weeks to prevent undue soreness of the teeth when the edgewise arch was used. This small round arch was tied into all the brackets and then into the second molar tubes by means of the tie spurs. The latter was done to prevent the labial tipping of the lower anterior teeth during the time that it was worn. At the end of the two week period, an .0215 x .024 stainless steel edgewise arch was formed, after which a slight lingual torque

was placed in the anterior segment of the arch and a decided bend gingivally in the second molar area. Tie spurs were soldered just anterior to the second molar tubes. The arch was tied lightly into all the brackets and then tied into the buccal tubes on the second molars. At the next appointment slight distal second order bends were placed from the cuspid distally and the arch ligated to all the brackets and then tied into the buccal tubes. Gradually the second order bends and the distal tip gingivally in the second molar area were increased until sufficient anchorage was established. This required two months.

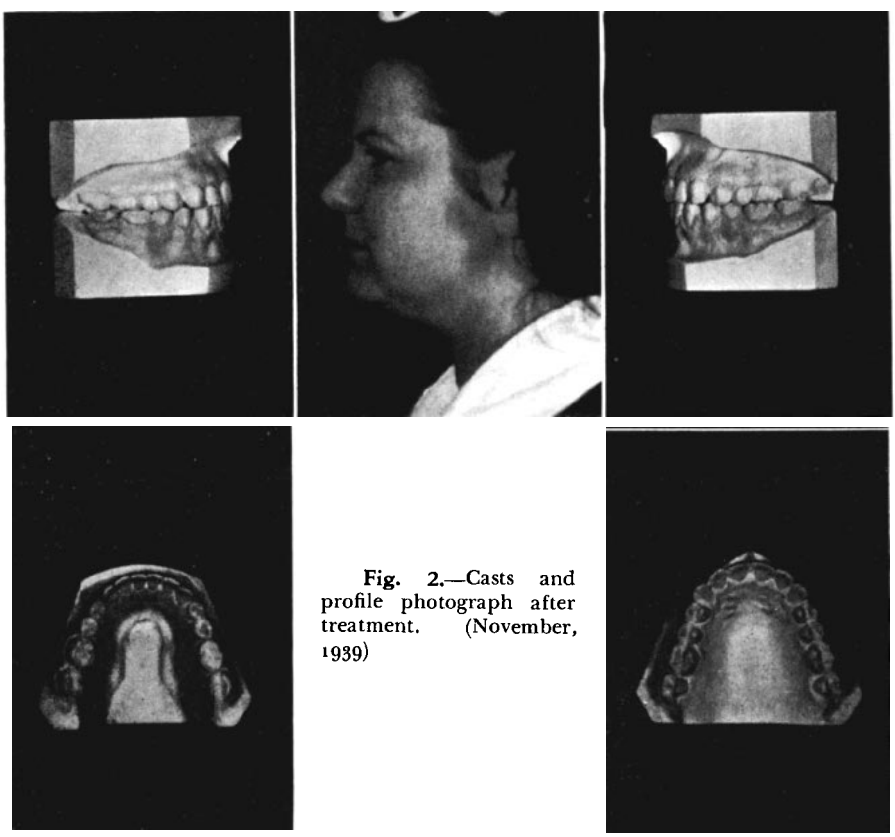

Fig. 2.—Casts and profile photograph after treatment. (November, 1939)

Edgewise bracket bands for the upper right and left cuspid, first and second bicuspids, and first molars were made and set. Buccal tubes were placed upon the bands of the second molars. Due to the labial axial position of the upper lateral incisors, it did not seem wise to band these teeth at this time, for fear they would offer too mueh resistance to the mandibular anchorage in the distal tipping of the maxillary teeth. Segments of edgewise arch .0215 x .024 were placed from the upper cuspids to the second molars with distal second order bends and intermaxillary hooks soldered to segments anterior to the cuspid brackets. Stops were soldered mesially to the second molar tubes. Patient was instructed to wear 5/8" intermaxillary rubber

ligatures from hooks on the upper segments to hooks soldered on the tubes of the second lower molar tubes.

After three months it was found that the upper right and left first and second molars were being moved lingually, so at this time the edgewise segments were changed to a round .022 stainless steel arch with second order bends from the cuspids distally, and stop spurs placed so as to prevent the arch from contacting the upper anterior teeth. Intermaxillary hooks were soldered anteriorly to the cuspid brackets. The arch was lengthened as the buccal segments moved distally. This method of retracting the buccal segments distally was something of an experiment. However, in this particular case it seemed to accomplish the objective.

In all probability the mandibular teeth were brought forward slightly, even though it did not seem indicated or desirous. Near the last of the treatment, the four anterior teeth were banded and an ideal arch was inserted after having placed a lingual torque in the anterior segment with distal second order bends from the cuspids distally. Intermaxillary hooks

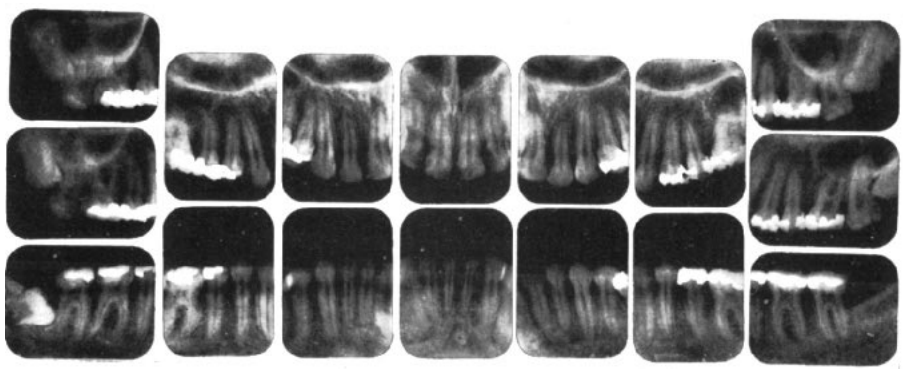

Fig. 3.—Full mouth roentgenogram following treatment. (November, 1939)

were soldered on the arch anteriorly to the cuspid brackets, and again rubber ligatures were worn continuously. The actual treatment required nineteen months.

Myo-functional Therapy: At the beginning of treatment the patient was instructed as to proper method of swallowing and was given the following passive swallowing exercises, as advocated by Dr. Robert Strang:

1. Stand in front of a mirror.
2. Take a sip of water to moisten the mouth. (Water is not to be used during the swallowing acts, but only to regain the ability to swallow.)
3. Watch the mouth carefully in the mirror.
4. Place the teeth gently together and keep them in this position all through the exercise.
5. Close the lips gently and then swallow with three things in mind.
   a. To keep the lips perfectly quiet
   b. To keep the teeth together
   c. To keep the tongue in the mouth and not pressing against the front teeth. In order to prevent such tongue pressure, place the tip of the

tongue on the roof of the mouth and keep it there while swallowing.

6. Repeat the swallowing slowly, taking a sip of water whenever it becomes hard to swallow.
7. Do this for two minutes and at least for three sessions a day. Do it frequently between practice periods. At least one hundred practice swallows a day should be performed.

The object of the exercise is not only to train the muscles to act correctly, but also to teach the patient to detect the error in swallowing when he is not thinking about it, that is, to make the child conscious of this excessive pressure which is so harmful.

Patient was also given the following exercise as an aid to develop the labial muscular tonicity:

1. Place a small amount of water in the mouth.
2. Press the lips tightly together with the teeth in occlusion.
3. Force the water through the embrasures of the anterior teeth into the area between the teeth and lips.
4. Make sure that water extends labial muscles from the fold of the mucosa of the maxilla and the mandible to their full capacity.
5. Do this until labial muscles are fatigued and repeat the exercise many times daily.
6. Shortly, the water may be dispensed with, using simply air to distend the lips.

Retention: The lower arch was retained with a vulcanite lingual plate with .016 stainless steel spurs slightly projecting into the embrasures of the four lateral incisors, which prevented the denture from being displaced so easily by the tongue. .030 stainless steel wires were extended from the vulcanite up over the occlusal margin of each of the first molars. These lay in the lingual grooves and kept the retainer from being displaced gingivally. The upper denture was retained with a full vulcanite palatal plate having a labial arch of .015 x .036 flat stainless steel wire extending from lateral to lateral. Both upper and lower vulcanite retainers were later remade using crystolex, to which the patient reacted favorably. The retainers were worn continuously for ten months; later only at night.

Results of Orthodontic Treatment: A recent examination of the patient shows that in the main, the primary objectives of treatment have been accomplished.

Summary: The objective of this manner of treatment of the case was to have a minimum force upon the lateral incisors, due to their labial axial positions, but possibly better results could have been obtained within a shorter period of time had bracket bands been placed upon all the maxillary teeth and a round .022 stainless steel arch used until the incisors were in an upright axial position, and then an edgewise arch to complete treatment. The three impacted third molars should be removed immediately. The prognosis of this case is fair and the results will be gratifying to the patient.

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