

Case Report

TREATMENT OF CLASS III MALOCCLUSION BY BILATERAL OSTEOTOMY*

IVAN F. JOHNSON, D.D.S.
Oakland, California

THE PATIENT, a female of German ancestry, was presented to the University of California Dental Clinic, at the age of fourteen years, with a pronounced asymmetrical Class III malocclusion. She was in excellent physical and mental health at this time.

The patient's childhood had been uneventful from a medical point of view, having suffered only the usual childhood diseases. There was no history of traumatic injury or serious illness to impair her growth and development. She had received a better than average diet.

The general health of the other members of the family may be considered excellent. The father and sister, may for our purposes be considered to have normal occlusion. The mother presents an edentulous Class III tendency, however, it is not so marked as to be a definite deformity.

No abnormality in the cranial development was found, nor were there such indications in the character of the musculature of the head and neck. The lips and tongue may be considered normal. The osseous structures are well developed and there are no abnormalities in the morphological formation of the teeth.

The malocclusion existed as an asymmetrical Class III relationship of the jaws. There was a marked inclination of the symphysis to the left of the median line. This is also shown in the relationship of the first molars. The upper right first molar has drifted mesially to the extent of one tooth illustrated in the impaction of the upper right cuspid. The lower right molar is in Class III relationship to the upper molar which has already been described as being mesial to its proper position. This would place the lower right molar mesial to the extent of approximately 12 mm. The upper left molar is in approximately its normal position and the lower left molar is in Class III relation to it. The upper anterior teeth were approximately 8 mm. lingual to the lower anteriors.

The etiology of the malocclusion is obscure. No other member of the family has this type of malocclusion. The Mother's tendency toward Class III relationship might well be classed as a "strong" chin. No abnormal growth was noticed in the completely deciduous denture. It cannot be said with any degree of certainty that this condition was caused by either heredity, glandular dysfunction or external influences. The fact that the youngster slept with her hand between her mandible and the pillow may to some degree account for the asymmetry of the malocclusion.

*From the Orthodontic Department of the University of California, College of Dentistry.

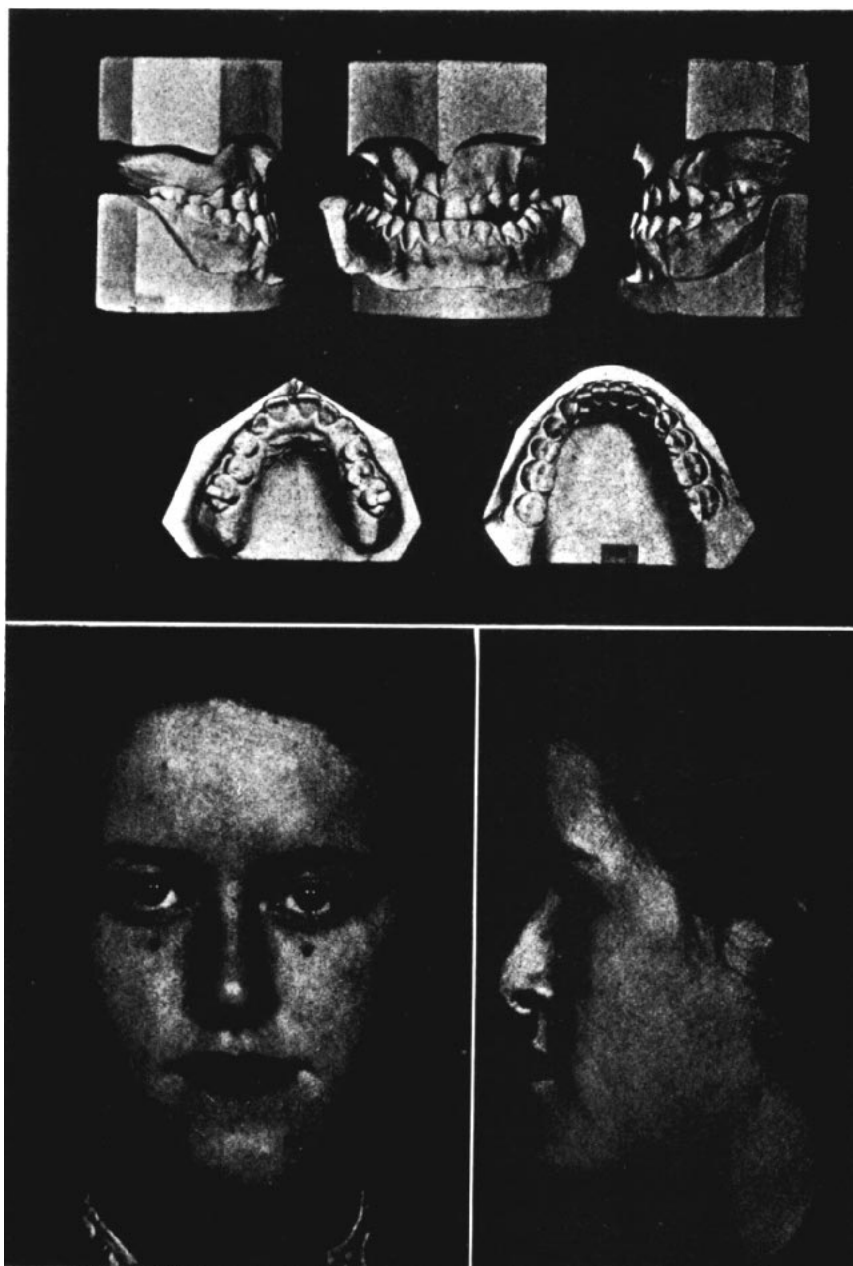


Fig. 1.—Patient at 14 years of age.

When the patient presented at the clinic, a plan of treatment was formulated whereby the upper arch would be immediately treated orthodontically and the lower arch would be treated surgically after full growth had been attained.

The upper teeth were banded with ribbon arch bracket bands on the central and lateral incisors and left cuspids. Edgewise bracket bands were placed on the bicuspid and curved sheaths placed on the first molar bands.

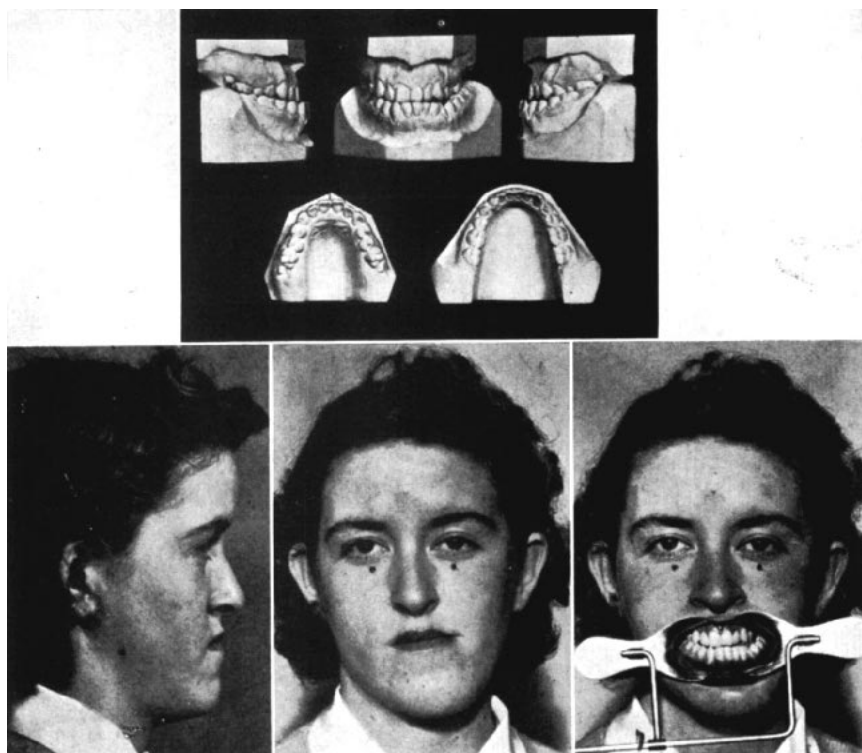


Fig. 2.—Patient after the completion of orthodontic treatment of the upper arch and before surgery.

The right lateral segment was moved distally to open the space for the eruption of the upper right cuspid. The arch was then refined and the teeth placed in as nearly an ideal position as was possible. Occipital anchorage was used in place of the usual Class III elastics in order to avoid any tendency towards further stimulating the growth of the mandible.

After the desired tooth movement was obtained, models were made and articulated. From these it was possible to determine the plan of surgical intervention. It was determined that the ramus of the mandible would be cut at a point approximately midway between the coronoid notch and the mandibular foramen in a mesio distal direction. The free segment of the mandible consisting of the body and the inferior portion of the ramus

would be moved laterally and distally until the teeth reached a point of occlusion and the protrusion would be reduced.

At this point the patient expressed a desire to discontinue the treatment so that it became necessary to remove all appliances and discharge her. This change in plan was due to the patient's fear that the scar caused by making the incision would mar her appearance to a greater extent than the deformity itself. She returned approximately eighteen months later and requested that the surgery be done.

No definite arrangements with the surgeon could be made at this time



Fig. 3.—Illustrating the chin cup used in closing the anterior open bite.

and attempts to secure the services of a surgeon continued for approximately nine months. Notice was finally received on Saturday, December 19, 1942, that the osteotomy would be performed the following Monday. It was not possible to secure a postponement to allow the placing of a full edgewise appliance so that due to lack of separation the centrals, cuspids, first bicuspids and first molars only in each arch could be banded. .022 x .028 edgewise arches were placed with spurs in the proximal spaces for the use of elastic lacings.

The osteotomy was performed. The desired mandibular relationship obtained and the ligatures placed immediately.

For several days there was no clinical change but in a period of three weeks there had developed a decided tendency toward an anterior open bite.

Tomograms were taken and it was found that the superior fragments of the ramus had become displaced with a forward rotation. The roentgen-

ological report reading as follows: "On the right side the proximal fragment can be seen to be rotated forward about twenty-five degrees. On the left it can be seen that the proximal fragment rotated forward but in this case it is much less of a rotation, amounting to perhaps only ten to thirteen degrees."

At this time it was also apparent that the orthodontic anchorage had

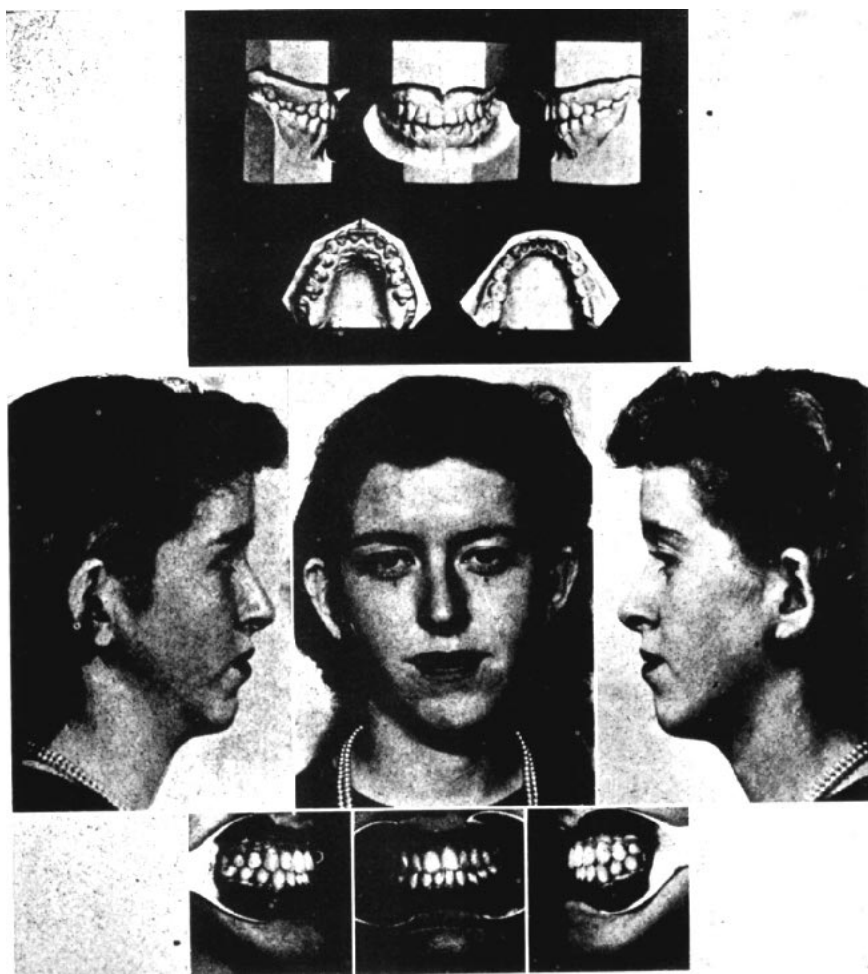


Fig. 4.—Completed case, May, 1944.

failed to antagonize the pull of the musculature and that considerable extrusion of the teeth from the alveolar bone had occurred.

It was decided that the intra oral anchorage should be replaced with external anchorage so that the chin cup device illustrated in figure 3 was designed and placed and the orthodontic appliances removed. This chin cup was worn continuously for a period of six weeks whereupon a

complete reduction of the open bite was obtained. Thereafter it was worn regularly at night for a period of approximately five months.

Tomograms were again taken on January 5, 1944, and the following report was received. "The posterior fragment of the right mandible is tipped forward and apparently overlies the distal fragment. As far as I can see the two are in excellent contact and in view of the patient's symptoms is probably healed. On the left side the posterior fragment is tipped just about as it is on the right side and again one gets the impression that the two fragments are in excellent contact and probably healed."

No further retention has been necessary as there has been no recurrence of the tendency for the bite to open anteriorly.

SUMMARY

Clinically and roentgenologically the case may be considered successful. Psychologically the results have been very gratifying.

Orthodontic anchorage alone was not sufficient to completely antagonize the forces tending to create an open bite anteriorly—it had to be complemented with external anchorage.

ACKNOWLEDGMENTS

Dr. George W. Hahn of Berkeley, who supervised the early stages of orthodontic treatment and under whose direction the work was done.

Dr. H. M. Blackfield of San Francisco, who performed the surgery.

Dr. G. H. Terwilliger of Oakland, for his advice and suggestions.

Dr. Fred Schubert, of the University of California, for the photographic data.

1904 Franklin St.

BIBLIOGRAPHY

HENSEL, GEORGE C.: "The Surgical Correction of Mandibular Protraction, Retraction, and Fractures of the Ascending Rami," *Surgery*, St. Louis, Vol. 2, No. 1, Page 92, July 1937.