MALOCCLUSION AND ITS FAR-REACHING EFFECTS *

SAMUEL ADAMS COHEN, M.D.
NEW YORK

When we consider from the standpoint of beauty and comfort the great blessing of a healthy oral cavity, we cannot but wonder why the medical profession has only at this late date come to stress its importance. It is in this area more than anywhere else in the human body that prevention—the ideal of the physician—can be exercised. It has already been pointed out [1] that caries, the most frequent disorder of the oral cavity, can be at least greatly minimized by both prenatal and postnatal influences; prenatally not only by giving particular attention to the diet of the mother for the formation of teeth of her unborn child, but also by preventing any disturbance in the mother's metabolism that might interefere with the assimilation of food. Postnatally, the physician should advise for the child a diet which provides for continuation of adequate tooth formation, and which also aids in the development of proper functioning of the jaws so as to lessen the probability of the occurrence of malocclusion.

Malocclusion is one oral disorder that has not received the attention it deserves. It is a great handicap to the child physically and mentally. This is evident when the physician notes the frequency with which a diagnosis of mental retardation and physical impairment accompanies the diagnosis of malocclusion. Normal occlusion goes hand in hand with well formed jaws, sound teeth, proper mastication, correct breathing, normal speech, normal brain development and the well-being of the child.

The oral cavity of the new-born is very shallow, owing to the imperfect development of the alveolar process. The hard palate is flat. The teeth are formed first, and the bone develops around them for their support. A tooth grows by the multiplication of cells of the tooth germs, and the growth is comparable to the forces exerted on it by multiplication of cells as in any other part of the body. The peculiar forces of the muscles of the face and the surrounding bone determine the extent of development. The lips, tongue, palate and other tissues exert pressure on the lingual surfaces of the bone, through the periostium, which in turn stimulates its growth. This mechanical stimulus is necessary in addition to nutrition for growth.

Animal experiments and clinical evidence show that the muscular function acting through occlusion affects the development not only of the jaw but also of the entire skull. Any lack of harmony in the working of these muscular forces causes the teeth to occlude abnormally after their eruption. Every pathologic occlusion has a simple beginning in its deviation from the normal either in structure or in function. Once this balance or harmonious relation in the forces acting on the oral tissue is altered, there is a resulting disturbance in the development of the jaw. This improper development progresses because the same forces that act in keeping the teeth in their normal relation act equally in increasing any disproportion that exists.

If the child has proper oral care up to the age of 6, the chances are that oral disorders in after life will be avoided or at least greatly decreased. Assuming that the child has inherited a normal oral cavity, the most effective means of preventing oral deformities are to (1) provide proper nutrition; (2) provide sufficient and proper exercise of the jaw; (3) avoid faulty oral habits, and (4) remove causes of mouth breathing.

MOUTH BREATHING

The physical defects often seen accompanying mouth breathing of long duration include poorly developed alae nasi with small nose and short upper lip, upper arch narrow and lengthened, deflected septum, and sometimes impaired hearing. The child's appetite is usually poor, and there is a great desire for fluids, to take away the constant dryness of the mouth and throat. A history of anorexia and unsatisfied thirst is given by the mother as a consequence.

The amount of discomfort and deformity that may result from mouth breathing is difficult to estimate. Those who have a long, narrow face, with a shortened mandible, are apparently the worst sufferers A normal face, on the other hand, seems to show evidences of comparatively little discomfort.

One of the commonest causes of persistent mouth breathing, especially in infancy, is adenoids. The cause of adenoids is often hard to explain, but their removal is comparatively simple. This course is urgently advised, as soon as the diagnosis is established. Early age is no barrier to their removal. When adenoids are responsible for mouth breathing, their removal is usually sufficient to restore nasal breathing; but nasal breathing does not usually follow after the removal of the adenoids in early childhood unless proper instruction of muscle training is given and carried out.

About 75 per cent. of the children seen at the Forsyth Dental Infirmary are still mouth breathers from one month to three years after the removal of their tonsils and adenoids. In a small percentage of these children, the condition may be traced to some further existing mechanical obstruction; in others, mouth breathing exists either because of habit formation or because of improper development of the facial muscles. By repeatedly reminding these children to breathe with their mouths closed, and by the constant practice of simple special exercises which tend to develop the facial muscles (as recommended by Dr. Alfred P. Rogers of Boston), a great many of them can be taught to breathe properly.

Nasal breathing is vital for correct oral development, and is one of the surest preventions of irregularity of temporary teeth. Fortunately, not all mouth breathers develop material deformities of the dental arches, maxilla or mandible.

FAULTY HABITS

Faulty habits may play some major or minor part in the causation of oral deformities. These habits should be prevented if possible; if formed, they should be discontinued. A practice to be especially condemned is the prolongation of feeding through the artificial nipple. Bottle feeding does not furnish the proper development of the muscles of the jaw. It retards the child in learning to masticate properly. The muscles of mastication should be put into function as early as possible, and there is no valid excuse for allowing the child to continue bottle feeding when it has sufficient strength to be fed with a spoon.

It is hardly necessary to comment on the fact that the breast-fed baby is better nourished than the baby who is artificially fed. From the point of view of normal oral development, the breast-fed baby, by the

* From the Forsyth Dental Infirmary for Children.

1. Cohen, S. A.: Oral Disorders in Pediatrics, Am. J. Dis. Child. **24**: 160 (Aug.) 1922.