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ORIGINAL ARTICLES

THE POSITION OF THE DECIDUOUS TEETH, AN IMPORTANT DIAGNOSTIC SYMPTOM

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TODAY is the period of preventive medicine. Why should we not drop the consideration of the teeth as teeth, and look upon them as indications of conditions that exist in the animal economy and that need corrections? Conditions which, if not corrected, will lead to faulty development of the whole body, including faulty development of the permanent teeth, often including flattened sides of premolars and molars, defective enamel covering, which includes deep sulci instead of a continuous enamel surface like a coat of mail over the entire surface of the tooth or teeth affected, and a retardation of their eruption, because the arches into which they must erupt are not big enough for them to come into regularly, and they have to crowd in among a lot of teeth, themselves crowding for space that they have not.

The deciduous teeth show most clearly to him who is able to read their language the conditions that tend to this faulty development of the child, and if not corrected, lead to a body so much below par that the child is not able to fight the battles of life as it should.

The width of the normal maxillary arch of the permanent teeth in the premolar region is generally from 33 to 35 mm. in mankind. The premolars develop between and are embraced by the three roots of the maxillary deciduous molars and they erupt from the same spot, so that if the maxillary deciduous molars stand in the places that the premolars ought to occupy, these premolars will erupt exactly under them and will develop their roots there; but, if these deciduous molars are not in correct position, the premolars cannot be in correct position either, for they develop between the roots of the deciduous molars and they erupt at that spot when the deciduous molars are lost.

Now, the bearing of all this upon our subject is that if the child is in

good health, the deposition of bone (alveoli) around, among, and especially between, the deciduous teeth is such as to form an arch large enough to hold these deciduous teeth steadily in juxtaposition to each other, but not in contact, and the six anterior teeth will be far enough apart for the permanent teeth which are behind and within the circle of their roots to erupt regularly in a proper arch and the vital energy of that child will be such as to cause the deposition of bone between and around the roots of these erupting and developing permanent teeth, so as to hold them securely in the arches. This is normality.

Now let us turn to abnormality. In very many cases, probably the most of them, in civilized life, the dental arches are too narrow; they do not come up to the average as obtained from the measurements of the most ideal dentitions that we can find. This is true of both the deciduous and permanent

Fig. 1.

arches. In so much, then, as the permanent row of teeth with but few exceptions, occupies exactly the same arch that is occupied by the deciduous row, if the deciduous arch is too narrow, spread it as soon as it is found to be too narrow, whether the age of the child is three or six or anywhere in between, but always the sooner the better; because the premolar region is the part of the arch that is nearest the nasal passages, which are also spread when the teeth are spread and is the part that most surely needs spreading in the majority of cases. If the deciduous teeth are still in the mouth the roots begin to absorb about six years of age, and if the absorption has been great enough to prevent the movement of the premolar crowns in their entirety, these second teeth will either be left in their original positions, or they will be tipped or rotated instead of being moved bodily, and will require readjustment after the deciduous arch is spread. These deciduous teeth can be regarded as handles with which one can widen the nasal cavities and air passages so the child can breath naturally, and with the closure of the mouth

which follows this treatment, the child will be less liable to inhale deleterious germs that may be floating in the atmosphere. As a result of this widening of the arches and nasal cavities, we notice a better development of the thoracic cavity and a more vigorous operation of the heart as well as the lungs.

Fig. 2.

Fig. 3.

Fig. 4.

There is a periodicity of growth among our civilized children which causes a retardation from about the sixth to the twelfth year when the growth is resumed. In two or perhaps more cases I have apparently succeeded in breaking up this periodicity and the children have continued their growth

uniformly through that period for they are still growing and not yet thirteen years of age.

At the Hygiene Exhibit held in Dresden, I think in 1911, it was shown that the human brain averages at birth 371 grams, and that the brain at six years of age averaged 1360 grams, while at nineteen it weighs 1400 grams. This shows that the skull of the child of six has nearly reached its adult size;

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

and if the skull can be shown to be subnormal at that age or earlier, the inference would be that it could hardly be expected to become normal at adult age unless something was done to make it resume the growth which had been interrupted. This growth can be stimulated by one of three ways that will be mentioned later.

The early diagnosis of the lack of growth of the skull and face can be made from the deciduous teeth, and made almost at a glance. It has been stated that normality of the deciduous teeth means that the anterior teeth

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

must be separated to insure a normal position of the permanent teeth, and this spacing also denotes normal growth and lack of it indicates abnormality.

Therefore, if the deciduous teeth are found to be close together, the diagnosis is clear that the necessary life force which should accompany development and the eruption of the deciduous teeth has been lacking, and if the breadth between the maxillary deciduous molars is not more than 28 mm., it is fair to presume that some assistance must be given to procure a normal eruption of the teeth, which will in turn mean a normal cranium and face. There are three general ways which may be utilized in causing nature to resume this growth, the lack of which has been diagnosed from the deciduous teeth. First: The use of proper food and exercise. Second: A stimulation of growth by the use of thyroid or other glandular extracts. Third: A stimulation of growth through mechanical means. All of these may be employed at times.

In order to impress more fully what is meant by the normal, I shall show a normal case photographed at two and one-half years of age (Fig. 1). Models

Fig. 13.

Fig. 14.

of the case were taken at the age of six and one-half (Fig. 2) and the models of the same case are shown at ten years of age (Fig. 3).

As an example of abnormal development or rather lack of development, Fig. 4-B shows the models of the mouth of a middle-aged lady who is the mother of four children. She must have had a narrow mouth during childhood, as is shown by the models. The models in (Fig. 4-A) are from the mouth of one of her children who has a wider arch than the mother, although the child is but three years and four months old.

Other examples of the lack of development can be shown in the case illustrated by Fig. 5 which was made at five and one-half years. Fig. 6 shows the same case at eight, and there has been no lateral development. At the age of eleven, Fig. 7, we again find no lateral growth has occurred and remains .90 of an inch wide between the deciduous molars.

Another case which also shows similar lack of growth is seen in Fig. 8 which was taken at seven years of age, Fig. 9 at ten years, and Fig. 10 at thirteen. Fig. 11 and 12 also show another case in which there has been no lateral growth over a period of three years. None of these cases shows any lateral growth and the condition could have been diagnosed early and any one or all three of the methods of inducing growth could have been used with good

Fig. 15.

Fig. 16-A.

Fig. 16-B.

Fig. 16-C.

results. Of course mechanical stimulation is the one method that will be most discussed in this paper. With these three cases an early treatment should have been begun.

Fig. 13 shows models of a case at four years of age when treatment was begun. Fig. 14 shows models of the case made three years later. Fig. 15 shows the case again four years after the second model was made. Some idea of the amount of growth that has been obtained can be realized by comparing Fig. 13 with

the models shown in Fig. 15 which are photographed on the same scale. The three views in Fig. 16 show the facial development of the patient at the time the model in Fig. 13 was made. As a result of the growth which was produced by the mechanical assistance, the face has developed as you see it in the three views shown in Fig. 17. The facial outlines in Fig. 17 are associated with the models shown in Fig. 15. The front view of the patient shows a develop-

Fig. 17-A.

Fig. 17-B.

Fig. 17-C.

Fig. 18.

Fig. 19.

ment of the face and cranium for which it would be hard to suggest any improvement. In fact the patient would be classed as one of normal growth.

Another case of early diagnosis and treatment is shown in Fig. 18, the models of a patient five and one-half years of age. The arches show a lack of development with no spaces between the deciduous incisors. Within one year the arches were spread as shown in Fig. 19. Fig. 20 shows the case at the age of nine years and two months, and Fig. 21 shows the condition as

found at twelve years and four months. Fig. 22 shows the occlusion of the models. It can be easily understood that the facial outline of the patient was as greatly improved as were the dental arches.

Another case which is slightly different and which was susceptible of an

Fig. 20.

Fig. 21.

Fig. 22.

Fig. 23.

Fig. 25.

Fig. 24.

early diagnosis is seen in Fig. 23. The models were made when the child was two and a half years old. In January, 1919, the teeth had taken a position whereby the maxillary molars on the left side occluded buccally to the mandibular molars, instead of striking the occlusal surface. As a result of this malocclusion of the teeth, the maxillary molars were forced outward toward the

Fig. 26.

Fig. 27.

cheek, making the maxillary arch 30 mm. broad. The mandibular molars were driven toward the tongue, making a one-sided condition of the mouth. Figs. 24 and 25 show the abnormal relation of the molars. If this case is allowed to remain with the deciduous teeth in malposition, we should expect to find a similar malocclusion of the permanent teeth.

The boy shown in Fig. 26 was five years old and a mouth breather. The maxillary arch was but 28 mm. wide in the second deciduous molar region.

(Left side Fig. 27.) In ten months the maxillary arch was spread until there was 35 mm. between the second maxillary deciduous molars and a corresponding increase in width was obtained in the mandibular arch. This spreading of the molar regions caused a separation of the anterior teeth which I estimated would provide enough space for the permanent teeth. The change in the arches can be seen in Fig. 27, the models on the right being the case after

Fig. 28.

Fig. 29.

expansion. Fig. 28 shows a photograph of the patient a few months after treatment. With the majority of these patients, the breathing is greatly improved by the expansion of the arches and snoring ceases.

The models shown in Fig. 29 represent a boy six years and four months of age whose maxillary arch was only 27 mm. in width. He had suffered from abscesses in his ears in the spring of 1914 and again in the spring of 1916, the ear drums being pierced at both times. Considerable deafness was present at the time of the beginning of the orthodontic treatment. An appliance was

Fig. 30.

Fig. 31.

placed on the teeth in May, 1916, for the purpose of spreading the arches. In six months the maxillary arches had been widened to 35 mm. between the second deciduous molars. This widening changed the nasal cavities and relieved the pressure on the eustachian tubes, with the result that the deafness was no longer apparent and the boy could hear the ticking of a watch five feet away with both ears. The improvement in hearing has continued up to the present time. One advantage of this early diagnosis and treatment is that by beginning the widening of the arches at five years of age, it is not necessary to attach appliances to the permanent teeth and thereby the danger of decay to the permanent teeth is wholly eliminated. Furthermore, children

who have been taught to keep the teeth clean when they are young acquire habits of cleanliness that remain through life. I have never carried through a case of correction of the deciduous teeth that was followed by decay of the permanent teeth, caused by the regulating appliance. As a rule, too rapid treatment is to be condemned but in the case reported here, I believe the rapid treatment did no harm and the later history of the case shows that the patient was greatly benefited. Figure 30 shows the portrait of a girl eight years of age. We had but twenty-four days before she was obliged to go south for

Fig. 32.

Fig. 33.

the winter. A gland had been removed from the neck and there had been one or two operations on the nasopharynx, and the general condition of things indicated that the patient would be greatly benefited by orthodontic treatment to widen the arches. Two screw appliances were used as shown in Fig. 31 and in twenty days we had moved the lateral halves of the arches seven millimeters. Fig. 32 shows later models of the case. The mother has lately sent me a photograph of the child made seven years later than the first one which is Fig. 33. The nasal passages have remained clear, the hearing is normal, and the general health good. Nevertheless, this case could have

been diagnosed much earlier from the position of the deciduous teeth and a normal development started at a much earlier period in life. This case however proves that by widening the arches the breathing can be greatly improved and better hearing established by the proper orthodontic treatment, even though such results are doubted by some.

That the breathing can be greatly improved by the proper orthodontic treatment is proved by the case shown in Fig. 34. The models on the left are of a boy ten years and ten months. The models are shown in occlusion and separated. The rhinologist in attendance decided that it would be impossible

Fig. 34.

to move the teeth at that age and keep them in an upright position. The models on the right show the condition at seventeen years of age, seven years after treatment was begun. Since the orthodontic treatment there has been no further trouble from mouth breathing and the arches have remained in a fair position. This case like the preceding one could have been diagnosed much earlier and better results obtained by an earlier treatment.

It is my belief that most, if not all lack of developments can be diagnosed from the deciduous arches and that great benefit can be derived from early treatment. Of this I am sure from the treatment of many cases during the last twenty years.