

A CONSIDERATION OF FREQUENT CAUSES OF MAL-OCCLUSION

BY WILLIAM B. POWER, D.D.S., SEATTLE, WASH.

IN a paper which I read before the King County Dental Society April 2, 1918, published in the August issue of the JOURNAL of the same year, I took up in a general way some of the most frequent causes of malocclusion, as I observed them in my own practice. The publication of that paper caused some little discussion by men who read it, and to further substantiate some of the conditions which I have mentioned, I am writing this paper, illustrated with a number of malocclusions which I believe present positive etiologic factors that are so clear that they can not be misinterpreted for anything else.

Under the head of constitutional conditions, I stated "rickets" was a disease that was very liable to cause malocclusion and which produced typical conditions that could be very easily recognized in most cases. Rickets is a disease which may manifest itself at any time in the life of the individual, the malocclusion will present certain characteristics depending upon what time the child acquires the disease. One of the earliest symptoms of rickets is that the deciduous teeth are lost early and the permanent teeth erupt late. Given such a clinical history in any case, malocclusion is always sure to develop, and when the two conditions go together, complicated by the constitutional disturbance as found in rickets, malocclusion of the most severe type is very liable to occur. With

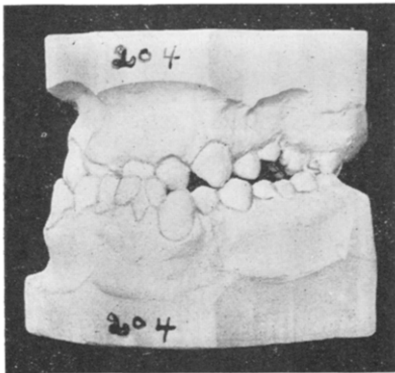


Fig. 1.—A condition resulting from rickets.



Fig. 2.—Shows superior arch of same case as in Fig. 1.

children that have the disease only to a limited extent, the malocclusion is characterized by a lack of development of the upper arch with more or less bunching of the upper anterior teeth and a tendency for the overdevelopment of the lower arch. Fig. 1 shows such a case. Fig. 2 shows the occlusal view of the upper dental arch in which will be noticed the large well-developed rugæ of the palate which also is associated with rickets. The alveolar process is thick and spongy and the alveolar ridge is thick and the teeth will move quite easily. The tardy eruption of the teeth from any cause will, of course, produce a maloc-

clusion, but in the majority of those cases where this tardy eruption occurs, rickets will probably be present. Fig. 3A shows the front view of the case in which there is a spacing between the central incisors that has been produced by the abnormal development of the frenum, but this spacing is further augmented by the fact that the upper lateral incisors are unerupted and are really late in erupting. Owing to the lack of approximal contact, the action of the lip and the abnormal frenum, the upper central incisors have drifted apart, and taken a lingual position. The whole case is one which will present a very complicated condition and one which will grow worse as the individual grows older. It is another case which demands immediate treatment and is one which by no means should be allowed to wait, neither should the parents be told the case can be treated a little later as easily as it can now. Fig. 3B shows the result that has been accomplished by treatment, and could be more easily obtained at that time than

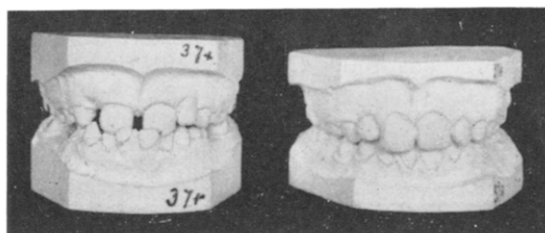


Fig. 3.—*A.* This shows superior centrals in lingual occlusion, with right lateral unerupted. *B.* A result in same case easily obtained.

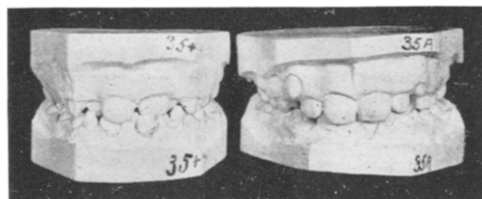


Fig. 4.—Anterior teeth in wrong position due to interlocking of inclined planes of teeth.

it could ever be obtained at any later period in the individual's life. I am showing this case not only as a possible factor of etiologic interest, but also one which emphasizes the importance of treating certain types of malocclusion immediately and to discourage the idea of telling patients to wait.

In the study of normal occlusion, we have been told that the force of the inclined plane was one of the factors which caused teeth to assume and maintain their proper position in the line of occlusion. Now the force of the inclined plane is active and normally produces normal occlusion but when for any reasons the force becomes abnormal it will cause the malocclusion to become more extreme as the individual advances in age. The model on the left of Fig. 4 shows a case in which the abnormal locking of the inclined plane of the central incisor, as well as the abnormal approximal compact in both the upper and lower teeth are producing a type of malocclusion which will grow worse the older the individual becomes. In other words, the incisors are so locked that malocclusion is the only thing that can possibly exist and is the only development which will

occur following the subsequent eruption of the other teeth. We might say the entire treatment of this case lies in getting the two forces of occlusion that are abnormal to act properly, namely, the force of the inclined plane and approximal compact. If these forces are corrected and continue to act as they should, the malocclusion, of course, will be necessarily corrected and normal development will progress from this point.

The loss of any deciduous teeth will produce malocclusion, and when given a certain deciduous tooth that is lost, we can absolutely portray the future malocclusion that will develop. The loss of a deciduous tooth produces malocclusion in at least two ways, first, by destroying and interfering with the mastication of the teeth which in turn disturbs the mechanical stimulation of the supporting structures. Secondly, the loss of the tooth interferes with approximal contact which in turn allows the dental arch to collapse and that in turn produces in-harmony in the size of the arches, which has an influence on the opposing arch and eventually destroys the force of the inclined plane. In Fig. 5 we have the loss of the lower right canine and the lateral incisor has drifted lingually and

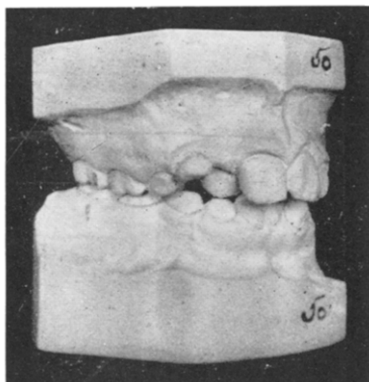


Fig. 5.—A condition resulting from the loss of the lower right deciduous cuspid.

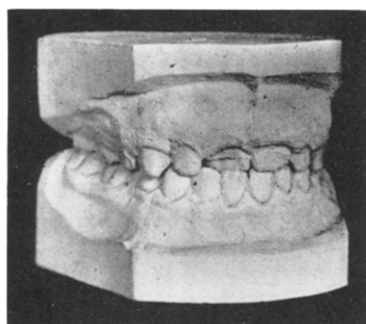


Fig. 6.—Superior central deflected into malposition.

to the right until it is in contact with the first deciduous molar. The result of this is the lower arch is smaller by the width of one tooth which has resulted in the bunching of the upper arch, and which will result in the impaction of the lower canine or the premolar, depending upon which of those teeth attempt to erupt last. The only treatment for this case is to restore the normal sizes of the upper and lower arch and make the proper space for the permanent teeth in the lower arch so they can come in and occupy the normal approximal contact. This is another case in which it was very unwise to delay the treatment because of the condition that will simply be postponed from one tooth to the other as each succeeding tooth erupts, even though the malocclusion does not become apparent in early life. We see a large number of these cases in which the parent failed to realize that one tooth was short in the lower arch and they come to us to have only the upper arch straightened because that is the only one which to them shows any malocclusion. We have even known dentists who are so unfamiliar with the dental anatomy as to overlook the missing tooth in the lower arch until their attention was called to it.

In order to more thoroughly show the force of the inclined plane as a factor in producing normal occlusion or malocclusion, I am showing Fig. 6 which was another simple case but the whole etiologic features lie in the fact that the upper central incisor has become deflected and from now on will continue to occupy a malposed position, unless the mechanical interference is instituted to correct it.

We have mentioned the fact that the early loss of the deciduous teeth is an etiologic factor in the production of malocclusion, but it must also be remembered that the prolonged retention of the deciduous tooth or even the retention of a small portion of a deciduous tooth will produce various types of malocclusion. In Fig. 7 we find the upper central incisors wedged between the centrals and laterals, and the deciduous root is still in place. The position of the upper central is without question the result of force of inclined plane, during the time it erupted against the retained deciduous root. As a prophylactic measure in the prevention of malocclusion it is very imperative that the child's mouth be examined at various intervals and the deciduous roots be extracted

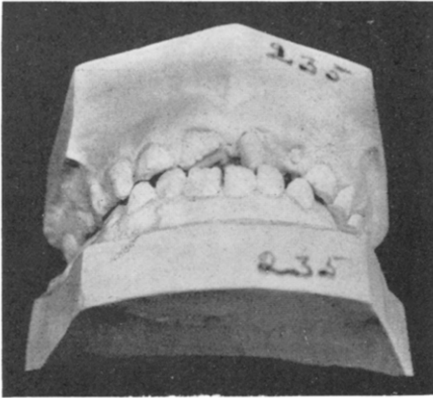


Fig. 7.—Superior central wedged crosswise between lower central and lateral. Deciduous roots still in place.

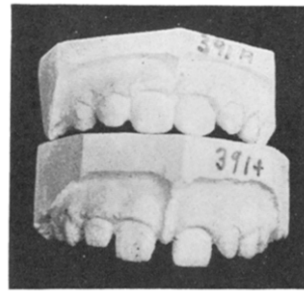


Fig. 8.—The removal of the frenum labium and a small amount of treatment obtained a satisfactory result in this case.

so as to avoid such conditions as are shown in Fig. 7. As to the possible time when a deciduous root should be extracted so as not to produce a malposition of the permanent teeth, that can only be decided by frequent study of the conditions after the teeth have been radiographed.

In the majority of those cases where all the upper teeth are in normal approximal contact, and we find a large space between the central incisors, this spacing is generally the result of the abnormal development of the frenum-labium. The exact cause of the development of the frenum or abnormal size of the frenum is still a disputed point and in some type of the maldevelopment the most logic treatment beyond the question of a doubt, is the surgical removal of the frenum and then the drawing of the incisors together. Fig. 8 shows such a case before the removal of the frenum and also the same case after the frenum was removed and the central incisors brought into position. It must be remembered that every case of the separation of the upper central incisors is not an abnormal frenum case, and consequently the condition must be very carefully

observed, before making a prognosis as to the outcome of the case or also a diagnosis as to the etiologic factors involved.

Another common type of malocclusion or rather another common condition which will produce malocclusion is supernumerary teeth. Supernumerary teeth may make quite a spectacular malocclusion, but as a rule such malocclusions are comparatively easily treated by the removal of the supernumerary teeth and the bringing of the normal teeth into occlusion. I wish to say that missing teeth are also factors in the production of malocclusion, but of the two, supernumerary teeth are much more easily treated from the standpoint of permanency, because all the tooth material is present that is necessary to produce the normal

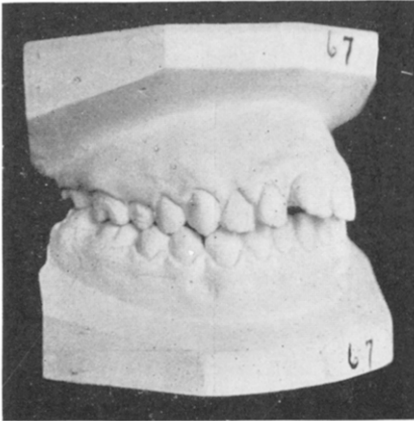


Fig. 9.—A very unsightly form of malocclusion caused by a supernumerary tooth.

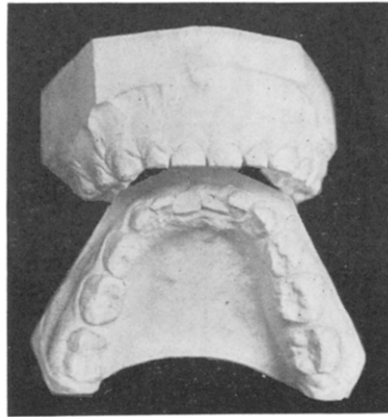


Fig. 10.—The growth spaces are easily seen, with the lower centrals erupting in a lingual position. Teeth thus erupting are often mistaken for malocclusion.

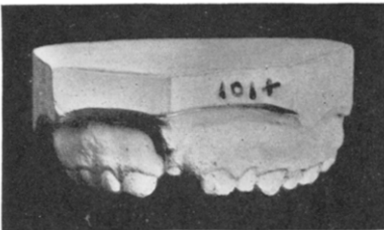


Fig. 11-A.—A frenum labium case.

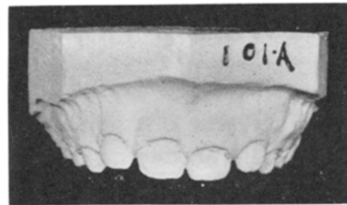


Fig. 11-B.—The abnormally large frenum labium was removed in this case. No appliance was used to move the teeth which were widely apart, yet this was the result at the end of two years.

occlusion. In cases produced by missing teeth the tooth material is lost and it consequently follows that in the correction of the malocclusion present the result is never entirely satisfactory, owing to the missing tooth material, which makes the attaining of normal occlusion or normal masticating efficiency impossible. Therefore, I would say that of the two evils, the case produced by the supernumerary tooth lends itself to more satisfactory treatment than the case produced by the missing tooth.

In considering the causes of the malocclusion, it is very necessary to take into consideration the age of the patient, for in some instances a malposition at

a certain age may be corrected by a normal growth, associated with normal forces of occlusion; provided all forces of occlusion are normal. In Fig. 10 is shown the upper arch of a child in which spaces are seen to be present between the deciduous incisors which indicate the upper arch is developing to accommodate the permanent teeth. However, for some reason or other in this particular individual, the growth was not rapid enough to accommodate the eruption of the lower permanent teeth, and we find the lower central incisors occupy a slight position of linguoversion. Some of these cases demand treatment, while others when present in children that are assuming an active period of growth, will be carried out to the proper position by the normal tongue action. If a child is a normal breather with normal lip and tongue action and the proper physical development at that time, the natural forces of occlusion and natural

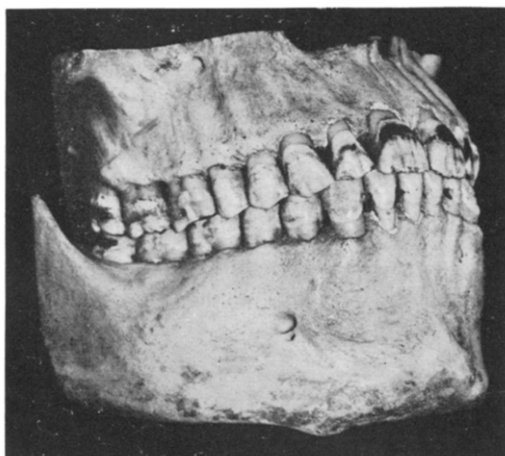


Fig. 12.—As the occlusion should be.

growth may overcome the slight deficiency shown in Fig. 10. However, with a slight malocclusion occurring we may just have the reverse, in which case the growth will stop at this point, Fig. 10, nothing will be carried any further, and the mechanical interference will have to be instigated to produce the development that nature has failed to get up to this time. The question of the treatment of such cases as shown in Fig. 10 is one which has to be very carefully considered and the child kept under close observation in order to see whether the normal development is going to take place, or whether mechanical interference must be started to supply what nature has failed to do up to this time.

Fig. 11 also shows a very interesting case but you will have to take my word for the condition, as this case was one in which an abnormally large frenum was removed. No appliance was used to move the teeth together, which were very wide apart, still the results as shown in this model occurred at the end of two years. I am showing this case to substantiate the fact that some man claimed that abnormal frenums are not etiologic factors and that the removal of them does no particular good. From clinical observation I am convinced that the spacing between the teeth as originally present was the result of the abnormal frenum and after the frenum was removed the etiologic factors

were gone, and nature was able to care for the rest by establishing normal forces of occlusion.

I might further say that any type of malocclusion which develops is the result of the forces of occlusion going wrong, and if all the forces of occlusion act normally there is a normal occlusion as shown in Fig. 12, which is the ideal for every type of malocclusion treated.

TEACHING ORTHODONTIA*

BY W. E. STOFF, D.D.S., OMAHA, NEBR.

THE teaching of orthodontia is a difficult proposition, especially in the dental college, where it is presented with the idea that the course is not expected to fit the student to practice this branch of dentistry with any degree of success and only gives him the theory which he may or may not retain after he passes the final written examination of the college and the state board, and which then, will have to be worked out in practice attended by the usual difficulties, incident to initial attempts at the correcting of malocclusion. That student-dentist is an exception, who succeeds in spite of these conditions and the percentage is indeed small. There being a number of teachers in the alumni association and probably some among the present graduation class, I offer these suggestions.

Since there is so much malocclusion to be corrected, I believe we should endeavor to give the students under us as much practical knowledge as we possibly can.

The following, I offer mainly because I believe many colleges are not giving orthodontia the attention that Creighton gives. The junior class gets the usual thirty-two weeks of lectures during the year, while the seniors are handled a little differently.

Each senior is required to handle one case all through the year, the clinic being ample for this. Besides treating this practical case he is required to write a paper on it and read it before the class, during the regular lecture period: the schedule for these papers being so arranged that the student has had time to get a working knowledge of his case and, too, that each will have time to prepare well. I usually have two papers each period and that allows us a little time for general discussion and "fill-in" explanations by the lecturer. This gives the entire class a good insight into all the orthodontia cases, widening their scope of experience, etc.

The system used to prepare the students to handle their cases and which helps them materially in writing their papers was suggested to me by Dr. Brady and consists of three diagrams illustrating, on the first, the malpositions of the teeth being drawn with black ink and over this the correct positions in red ink.

*Read before the Alumni of the International School of Orthodontia, Kansas City, Mo., July 9, 1918.