Premature Loss of Deciduous Teeth*

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A review of general and special dental literature pertaining to the effects resulting from the premature loss of deciduous teeth, furnishes convincing evidence that the subject has received but superficial investigation or discussion. While all writers on this topic acknowledge such loss to be an etiological factor, productive of arch malformation and malocclusion of the permanent teeth, not one of them enters into a satisfactory differential analysis of the subject.

Little consideration has been given to the fact that the response of one individual to a given agency, furnishes no criterion by which to estimate results in other similar cases. In the discussion of all classes of malocclusion, over-positive statements, made without reservations, are evidence of a superficial study of the etiological factors involved, and such statements characterized most of the articles that were reviewed.

McCoy, however, is to be credited with being less definite. He admits that, "Except for such known causes as caries, extraction, or traumatism, the true reason for the premature loss of the deciduous teeth frequently remains purely a matter of conjecture, which lends emphasis to the necessity for a more thorough study of the deeper and more obscure phases of growth and development, and a better understanding of the predisposing causes of malocclusion."

In the fourth edition of *Practical Orthodontia* by Dewey, in approximately two hundred and fifty words devoted to this subject, eight unqualified statements are made. Summing up his brief discourse, Dewey says: "Given the loss of any of the deciduous teeth, it is possible to describe the malocclusion that will result in a few years from that time." I quote Dewey because without doubt his teaching has been well received by many men preparing to teach or practice orthodontia, and therefore should not be permitted to go unchallenged, and certainly should not be accepted without logical proof of such unconditioned doctrine.

Your essayist does not presume to suggest that he has conducted a

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thoroughly exhaustive research into the causes of early loss of deciduous teeth, and the full effect of such loss upon future occlusion of the permanent ones, but he feels justified in the expression of one definite conclusion, based upon his venture of investigation to date.

That conclusion is, that the problem is complex, involving as it does the determination of the basic causes underlying the most frequent premature loss of deciduous teeth, and the predetermination of the effect such a loss of functional units will produce in the formation of the dental arch and the future occlusion of the permanent teeth.

Previous to a personal investigation of one thousand orthodontic case records of children whose ages ranged from seventeen months to ten years, I was possessed of some very set opinions. The investigation was undertaken with a view to determining what effect disturbed function of the deciduous teeth might have upon occlusion, and the study of even so limited a number of cases as one thousand, revealed interesting, even startling data that reversed some of those opinions, and led to deductions contradictory to popular ideas relating to cause and effect in the early loss of one or more of the deciduous teeth.

The survey of one thousand orthodontic case records of patients ranging from the age of infancy to that of advanced childhood, was made with the intention of determining the relative number of them in which impaired function of the deciduous teeth due to caries and later consequences, actually contributed to the complications of malocclusion. No consideration was taken of the effect which the loss of permanent teeth may have had on occlusion. To avoid any confusion such cases were not included in the survey.

The relative percentage among the cases was found to be as follows:

Caries of the deciduous teeth and defective fillings affected 60.3 per cent.

Premature loss of deciduous teeth, due to caries, congenital causes, early absorption of roots, accidents, and unjustifiable extractions affected 28.8 per cent.

Caries, defective fillings and premature loss of deciduous teeth from all causes contributing to malocclusion, affected 52.2 per cent.

The finding that conflicted most with popular text upon the subject was that, as the direct cause of malocclusion, caries, defective fillings and premature loss of deciduous teeth from all causes, affected only 8.4 per cent.

The seriousness of the situation is not minimized by the discovery that only 8.4 per cent of one thousand cases showed malocclusion directly attributable to impaired function of the deciduous teeth against 52.5 per cent in which such impaired function was but the contributing cause.

On the contrary, the results of even this limited investigation show that it is impossible to over-stress the importance of safeguarding function of the deciduous teeth, from the time of their eruption until they have served their full purpose in the dental arch.

Tabulation of the one thousand cases led to the deduction that in the majority of them causes other than impaired function accompany the devastation attending the premature loss of deciduous teeth and that impaired function is only one link in a chain of over-lapping etiological factors.

The interception of the progress of any of these contributing causes which predestine certain forms of malocclusion, but better still, their prevention, is a long step in the reduction of complex abnormalities to simpler ones.

This investigation further revealed the fact that because the eruption and shedding of the deciduous teeth is governed by inherent individual characteristics rather than by a definite chronological order, the effect of premature loss of a certain deciduous tooth, or even a series of them, by one child, would differ widely from the effect of the same loss in the case of another child of the same age.

In certain cases, the dominating persistency of factors making for normal growth and development to a state of functional occlusion of the teeth is astounding. A fair approach to normal occlusion will sometimes occur in the face of a family history showing on one side that even the deciduous teeth through consecutive generations, have erupted devoid of enamel.

Associated with this condition in such histories, will be found malnutrition, adenoids, hypertrophied tonsils, premature loss of deciduous teeth and inadequate home care. In most cases, any one of the debilitating factors in such family records would prove sufficient in itself to seriously affect proper occlusion of the teeth, and it is indeed fortunate that such persistence for normality on the part of nature is as potent as the unknown causes that dominate abnormal tendencies in other cases. I feel justified in saying that the satisfactory results obtained in the treatment of many cases of malocclusion are due to the fact that the active causes either subsided before or during the course of corrective treatment.

In cases of children who are endowed with a robust physique and who possess a normal respiration, the loss of one, or even the two maxillary central incisors through accident at the age of three years, does not necessarily affect the occlusion of the permanent teeth, providing that function of the deciduous buccal teeth remains unimpaired. The maintenance of function

of the deciduous and first permanent molars seems to be of the most importance in promoting normal arch growth.

In no case however has it been observed that accidental loss of one or more mandibular incisors at the age of three or thereabout, has occurred without detrimental effect upon arch growth in the canine region, and a later precipitation of malocclusion of the permanent teeth.

The premature loss of deciduous canines, usually due to early absorption of their roots, is invariably followed by a closing up of the space. The distal roots of the second deciduous molar frequently absorb, permitting the first permanent molar to migrate forward, the usual result of which movement, if unchecked, is an impaction of the second premolar. When such a loss occurs in the maxillary arch, the case, later on, may appear to be a typical Angle Class II malocclusion.

The difference of process and result between the absorption of the roots of the deciduous canines and those of the second deciduous molars is this: the canine root absorbs regardless of whether the permanent canine is encroaching or not, but invariably when the second deciduous molar is so affected before the time of partial or full eruption of the first permanent molar, we find the distal root of the deciduous molar absorbed, and the mesiocclusal angle of the crown of the first permanent molar burrowing under the deciduous one.

There is suggestion of like situations in the absorption of deciduous canine roots and those of the second deciduous molars, because, whenever a second deciduous molar becomes affected, the deciduous canine is invariably loosened from the same cause, but such suggestion is not presented in reverse order, for the deciduous canine may be permaturely thrown off and the second deciduous molar remain unaffected by root absorption. We have here a rule that does not work both ways.

It was observed that premature loss of the deciduous canine occurred more frequently in cases where there was a retarded growth in the anterior part of the dental arch. Irrespective of an apparent normal condition of the child, premature absorption of the roots of the deciduous canines and second deciduous molars occurred, but premature loss of one of the other deciduous teeth occurred so frequently as a consequence of early absorption of the roots, their loss occurring only as the result of caries, defects, accidents, or errors of judgment in extraction. It is but fair to infer that errors in extraction are usually due to the dentist's belief that he is performing a plain duty in extracting a mandibular or maxillary deciduous canine for the purpose of giving more space to an erupting permanent lateral incisor.

Dewey says: "The early loss of deciduous teeth may be constitutional, as, for instance, when it is associated with rickets." This statement is not upheld by the results of our observation of deciduous teeth in the mouths of children afflicted with the most outstanding forms of rickets. The deciduous teeth of these children were retained late, instead of being shed prematurely, and another very interesting finding was that they did not seem to be as susceptible to caries as children in apparent good health.

While not fully germane to the subject, because of its part in the gathering of statistical information pertaining to functional defects of both deciduous and permanent teeth, it may not be out of place to mention a tabulated examination made some twenty years ago in a Juvenile Detention Home. Those records of between eighty and one hundred children's cases have been lost, but their disappearance causes no especial regret, in view of my knowledge of the comparative unimportance of that particular piece of investigation.

At that time we were beginning to hear a great deal of talk about the correlation of oral disorders and the general delinquency of children, up to, and through adolescence. I became curious to know, from first hand observation, the mouth condition of the incorrigible child, and the County Detention Home presented a favorable field for such investigation.

About an equal number of girls and boys were inmates, their ages ranging from nine to sixteen years. During the two months in which the examinations were made, I selected from the group only those who were considered to be the most serious social problems. Aside from the usual number of defective first permanent molars that can be found in the mouths of any children, selected at random and grouped together at those ages, the general condition of the teeth was good. Among them were few faces of the adenoid type. Functional occlusion of the teeth and dental arch formation was above the average, in spite of the fact that many possessed disproportioned crania.

Fear of squelching the enthusiasm of certain local social and health propagandists, or of being accused of throwing cold water on a good cause, held me from making any published report of my findings, and this is the first time I have ever referred in open meeting to the experience. My only reason for doing so now, is to call attention to the fact that in such small groups a few exceptional cases may be found, and theories built around them do not represent averages, and that such limited investigations are often very misleading as to facts.

As an illustration of this point, the boy inmates of the Home were found most defective orally, but close to fifty per cent of the inmates were girls, ranging in ages from twelve to sixteen years, and they were physically developed beyond their years though low in mentality. It was the girls of the group who raised the average of unimpaired dentition, and so in any attempt to gather unbiased scientific information two points must be kept in mind. First, the size of the group selected for observation must make it representative of some special class of society or its masses; second, exceptional, segregated cases of a certain type must not predominate in the group, as they did in the Detention Home investigation.

I had considered the one thousand surveyed cases as representative of what could be found in the case records of other orthodontists, but for the reason that plaster casts of a child's mouth and other records were very seldom made unless a tendency to malocclusion was suspected or the malocclusion was well defined, I did not feel that the collection of cases was a fair one from which to draw final conclusions in an attempt to determine the percentage of children in whom structural tooth defects affected functional occlusion and arch formation.

All that could be claimed as a benefit from the orthodontic case record survey was its revelation of the extent to which functional defects of the deciduous molar teeth complicate the malocclusion which the orthodontist is called upon to treat.

I was more than ever impressed with the importance of selecting representative groups of cases when I visited Dr. Samuel Lewis at the Merrill-Palmer School in Detroit, and received his personal explanation of the vital statistics being tabulated there. The children Dr. Lewis had under observation more closely approached childhood averages than average orthodontic patients but even so, I do not believe that the class of children selected for observation in the Merrill-Palmer School are fairly representative of the rank and file in even the better city districts. They appeared to me to be distinctly superior in physical vigor. This I attributed to the fact that even though selected as representative of a cross section of the population, the dietary stipulated and the environment of the Merrill-Palmer School rapidly made those children exceptions to the average.

Our true findings as to the cause and effect of premature loss of deciduous teeth must come from a tabulation of statistics furnished by observation of large groups of children, and a re-checking at regular intervals. Only by such painstaking and persistent labor shall we become possessed of any definite knowledge of this subject, or be able to form reliable conclusions.