CAUSES OF INFECTIONS OF THE GINGIVAE AND THEIR TREATMENT

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(Read before the National Dental Association, Boston, Massachusetts, August 23-27, 1920)

DENTISTRY which has been engaged mainly in surgical and restorative measures in which it has made the highest progress is now entering upon an era of preventive dentistry. Our inability to cope with the problems of tooth restoration and replacement, the hopelessness of that task on a quantitative basis, and the recognition of the serious systemic results of infected mouths have compelled us to direct our attack on dental disease at its source, for we must realize that the hope of success in dentistry lies in prevention and not in cure.

The most usual portal of entry of infection into the bloodstream thru the mouth is undoubtedly thru the peridental membrane, and inasmuch as the usefulness and preservation of the tooth also depend upon the maintenance of a healthy peridental membrane, the prevention of disease in this organ assumes paramount importance.

Nature makes provision for this protection by means of a special arrangement of the gum tissues, to a portion of which we give the term gingiva, or gingivae. All of that portion of the gum tissue which lies to the occlusal of the crest of the alveolar process is called the gingivae. It covers the occlusal border of the process, the neck of the tooth, fills the septal space, and overlaps the gingival area of the crown of the tooth in such manner as to protect much of the enamel surface from decay that is not kept scoured and polished by the food during mastication.

The peridental membrane, once exposed to the secretions of the mouth and in direct access to the bacteria thereof, readily becomes infected, which infection is practically hopeless of cure and extremely difficult of control. The gingiva, however, composed of gum tissue and covered by mucous membrane, possesses most remarkable powers of recuperation and of resisting infection. So long as the gingivae remain in a normal healthy state they afford perfect protection to the peridental membranes against infection or disease beginning at the gingival border, and since that point is the most vulnerable and most frequent focus of infection in the mouth it becomes our first duty to maintain the gingivae in sound health. While the gingivae are so highly resistant to injury and infection, it also should be recognized that they are subjected to unusual exposure by injury in mastication, owing to their position in the mouth.

Under normal conditions the form of the crown of the tooth, as a result of its various contours, and especially the

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height of contour on the axial surfaces, is such that during mastication the food passes from the tooth surface and strikes the tooth—whether it be due to wear, decay, unskilful restoration, or other cause—which results in directing the food against the gingiva in such manner as to produce repeated injury, inflammation and infection eventually result, notwithstanding the remarkable vitality and

Fig. 1. Lack of contact of proximal fillings

Fig. 2. Broad, flat contact of proximal fillings
resisting powers of this tissue. So close is the connection between the gingiva and the peridental membrane that serious attachment of the gingiva to the peridental membrane at the gingival line results in a relaxation of the fibers that hold the gingiva snugly against the gingival margin of enamel, enlarges the subgingival space, permits the collection and disintegration of food in the space,
with consequent exposure of gingiva and periodental membrane to infection therefrom, and permits an extension of the gingiva beyond the contour lines of that tissue. These lines normally harmonize with those of the tooth crown, and in this way also makes impingement of the food possible upon the gingiva, with the results already stated.

Since physical injury of the gingiva precedes its infection and disease in practically all cases, it would be well to consider some of the most common causes thereof.

A more careful study of tooth form with special reference to the gingival line and the height of contour, as well as the contact form and position of the gingivae, and a recognition of the importance of a harmonious interrelationship between the contour lines of tooth surface and gingiva, will accomplish great good in preventive dentistry and the control of oral focal infection.

**DISCUSSION**

_J. D. Whiteman, Mercer, Pennsylvania:_ A shockingly large percentage of the causes of this condition is due to poor dentistry.

Obviously, when a patient brings a child for dental attention it is for the purpose of saving the child's teeth. That we consider only an examination for decay or perhaps a prophylactic treatment is merely because we have been taught that these are the only essentials to that end. We know that malocclusion will ultimately and inevitably result in gingivitis; that gingivitis will just as surely result in pyorrhea; that pyorrhea, existing under these conditions, is practically incurable, inasmuch as the cause cannot then be removed; and yet unless malocclusion in the child is sufficient to produce disfigurement it will be allowed to go neglected, only because we have fallen short of our duty to enlighten the parent as to the serious consequences that follow that condition.

A little inflammation of the gums is in itself but an insignificant thing and not at all alarming to the patient; yet, as the essayist has pointed out, the prevention of this apparently insignificant inflammation is really of paramount importance.

It is evident that gingivitis is to be regarded as a progressive, destructive yet fortunately a preventable disease, and that the solution of the pyorrhea problem, lies, not in the treatment of the disease, but in the recognition and correction of the conditions favorable to its development. I do not wish to be understood as holding inefficient dental service entirely responsible for the existence of gingivitis, for
we all know that neglected oral hygiene on the part of the patient is responsible for its full share.

It is important that we teach our patients that in a large sense we as dentists cannot save teeth, but can only put them in a condition so that they can save them.

Charles E. Woodbury, Council Bluffs, Iowa: We in the Middle West see many cases of gingivitis that have been caused by dental errors. The reason that we are chargeable with these errors is because of the fact that we do not study our cases before operating. We are good mechanics but poor pathologists. When a case presents itself much time should be spent on the study of that individual case. We should view it from all angles and decide what is necessary before anything is done. In that way we will correct many of the errors with which the dental profession has rightly been charged.

The average person is not aware of the extent of the interproximal wear that comes from the sliding of the teeth, one against the other. This wear from the distal surface of the third molar on one side of the arch to the distal surface of the third molar on the opposite side of the arch averages, at the age of thirty-five, as much as one centimeter, almost half an inch. When a case presents itself to us for an operation, separation should always be made, no matter whether the decay has been sufficient to involve the contact or not, because there is always a loss of the interproximal space. The teeth should be forced apart so that we can compensate for the wear that is ever present after that age.

The third molars have seemed to be a superfluity, and it is often said that those teeth are of no benefit. In the study of the anatomy of the jaws it seems that the third molars—I do not refer to impacted third molars, or third molars out of alignment—that come in a natural way should stay. They are the most important teeth in the whole arch. They have a special duty to perform aside from mastication. The teeth as they erupt in the jaw move in three dimensions of space. They move forward, outward, and downward, and in the case of the lower jaw, forward, outward, and upward. The especial function of the lower third molars is to keep the contacts. The end of the root is set in a deep hard structure of bone; it is not set in the alveolar process. As it grows forward, it moves all of the lower teeth forward and keeps the contacts tight; thus, as this interproximal wear takes place at the contacts, the third molar is the adjusting screw, the jack screw that holds all of these teeth in tight contact. It also influences the teeth in the upper jaw.

Occasionally cases come to us with the membrane involved from long loss of contact. We are justified in cutting cavities in these teeth, if they are not present, and making gold inlays which carry a spur of filling material from the occlusal surface of one tooth to the occlusal surface of the other tooth, thus making teeth serviceable.

Success of every dental operation is in attention to detail. There is no short cut to excellence in dentistry. We must be thoro. We must study our cases. And when we make an operation, we must make it complete to its last exact detail.

Dr. Friesell (closing): I feel that it is necessary for dentists in general to get back to fundamental principles and understand that the mechanical operation, no matter how perfect it may be mechanically, must also be made in accord with a knowledge of the conditions that govern tooth form and tooth function.