

Neglect of Prevention of Dental Disease

CHARLES C. BASS, MD*
New Orleans

EVERY person, in whatever position in society, surely needs to keep his or her natural teeth healthy and functional throughout life. This can be done only to the extent that damage from the two almost universal diseases of the teeth in this country—caries and periodontoclasia (pyorrhea)—is prevented. Damage from them can be, for all practical purposes, entirely prevented, if the individual knows and consistently follows the right method of personal oral hygiene (home care of the teeth); *but not without it.*

Only One Entirely Effective Method

Only one entirely effective method¹ has ever been known. All others are inadequate and at best only partially effective. In the light of the basic facts as to the microscopic, etiologic and pathologic conditions at the respective specific locations where the lesions of each of these diseases originate and advance, there cannot be any other entirely effective method. Opinions and claims in this regard of anyone—whatever his position of authority and reputation may be, based *only* upon clinical observations, and who therefore does not know, *of his own* knowledge, and does not understand these microscopic conditions—are simply guesswork and often are more or less erroneous.

Disease Lesions

The lesions of each of these diseases, at first, are microscopic in extent; they advance microscopically. They are caused

by microscopic organisms. The tissues involved are composed of microscopic elements, and the destructive processes are microchemical. The lesions originate and advance at the vulnerable locations *only* beneath a thick film of dental plaque, composed essentially of long filamentous type microorganisms, each one attached to the surface of the tooth and extending outward. Organisms of this type, when cleaned off with a toothbrush or dental floss, grow out again from the remaining stumps and stems and soon form another plaque, unless the cleaning is repeated daily. These vulnerable locations are for caries: 1) the depressions at the entrance to the developmental pits and fissures on the occlusal surfaces of the molars and bicuspid; 2) about the approximal contact area between teeth; 3) and less frequent, some large buccal pits on molars; and 4) some abnormal cemento-enamel junction grooves, whenever they are exposed; for periodontoclasia: the surface of the teeth at the entrance to, and *within*, the gingival crevices. These facts can be known or confirmed *only* through microscopic studies of extracted tooth specimens, employing appropriate, simple but necessary methods.

Oral Hygiene Personal and Individual Matters

To prevent these diseases this plaque material must be removed or minimized, *at these specific locations*, frequently enough to prevent reaccumulation of harmful amounts. It is just that simple. Therefore the teeth must be cleaned, *at each of these locations*, with the right kind

* Dean, emeritus and professor of experimental medicine, emeritus, Tulane University School of Medicine, New Orleans.

of both toothbrush and dental floss, every night before retiring. It cannot be done with either one alone. Nothing else is necessary; nothing less can be entirely effective. Oral hygiene is a personal and an individual matter. Each person must be shown in his or her own mouth, by a dentist who knows and follows it himself, exactly how and where the teeth must be cleaned.

Effective Prevention not Generally Recognized

This method of cleaning the teeth, whereby the two diseases and their consequences can be prevented, has not been taught in the dental schools.² On the contrary, for more than 40 years, quite inappropriate and inadequate methods of brushing (Charters, Stillman, various modifications of these) have been taught and promoted.³ Most people who brush their teeth at all try to follow some such faulty method. The *absolute necessity* for proper use of the right kind of dental floss, in addition to proper brushing, has not been generally recognized or effectively taught. In fact, *effective prevention* of these diseases has received little serious attention. Few dentists, or others, know that it is possible.

Dental Floss Absolute Necessity

Caries lesions originate and advance on 20 occlusal surfaces on molars and bicuspids and on 60 approximal surfaces between contacting teeth. The vulnerable locations on the occlusal surfaces can be cleaned adequately by the proper application of the right kind of toothbrush to these areas. Toothbrush bristles cannot be applied to the vulnerable locations on the 60 approximal surfaces. These areas can be cleaned adequately only by the proper use of the right kind of dental floss. Therefore, brushing the teeth right can prevent caries on only 25 per cent of the vulnerable surfaces. Use of dental floss is absolutely necessary for prevention of caries on 75 per cent of the vulnerable surfaces.

Right Toothbrush and Dental Floss Required

For prevention and control of periodontoclasia 64 of the 128 vulnerable surfaces, at the entrance to and within gingival crevices, can be cleaned adequately by the proper application of the right kind of toothbrush. The other 64, interproximal, surfaces can be cleaned *only by* the proper use of the right kind of dental floss.

Not only do many dentists follow themselves, and advocate to others, inappropriate and inadequate methods of brushing the teeth but they approve, promote or acquiesce in teaching these methods to children in the schools, with the implication or claim that caries can be prevented thereby, which is not so. Thus the belief is promoted that brushing the teeth is all that is necessary. The fact is that both approximal caries and interproximal periodontoclasia can be prevented and controlled *only by* the proper application of the right kind of dental floss at these locations. Under these circumstances, persons who would like, *or are anxious* to know how to keep their teeth *clean and healthy* have little or no chance to learn that it can and should be done, or how to do it.

Patients Should Be Instructed in Proper Care

If there is only one entirely effective method of personal oral hygiene, which I assert is the case; and since people must rely upon their dentists for dental health advice, then it is important for dentists to know this exact method themselves and to be able and willing to teach it to their patients. Dentists, who did not learn it in dental school, have to learn it afterwards. They also have to learn to avoid instructing their patients to carry out unnecessary, superfluous procedures which confuse and tend to distract from learning and following exactly what is necessary and effective.

Armed Services Could Promote Learning

One area in which it should be possible to promote learning and following of ef-

fective personal oral hygiene, and thereby prevention of dental disease, is in the armed services. Hundreds of thousands of the finest young men (and some women) are drafted or otherwise brought into these services. From the day of induction to final discharge, and sometimes much longer, their dental health-welfare, and to some extent that of their dependents, is a responsibility of the government.

Practically everyone, when he enters the service, already has sustained from some to much damage from caries. In addition they usually have many unrecognized, less advanced lesions, both on their occlusal surfaces and on the approximal surfaces of their contacting teeth. All have demonstrable, active, advancing periodontoclasia lesions around most of their teeth.

Although damage from these diseases can be prevented, practically 100 per cent, by the right method of personal oral hygiene, *and in no other way*, they now go through their period of service with active, advancing dental disease and are finally discharged, without being taught and induced to follow the only effective method of personal oral hygiene ever known. The dental officers had not learned this method before they were inducted and do not learn it afterwards. Therefore, they are not prepared to teach and promote effective oral cleanliness and dental health.

This situation is a shame and a disgrace. It is a serious reflection upon the leading authorities, in the dental profession, especially those in dental education, and also upon the highest officers in the armed services. Unless and until these officers recognize and know, not just hear about, these facts themselves, they are not prepared to successfully direct effective preventive dental health service by those under their command. The situation is also a severe reflection upon the responsible governmental system that blindly tolerates this enormous health-welfare deficiency in the armed services.

Damage and impairment of function of the teeth accumulate as age advances in veterans from the armed services. This

would not be so if they had been taught, while in service, and had continued to follow an effective method of personal oral hygiene. Since they did not receive the necessary instruction in service, through no fault of theirs, those to whom it could be made available yet would maintain the highest degree of oral cleanliness and dental health thereafter. The right method has been found to be entirely effective through far advanced age.⁴

Should Be Given Highest Priority

Certainly effective personal oral hygiene, and the resulting dental health, should be given the highest priority in any dental care provided under the auspices of the Veterans Administration. The present continuing need for conventional treatment and restorations would be greatly reduced thereby. This will not be done unless and until the dentists employed know the method themselves and are prepared and willing to teach and promote it.

The US Public Health Service

The US Public Health Service is another vast, authoritative, influential government agency in which effective personal oral hygiene, and the resulting prevention of dental disease could be promoted; but it is not. Although the method and the microscopic conditions which make it necessary have been known and available for many years,^{*5} persons receiving dental care under the auspices of the PHS today do not have the benefit of it. It would be necessary for the dental officers to know it themselves and to have the privilege and duty of bringing it to the patients under their care.

Fluoridation?

For more than 20 years the dental division of the PHS has devoted much effort and resources toward promotion of fluoridation of community water supplies, which promises reduction in caries up to, but not more than, 50 per cent, for those

* Reference 5 contains a list of my publications related to this subject, up to that time.

who have it all of their lifetime. The right method of personal oral hygiene promises practically 100 per cent prevention of further caries damage, for those who know and follow it. It also promises, at the same time, practically 100 per cent of prevention and control of periodontoclasia, whereas fluoridation promises none. This universal disease of man originates, as gingivitis, in childhood, continuously advances during adult life and never ends as long as any teeth remain. Notwithstanding reports, claims and opinions to the contrary, I believe that continued ingestion of fluorides actually increases the activity of the already existing periodontoclasia.

A small fraction of what the PHS has put, directly and indirectly, into promotion of fluoridation to reduce caries, long since could have brought the needed information about effective personal oral hygiene to every dentist in the country who is willing to learn it and sincerely wishes to prevent further caries and periodontoclasia activity in his patients. Those who follow this method and keep their teeth clean do not need fluoridated water.

In 1948, the US Congress, at the urgent request, advice and recommendation of dental officers of the PHS and some other misled dentists, appropriated one million dollars for a nationwide demonstration and promotion of topical application of sodium fluoride to the teeth. One of the specified purposes was to "generally publicize and promote interest in the procedure". The original advocate and leading authority for this treatment, which was reported to produce up to 40 per cent reduction in caries, was a PHS dental officer, Dr. John W. Knutson. He was chief dental officer of the PHS for several years until his retirement in 1961.

Application of sodium fluoride to the teeth has little or no specific effect whatever on caries. This million dollar mistake was vigorously imposed, no doubt with good intention, upon the dental profession, the US Congress and the American people, largely through the leadership and in-

fluence of dental representatives of the PHS.

The time and effort spent by dentists since then, in uselessly applying fluoride to teeth, if it had been devoted to teaching their patients effective personal oral hygiene, could have reached, and actually prevented further caries damage in many times more people. In addition, at the same time, it would have prevented further advancement of their periodontoclasia.

For many years now, organized dentistry, following the leadership and wishes of the PHS has vigorously supported and promoted fluoridation of public water supplies. A few years ago the number of new communities starting fluoridation was less than the number rejecting it or abandoning it after it had been started. In the November, 1960 elections 45 out of 50 referendums voted against fluoridation.

This situation led to a greatly increased, more militant promotion campaign in which authorities in the American Dental Association have taken a large part, especially through pressure on the local dental profession and through their publication media, particularly the *Journal of the American Dental Association*. The entire November, 1962 issue was devoted to this subject.⁶ There was a total of 24 articles dealing with one feature or another of fluoridation. Fourteen of them dealt, in part or entirely, with ways of conducting promotional campaigns and overcoming the opposition.

Another example, a large part of the November 1965 *JADA* was devoted to promotion of fluoridation.⁷ There was a total of eight original articles (40 pages), one editorial of highest praise for fluoridation, six short articles (News of Dentistry) relating further successes in final institution of fluoridation where it had not been accepted previously, and one Special Contribution (29 pages) presenting criticisms and ridicule that have been expressed about those who have opposed it.

Of the eight original articles two were authored by dentists (DDS) and six by

non-dental persons — (BA, BS, PhD, 2 MDs in gynecology and obstetrics). The authors of six of the articles appear to be either directly or indirectly connected with or subsidized by the PHS. One (BS) is a staff writer for the *JADA*, and one (PhD, a professor of political science) seems to be independent.

A small fraction of the effort and space in the *JADA* during the past several years, devoted to fluoridation, if it had been devoted to effective personal oral hygiene, could have brought the necessary facts relative to prevention of both caries and periodontoclasia to the attention of all readers who sincerely wish to prevent these diseases.

Comment

Dentists in general certainly are not to be blamed for not knowing themselves, therefore not teaching and advising their patients to follow effective personal oral hygiene. It was not taught or followed in their dental schools. Prevention of dental disease, for which it is necessary, usually receives little attention in the curriculum. What instruction they received in this regard was not based upon adequate accurate information as to the microscopic, etiologic and pathologic conditions in the two diseases which can and should be prevented.

This serious deficiency² in dental education surely will have to be reduced before any considerable proportion of practicing dentists are prepared to successfully promote prevention of dental disease.

Most dentists cannot be criticized for advocating fluoridation of public water supplies. For years they have been constantly urged to do so by an important, highly respected government agency, the PHS, and by authoritative spokesmen for their own national organization, the ADA. It has been so successfully promoted and publicized and has been so strongly advocated by leading dentists until any dentist naturally must hesitate not to endorse it.

One known effect from ingestion by man of sufficient fluorine during the first

eight or ten years of life is profound, life-time alteration in the microscopic and ultramicroscopic structure of the enamel of the teeth. If the damage is great enough, the condition may be recognized macroscopically and is then called "mottled enamel". This altered, abnormal enamel has been found to be less susceptible to the action of acids than is normal enamel. Since caries results from the action of minute quantities of acids produced and retained at certain specific locations, such fluoride affected teeth should be more resistant to caries. It has been suggested that this may be one of the ways in which fluoridation inhibits caries.

Inauguration of fluoridation of community water supplies means, in effect, that everyone living there, young or old, sick or well, with normal or abnormal functions, even those with no teeth at all, must take it for life whether they want to or not.

Does anyone believe, I do not, that life-time ingestion of enough fluorine to alter the structure of the enamel of the teeth, during childhood, does not in any way also affect other organs and tissues of the body. Nor do I believe that all such possible or probable effects can now be recognized or evaluated.

Fluorine is considered to be an enzyme poison, and it has been suggested that this antienzyme effect may reduce production of acids about the teeth, thereby reducing caries activity. Even if this is so, it is not reasonable to assume that its effects upon the countless known and unknown enzyme systems involved in the development and vital functions of other organs and tissues of the body, are likewise directly or indirectly beneficial. Nor is it reasonable to assume that it is possible to recognize, identify or evaluate all such effects.

Many physicians have endorsed fluoridation, thereby contributing their professional prestige and influence to promotion of potentially harmful compulsory mass-medication for inhibition of a local, noncontagious, noninfectious disease which results from inadequate oral hy-

giene. Shame on them! They should know better and I believe most seriously thinking physicians do.

The stepped up promotion effort is succeeding. More and more communities are adopting fluoridation. Three state legislatures, those of Connecticut, Minnesota and Illinois, have passed mandatory fluoridation laws. It is to be hoped that they may be repealed before they go into effect.

Summary

The two principal diseases of the teeth, caries and periodontoclasia, can be prevented, practically 100 per cent, by following the right method of personal oral hygiene, but not without it. Individual personal instruction is necessary. The teeth must be cleaned, at the vulnerable locations, with the right kind of both toothbrush and dental floss, every night before retiring.

This entirely effective method could be made available in each of the armed services and in the PHS; but it has not been utilized.

Fluoridation of public water supplies to reduce caries is potentially harmful mass-medication. Topical application of fluorides has little or no specific anticaries effect, and is not needed.

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New Orleans

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