

(B) **THE PROBLEM OF PARADENTOSIS
(PERIODONTOCLASIA)**

(3) **THERAPEUTICS (TREATMENT)**

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by

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There are many phenomena which indicate that derangements of the general system may act as causative agencies in periodontoclasia. These have been noted for many years and have formed a basis of the so-called „constitutional” theory of this group of diseases. So intricate has been the study of these derangements, that so far but little of practical therapeutic achievement has come from effort in this field. Recent studies in the field of diet, however, lead us to hope that this part of the problem is in a way to be solved, with as great a degree of satisfaction as has the problem of local causes and local treatment.

All students recognize that disease is a product of agencies which may vary considerably in their nature, and which may act either single, or in various combinations. In the case of periodontoclasia, we recognize both local and constitutional causes. My personal conviction is that in the vast majority of cases the local causes are the more important. Correct local treatment will produce satisfactory results in practically all cases without special attention being given to the constitutional aspects. On the other hand, I have yet to see a case

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in which any constitutional treatment, so far devised, has materially improved the condition of the health of the mouth, if the local treatment has fallen short.

Nevertheless, we must recognize the fundamental requisites in a cure of the disease. We must first realize and must always keep in mind, that neither the physician nor the dentist cures disease. Nature reserves this function to herself. Therefore, *the dentist who would treat periodontal disease must satisfy himself that the patients' general health is of such a state that the body can bring about resolution, in the diseased area.* And, it is here that the work of those who study the constitutional causes of oral diseases, may render great service. Those who like myself, give most of their thought and effort to the correction of the numerous local causes of disease which we encounter, recognize the fact that our work is largely concerned with removing those barriers which are interfering with nature's effort to cure the disease.

It might be well to recall at this point that periodontal disease is inflammatory in its nature, and that inflammation is a series of processes which represent an effort on the part of Nature to restore the diseased part to health. As long as inflammation persists, just so long we know that the vital forces of the body are working to eliminate disease.

It should be clear then, that the presence of inflammation in the periodontal tissues is an indication that the body is making an effort to bring about resolution. And, that when the burden of local irritation is lifted, the defensive forces of the body will overcome the disease and restore the parts to health, always providing, of course, that the disease has not progressed too far.

The restoration of health, however, implies something more than the mere relief from irritation. Just as the individual cell must have something within it, which induces it to reach out and appropriate the nourishment brought to it in the blood stream, so must the diseased tissues of the periodontium be

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influenced toward structural repair. The means we employ is commonly spoken of as stimulation. Stimulation, however, not only affects the individual cells in the diseased tissues, but it should influence the local circulation as well. This stimulation may be provided more effectively by local than by constitutional treatment, and, in fact, may be influenced but little by the latter.

With these thoughts as a preamble, I will enumerate briefly the principles on which local treatment, as I see it, is based. If in the first place when we study the healthy mouth, we recognize the fact that the mouth which is free from periodontal disease is clean. Healthy teeth and gingivae are always physiologically clean. Disease and filth occur concomitantly in the mouth. The incidence of uncleanness then, signifies a necessity for treatment. The teeth must be made clean, but the removal of debris in an unclean and therefore an unhealthy mouth, is by no means the end of treatment. Resolution and the regeneration of cells is the end, and the process of scaling and polishing is but one means to that end. Therefore, in any treatment of a diseased mouth, designed to bring healing processes into action, a fundamental item is complete cleanliness of the teeth.

Cleansing of the teeth is somewhat analogous to the removal of weeds which spring up among the plants in a garden. The weeds occur coincidentally with the plants and interfere with their health and well-being, because they interfere with their nutrition which is essential to plant growth. Uncleanness is not the only cause of periodontal disease. Not only is this true, but it is also a fact that it is a symptom of the disease. It, therefore, is seen to play a dual role in the mouth. Thus we find that no matter what the etiology which underlies the development of symptoms, the removal of deposits and concretions from the teeth is essential to the establishment and maintenance of health.

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At this point, it is necessary to call attention to a matter which I bring up reluctantly. Every periodontist has frequent occasion to realize that many dentists who may be conducting the other branches of their practice with signal ability, are, nevertheless careless or inefficient in the removal of calcareous deposits from their patients' teeth. This operation is extremely delicate. It demands the ability to visualize the tooth surface by means of the sense of touch with the scaling instrument as the transmitting agency. Many mouths develop preventible disease thru short-coming in scaling alone.

The second item in treatment is the establishment of functional balance of the teeth in their occlusal contact relations. It is not my intention to convey the inference that a functional occlusal balance is second in importance in the sequence of treatment. We all know that function is of primary importance in the development of health. This applies no more to the health of the teeth and oral structures than it does to the health of the body as a whole. Neither excessive function nor inadequate function will maintain health, nor can continuing health be maintained in the presence of either. Therefore, treatment should be so conceived, as not only to bring about a condition of health but to securely establish that condition, to the end that health may remain indefinitely.

Other of my papers have presented a detailed consideration of the effects of traumatic occlusion together with the means for its detection and correction. Those to whom this injurious agency has been adequately demonstrated, have without exception agreed with the mainpoint of the arguments regarding this factor which I have advanced during the past ten years. Traumatic occlusion is a force in excess of what the supporting structures of the tooth can tolerate. The reasons for this inequality may lie either in the magnitude and direction of the force itself, or in the physiological inadequacy of the supporting tissues. Herein, of course, lies the explanation as I see it of the influence of systemic factors in

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the causation of periodontal disease. Granting whatever importance we may wish to concede to the systemic factor, it, nevertheless, seems sound reasoning to insist that occlusal stress on any tooth shall be brought within the range of what the investing tissues of that tooth can support.

Abundant demonstration can be given of the irritating and injurious effects of excessive occlusal stress, and equally conclusive evidence can be produced to show the benefits obtainable by the relief of this fore. As in the case of the scaling of the teeth, it should be stated that only complete correction of this condition will give appreciable results. Lack of knowledge of the gliding contact relationships of the occlusal planes in the various parts of the mouth, together with a lack of courage in applying corrective measures has been responsible for much disappointment on the part of those who would attempt treatment in this field.

The opposite of traumatic occlusion is an entire absence of occlusal contact. Here the supporting tissues of the teeth suffer, not from the irritation induced by excessive function, but from a lack of resistance due to an absence of the stimulating influences of normal function. Naturally the answer in these cases is stimulation by whatever means are available. The restoration of function it, of course, the logical treatment where this condition obtains. But, whether or not this is possible, there is always available the stimulating influence of the toothbrush, properly used.

This brings us to the third of our division of treatment, an item which is required in the management of any case of periodontal disease. Health is dependent on function and nutrition. Normal function promotes nutrition and were we to use our jaws as Nature intended them to be used, this function should alone induce the stimulation necessary for nutrition. Unfortunately, the best that we can provide in the way of function, thru the modern cuisine, falls short of the requirements. It is, therefore, necessary to supplement this with an

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artificial means for producing stimulation. The medium which has been found most acceptable in my hands, has been the toothbrush. Using the toothbrush for stimulation of the blood-supply in the gingivae is quite a different proposition from using the toothbrush to clean the teeth only. The latter exercise, either fails of its avowed purpose thru inefficient scouring of the tooth surface, or else it cleans the teeth at the expense of the structure of the gingivae. The same instrument, however, when the technique of its use is properly modified, will produce the most striking changes in the health of the gingivae, thru its stimulating influence. And, strange to say, will at the same time cleanse the teeth with a remarkable efficiency.

The principle on which this action is founded is the same principle which underlies the beneficial effects of massage. The primary influence is on the circulation. The arterioles in the marginal gingivae are subjected to an intermittent compression. This forcibly empties them into the veins at regular intervals, and permits them to refill with new blood. As the process is repeated, the blood flows more and more rapidly thru the parts, flushing away all effete matter and bringing an abundance of nutriment to these tissues.

The effect of this massage, for such it actually is, will be exhibited to a profound degree even the first time it is employed. It is astonishing how nearly the coloration and appearance of health may be brought to even an inflamed gum tissue by the first fifteen minutes' use of the toothbrush. It only remains to state that this appearance of health, which at first is but transitory, may be converted into a continuing actuality thru the regular exercise of the tissues around the teeth by this method of using the brush.

Stimulation then rounds out for most cases of periodontal disease, a programme of treatment which has proven to be conspicuously successful in the hands of those who have followed it.

DENTAL RONTGENOLOGY PROMOTING SOCIAL HYGIENE

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by

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Application of X-rays for diagnostic purpose in dentistry nowadays is so natural that it would seem superfluous to point out its importance for practice and science. However, new problems bearing on the narrow field of the alveolar process are permanently presenting themselves to the rontgenologist whose special domain this is and who as a matter of course is gathering considerable material for his observations. The solution of those problems is of vital importance to the theoretical and practical odontology; in other words, dental rontgenology is apt to be a science of powerful vitality under condition that the possibilities offered by dental films be effectively exhausted and particularly if an extensive use is made of tracing anatomical conditions of the alveolar process by the aid of such simple methods. Thus results may be attained, particularly from the point of view of social hygiene, which spread a new light over dental rontgenology.

The importance of an accurate clinical method of examination may under no condition be underestimated; however, the diagnostic methods available to the dentist in fact are well-nigh primitive and in reality do not materially differ from those which a lay observer uses for localization of defects or tooth ache, except a certain refinement. Although ex-

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perienced elder dentists repeatedly state that they can do without radio-grams, still they thus intentionally ignore all such processes as for years were hidden in the jaw and were developing without any symptom; dental therapy was only sought for in case of acute painful inflammations or decay. This standpoint is not compatible with the important aims of social hygiene and prophylaxis. The masticating apparatus of any individual is too valuable a detail of the entire power of the people, but that curing should only depend upon painful cases or cosmetic requirements of the individual.

Sanitation of the mass can only be warranted by a systematic care of all defects of any part of the body before acute symptoms or considerable injury appear. This principle, which in dentistry is applied to the organized dental care at school will, however, be resultless as long as solely incomplete clinical methods of examination are adopted and but more extensive defects are being treated. Here the rontgen diagnosis comes into action, i.e. in no case by means of an incidental film „ad hoc” for determining a disease or symptom already manifest, but then only a systematic rontgen-method showing the complete alveolar process by a set of ten pictures, similar to anatomical sections of the jaws, will constitute an adequate basis from which the actual condition of the oral cavity may be judged. If considered more closely, the following prospects may be outlined:

a. Foci of caries are already accessible during such time of their observation in which clinical methods of examination are ineffective. Dentists should learn to diagnose the intermittence of the line of enamel shadow as initial caries, also to determine on which moment they must take action to prevent pulp infection. The problem of a biological root treatment at the time has not been solved as yet; therefore any aperture of the pulp chamber might cause its possible infection and subsequent infection of the jaw bones. The recognition and treatment of early caries will present the bacteria

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from invading the body, as long as the caries is distant from the pulp. This is the only method for present-day dentistry in the way of social prophylaxis with a view to caries. If this principle is carried out systematically — and I lay stress upon this only being possible by the aid of rontgen diagnosis — the outlook will be unexpectedly favorable.

b. in such cases where caries has already affected and disturbed the pulp, or possibly has inaugurated necrosis, the rontgen method will detect if and how far the process has made progress, even if certain teeth show no reaction. If a root treatment was performed previously, it may be clearly determined whether the regio ramificatoria of the root — which is essential for a filling — is treated correctly. Further it is of importance whether the root filling has furthered the spontaneous healing of an ostitic granulation formation, or whether in spite of all efforts by the dentist the latter is still in existence. Thus rontgen diagnosis is a warrant, which cannot solely be obtained by a mere clinical examination. Although no definite opinion may be given as to the significance of granuloma formation as introducing focal infection, still certain clinical and experimental data would indicate that this suspicion is justified. In cases where repeated post-examination, in spite of correct root fillings, do not show up any tissue healing reaction, which would mean that a surgical operation should be proceeded to, this can be more definitely determined if made visible by radiographs than if no anatomical basis is available. In no way the patient will be unaware of the condition of his jaw bones; for he may observe the destruction black on white. If he declines a surgical procedure in spite of a convincing radiograph, he is responsible for any complication of local or general nature. The dentist as an officer of social hygiene then never may be blamed about lack of precaution. Up till now the dentist trusted the strong defending power of jaw bones under the protection of the notorious lack of symptoms of the ostitic apical process, but here he has

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applied all medical principles so as to safeguard the patient with regard to pain and worse sequelae.

c. It is evident that only a diagnosis built up in this way will be able to reduce the practice of tooth extraction, as is still too much proceeded to nowadays. The times have finally passed during which teeth were extracted for the simple reason of their causing pain. But still the presence and conservation of single masticating units is underestimated, maybe with a view to the results obtained by modern prosthetics. Particularly from a social hygiene point of view, tooth extraction discloses its true character, i.e. a disturbance of the body is intentionally proceeded to by a brute, violent procedure on the level of medieaval medicine. Removal of a masticating unit, entrusted to the dentist, should in any case remain ultima ratio and may not be performed but if all other possibilities have proven impracticable.

d. Dental roentgenology with respect to social prophylaxis does not only benefit the domain above referred to, but also another group of diseases i.e. chronic diseases of the alveolar margin. As long as its confusing denomination was „pyorrhoea alveolaris” and localization took place only by the pus symptom, it remained „nole me tangere” for the mass of dental graduates. If during the process a destruction becomes evident — and as a rule this was the reason to call in dental attendance — the tooth was extracted. It is only the recent systematic studying of anatomical conditions of the diseased alveolar margin which taught us that also the non-suppurative stage of this disease, which I have suggested naming „paradentose”, should be the object of dental endeavours. If this fact penetrates into our profession, this would mean not only a paramount extension of its present domain, but also an infinite benefit to mankind. While drawing up all symptoms, the radiograph has a prominent significance, in that the resorption of the bone tissue of the „paradentium”, a denomination suggested by me, for the fixing apparatus of the tooth

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is in the centre of all symptoms. Therefore an accurate observation of clinical evidences is essential. The inflammatory evidences are playing a considerable part in these group of diseases; on the other hand the fact is clear to any observer that the endogen diseasing properties of the tissue of the alveolar process are the most important factors governing the shape and size of the process. Therefore I have characterized this disease of the paradentium not partially by laying stress on the affix „itis”, but by attaching the more indifferent affix „ose” in which the bi-causal character (i.e. both exogen and endogen) is expressed. Independent from the insight into the resorption of tissue, specially of bone, the rontgen-procedure enables us to recognize the incipient stage clearly. Similar like caries has proven a disease occurring during youth, paradentose is a pronounced phenomenon of advanced age. Already from the 30th year of age any patient, calling in dental attendance, should be examined systematically with respect to the condition of this paradentium margin. We are in the habit of considering the loss of teeth — the final result of an untreated paradentose — as a physiological defect of advanced age. The mastication apparatus second to the skin has suffered most from the results of domestication of mankind. Our teeth are no longer engaged to the same extent as should be in accordance with their natural function; therefore the „organa dentalia”, — as I have suggested naming the combined unit of paradentium and tooth tissue — are particularly subjected to the influences of mechanical and infectious irritation, effective during life. Must civilized individuals consequently count at present on loss of their teeth? i.e. is their life shorter than that of their teeth? This question may be answered in the negative. Often considerable prosthetics will be required. But no sooner modern dentistry has to solve the problem of determining the incipient stages, then they will be successful by the aid of comparatively simple means. Therefore the further-

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ing of a more extensive application of rontgen diagnosis means promoting social hygiene and prophylaxis; it is essential to detect the early symptoms from the radiograph.

The conditions to be considered thereby are manifold. We can clearly distinct two conditions of the bone, in one case the bone shows resorption more or less parallel to the top — designated by me as „horizontal atrophy” (fig. 18) — in the other case the alveolus is infundibuliform — designated by me as „vertical atrophy” (fig. 19). Both shapes are closely connected with regressive gum processes, particularly the formation of deepening of the physiological gum pockets, measuring 1—1½ mm. It is essential to know as to how the bottom of the pocket relates to the top of the bone, e.g. whether it terminates above the bone, or whether it is situated below the bone edge, as in case of vertical atrophy. The radiograph enables to determine this. If a gutta-percha probe is inserted into the pocket, it may be clearly determined whether the gum pocket extends into the infundibuliform bone line. Thus two different shapes may be distinguished, which are of considerable importance, both prognostic and therapeutical. I have named these cases supra- and intra-alveolar partial atrophy (fig. 19). Very often undeterminable cavities are noticeable, which only the radiograph may disclose (fig. 20). They are developing in most of the cases under the appearance of an acute paradental abscess, which up to date was designated as an acute marginal periodontitis. All these processes may be in conjunction with flow of pus; however, pus is just as often failing and therefore is a subordinate evidence in comparison with other symptoms.

Among the various X-ray conclusions in a case of paradentose, also belongs the information on the condition of the fundus alveolaris. Destruction often has made progress down to the bottom of the alveolus and has introduced a retrograde pulpitis or necrosis starting from the apex. It is a matter of course that the conservation of such a tooth is only justified

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by a purely dental indication i.e. cosmetic requirements.

A further problem for the X-ray examination is the observation of the condition of the apical base i.e. such a plane in which the apex is inserted into the body of the jaw. Moving of teeth many times occurs as an accompanying appearance in case of paradentose, by which the well known diastem formations are inaugurated. The „moving” starts by the apical base being elevated, which may be determined too by the radiograph (fig. 18). It is likewise important to examine the condition of the interior alveolar wall on the radiograph and to determine whether it is sclerotic thickened, or spongy perforated, or whether the periodontal space appears widened (fig. 18). In certain cases we recognize a clearly dilatation of interdental vessels (fig. 18), as an evidence of progressive resorption depthwise into the alveolar process. All these symptoms should be carefully combined and together with the clinical tangible appearances they constitute a collectivity on which a systematic treatment may be based. About the latter part of 1924 I have founded a „Society for Research of Paradentose”; this has drawn up a detailed questionnaire.¹⁾

As a matter of fact a systematic therapy could be built up, actually based on radiographs (vide „Ostmann, Vierteljahresschrift für Zahnheilkunde, 1924, volume 1). Thus scientific work has gradually created a broad foundation on which a new odontological working field is growing.

Particularly paradentose and its early recognition is essential from the standpoint of industrial hygienists. We are familiar with the fact that in many industries, handling special metals (such as antimony, mercury, lead) and further in individuals such as motordrivers etc. both gingivitis and destructions are everyday appearances. Here it is indicated to keep such persons, who constitutionally are susceptible to paradent-

1) Questionnaires in German will be sent at discretion to all colleagues gratuitously by the Office of the „Arpa”, Berlin-W 50, Institution of Dr. Weski.

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tose, (suffering of gout, diabetes, heredity) away from said occupations. On the other hand we should endeavour to keep the teeth of those exposed to the dangers mentioned in good maintenance. It would be beyond the scope of this paper to enumerate the measures which modern science has at its command.

As a rule the lack of a broad anatomical base with respect to dental rontgen diagnosis is very unpleasant. I have therefore gathered considerable material by systematical observations on cadavers, whose jaws I submitted to a microscopic and X-ray inspection. This material is bearing on all sorts of pathological conditions in question. These comparative rontgenologic-anatomical researches have turned out surprising results. So they allowed to give a positive explanation for a negative result which often was contrary to difficult clinical appearances. In another place they showed that the diagnose of root cyst was too often made; in cases of apical processes they lead to the interesting conclusion that the denomination „granulating periodontitis” used ever since Partsch carried out his important researches, would lead into a faulty direction; i.e. an inflammation of the periostium occurs more often than an inflammation of the bone mark. Finally modern ideas respecting paradentium have been based upon these comparative rontgenologic-anatomical researches. Not all the questions have been cleared as yet. It is necessary to continue work in this direction, in order to extend the diagnostic base of dentistry. The easiest way is to use the radiograph exhaustively. Dental rontgenology is appointed to become a lively growing twig on the tree of medicine. If it is the final object of medicine to make itself superfluous by a systematic hygiene and prophylaxis, then dental rontgenology has to play a considerable part thereby.

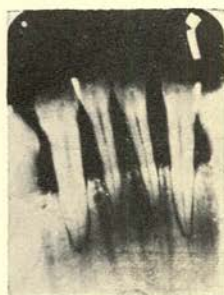


Fig. 18



Fig. 19.



Fig. 20.

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Fig. 18.

Radiograph of lower front teeth.

Existing conditions:

- a. horizontal atrophy of all teeth.
- b. elevation of apical base of 1 1.
- c. diffused widening of the periodontium line.
- d. dilatation of interdental vessels.

Fig. 19.

Radiograph of right lower molars.

Existing conditions:

distal to 6 vertical atrophy with intra-alveolar pocket, the gutta-percha probe inserted into the deepened pocket extends below the bone margin into the widened alveolus.

Fig. 20.

Radiograph of left canine tooth and premolars.

Existing conditions:

In the shadow of root 4 different densities visible, extending to 3. This would seem an undefined cavity which has gradually developed in the way of a recidive paradental abscess. Healing has occurred by flap operation of mucous membrane and bone scraping. (the apical process near 3 is of no interest here).