PROGRESSIVE DENTISTRY AND STOMATOLOGY

4. COMMENT ON NOVITZKY'S DISCUSSION OF "THE PROBLEM OF DEVITALIZED (DEAD) TEETH"¹

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In the foregoing review, on "the problem of devitalized (dead) teeth," Dr. Novitzky states that he has devoted "at least *half of each day*, for over twelve years, to laboratory work and research in connection with problems arising from dead teeth." Forty-four years ago my father first called my attention to the danger to health and life from the retention in the jaws of teeth with non-vital pulps. The clinical evidence in support of his position largely influenced me to decide to specialize in stomatology, even before I graduated from a medical school. The solution of the problem of teeth with non-vital pulps has been the main object of my professional career, although I have taken many fishing and hunting trips meanwhile, when I managed to forget about teeth and pulps.

As soon as I could find listeners, I told them of the wonderful cures of hopeless invalids that had been effected by the extraction of infected teeth. These statements subjected me to much ridicule, for no one else in those days was taking any note of this most serious matter. I made this fight for many years, unaided except for the coöperation of my teacher, Wm. H. Atkinson.

Although my father taught me never to retain in the jaw a tooth with a non-vital pulp, my every effort for forty years has been to elaborate an operative technic that would enable dentists to make it impossible for such teeth to continue to be, or to become, etiologic factors in focal infections. Obstacle after obstacle has been overcome in this

¹ The three preceding units in this series of reviews were published in the JOURNAL OF DENTAL RESEARCH, by (1) Gies, i (1919), p. 525; (2) Merritt, ii (1920), p. 77; and (3) Novitzky, ii, p. 567. A fifth, by Novitzky, follows, and replies to, this one (p. 585).—(Ed.)

endeavor, and today it can be sanely asserted that a large percentage of teeth with non-vital pulps can be so treated as to leave them free to function, without any danger of such teeth becoming factors in focal infection. This conclusion is diametrically opposed to that of Novitzky, but I place my observations, study, and experience, of forty-four years, against the twelve years of Novitzky.

Dogmatic statements carry little weight, unless they rest upon proofs, which are altogether lacking in Novitzky's papers. All laboratory research is subject to error. In order to be reliable, a result, in a clinical relation, must coincide with clinical evidence. The clinical evidence in numerous cases of metastasis and other diseases caused by streptococcus infection that apparently have been cured, after completion of scientific pulp treatment, is the strongest clinical evidence in this connection. In all such cases the x-ray has shown regeneration of alveolar process and absence of re-infection. The writer is preparing a detailed review of this subject; and, pending its publication, takes this means of informing the few hundred men who have successfully used his technic, and all others who may be interested, that the proofs of its scientific soundness and adequacy will soon be presented.

Novitzky makes the statement that examination of hundreds of devitalized teeth has shown that every one of such teeth, left in the jaws, was infected within six months of the time of devitalization. This statement is so indefinite that it is difficult to decide which aspect of it should be discussed. If the tests of the sterility of such teeth were made *after extraction*, the results were without significance, mainly because microorganisms are frequently found in vital pulps; also in the alveolar structure surrounding such teeth. Bacteriologic examinations of extracted teeth are continually menaced by possibilities of contamination. If, however, Novitzky refers to bacteriologic examinations of such teeth *while the teeth were firmly held in the alveolar process*, his observations mean that none of the teeth was properly treated.

Consider the three axiomatic principles involved in the scientific treatment of such teeth, namely, (1) the complete removal of every particle of pulp tissue; (2) the elimination of all diseased tissue in the periapical region; and (3) the hermetic sealing of the canals with a

homogeneous solid mass of base-plate gutta-percha, with which at the same time the exits of all the foramina are hermetically encapsulated. When these essential conditions are established, every outer point of exposed root cementum is successfully insulated from all the living body tissues, and therefore is free from danger of attack. Besides, every vestige of pulp tissue having been removed from within the root, and the canals having been solidly and hermetically sealed, no infection can arise from the interior of the root. According to Novitzky, circulation from the pericementum does not pass into the dentine, making infection from this direction impossible. If this statement were entirely true, the technic for the operation of saving such teeth would be much easier than it is. In that event, the non-vital dentine would be protected by living pericementum; and, where this pericementum was lacking, the exposed cementum would be insulated by the gutta-percha encapsulation.

The fact that Novitzky has failed to see the operation, for the saving of teeth with non-vital pulps, performed as here portrayed, does not gainsay the fact that such operations are successfully conducted daily by hundreds of dentists. Novitzky, and those who agree with him, persist in speaking of such teeth as "dead" teeth. While studying tooth histology in 1882 with Carl Heitzmann, I was repeatedly shown lines of protoplasmic communication from the pericementum, through the cementum, into the dentine. Most of our histologists agree that the cementum receives all necessary nutrition directly from the pericementum. At the meeting of the National Dental Association in New Orleans (1919), Dr. Box, of Toronto, Canada, showed photomicrographic slides of sections of roots which proved beyond doubt the passage of nutrient matter from the pericementum, through the cementum and the granular layer of Tomes, directly into the dentine. The large number of specimens shown by Dr. Box demonstrated that this circulation is greatest in degree in the apical half of the root. Dr. Box's findings agree entirely with clinical observations on the gradual decrease in thickness of the pericementum from the gingiva towards the apex of the root. Novitzky himself practically admits the truth of these deductions where he says (in the foregoing review): "Even if the protoplasmic fluid that probably passes part way into the cementum of normal teeth from the cells of the dental

socket, could proceed to or penetrate the granular layer of Tomes, it would not be sufficient to maintain vitality in tooth dentin."

If every vestige of organic tissue has been removed from the interior of the root, if every foramen has been satisfactorily encapsulated, and if the dentine is left in an absolutely sterile condition, it is immaterial whether any vitality remains in the dentine or not, *so long as the pericementum retains its physiologic condition*. The dentine can now be considered, from the standpoint of health, as analogous to the ideal root filling. The tooth remains a vital organ so long as the cementum receives nourishment through the pericementum. Only if and after the pericementum ceases to function, can such a tooth be correctly called a *dead* tooth.

It is of great clinical importance that this error of nomenclature should be avoided, because we frequently find dead teeth where a portion of the pericementum has been destroyed and where the cementum has assumed a true necrotic condition. Often such a tooth is retained in the alveolus because life continues in a portion of the pericementum. Such teeth have always been properly spoken of as dead teeth, have always been considered a menace to health, and their immediate extraction has always been required. The error of Novitzky's statement, that all teeth with non-vital pulps become infected within six months, must be due to failure on his part to see teeth of this kind that have received proper treatment.

The statement frequently made, that Novitzky's field of observation includes teeth treated by the technic I have taught, will not bear investigation. I have never had an opportunity to teach the technic of this operation to the profession on the Pacific Coast. No operation I know of requires as much personal clinical instruction as this one. The necessity for painstaking care, to the most minute degree, can be appreciated only by those who have received personal instruction in its details. Attempts to save time, and to avoid the trauma that follows all surgical procedures, have led many men to do operations in accordance with my principles but by means which spell failure because the so-called improvements have accomplished quite the reverse.

No one disputes the fact that, as in all surgical operations, a certain percentage of the best attempts are failures. The lack either of un-

derstanding of the situation, or, too often, of courage in the dentist frankly to tell the patient the operation has been a failure, has undoubtedly done much irreparable harm; and such failures are more apt to be seen by Novitzky than successful operations. This, however, is no reason why the people should be prevented from enjoying the blessings of the preservation, in the jaws, of that proportion of teeth with non-vital pulps which can be successfully treated so that these teeth can never become sources of infection.

Again and again bacteriologic tests of root canals ready for filling have given negative results. This statement applies also to canals where some reaming of the gutta-percha has been done months or years after the root filling had been inserted. Finally, we can show roentgenographs of teeth covering a period of twenty years (and of some for a period of thirty years, where there were no initial pictures), in which we see the signs of perfect root fillings and of alveolar structures in apparently ideal physiologic condition in the periapical region. These facts entirely refute the views of Novitzky in this relation.

It is unfortunate that, whenever new fields of observation are opened to medical research, the pendulum invariably swings too far in a radical direction. I have always been outspoken for the removal of teeth which cannot be made safe. It is time, however, that medical men unacquainted with mouth histology, and laymen as well, should understand that a large percentage of teeth with non-vital pulps may be treated in such a manner that they can be retained to function in a healthy way; and that such properly treated teeth will always remain healthy.

The removal of the buccal plate of bone, for the purpose of extracting a tooth through this orifice, has been recommended from time to time for many years. It unquestionably is a procedure of great value in certain special cases, and has been utilized in such cases at intervals by the writer. The oral surgeon is apt to forget, however, that often the future comfort of the patient is dependent on the technic of the operator. The discomfort in cases of flat mouth, as it is commonly called, warns us to be careful to do nothing that would tend to increase such a condition.

When we consider the transitory character of the alveolar structure, after it has ceased to function, we should be very certain that, in

removing the outer plate, we have not hastened the resorption of this process. Anything that tends to alter the character of the mucosa should be steadfastly avoided. It is impossible to suture the mucosa in a way to prevent development of scar-tissue. Such scar-tissue cannot be eradicated; and, if any dental prosthesis covers such scar-tissue, the latter becomes a very sensitive place in the mouth. It is questionable whether currettement of the average case requiring it cannot be done as effectively through the socket as by way of a buccal opening. In the final analysis, the individual dentist must decide what is best for each particular case. Follow-up roentgenograms of such tooth-removals should always be made.

A secondary operation is to be preferred to operations which may entail accelerated process-resorption, or a production of scar-tissue in the mucosa.

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