THE TREATMENT OF THE INFECTED ROOT CANAL

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A REPLY TO PROF. J. G. DE BOER

I have just had the privilege of reading "The Treatment of the Infected Root Canal" (in English translation) by Dr. J. G. de Boer. Certain statements in this paper require comment. Dr. de Boer is to be complimented for his clear, critical comparison between the older chemical disinfectants which were used for root canal sterilization and the newer chemical agents which we call antibiotics. He has apparently come to the conclusion that even though we think we have progressed during the last 50 years in the field of root canal treatment, we have made little or no progress. With this I must take issue. I have spent more than 30 of the 50 years to which Dr. de Boer refers in research, in practice, and in the teaching of endodontics. We have made more progress than Dr. de Boer realizes!

When I was a dental student (1919—1923), I remember well how elated our instructor was when he finally got negative cultures in one case after seventeen treatments. Please do not mistake me. This was not routine, but think what a waste of the patient's and the student's time it was. Today, I am sure such a case would respond to the use of antibiotics in 2 or 3 treatments — and possibly only one treatment. If you think I exaggerate, turn to "Bacterial Infection" by Dr. J. L. T. Appleton 2nd. ed., 1933, page 524 and you will find a chart of 360 cases of pulpless teeth which had been treated with camphorated monochlorphenol (Walkhoff). An examination of this chart shows that negative cultures in most of the teeth were obtained only after from 2 to 5 treatments, and that a few required as many as 13 treatments. Today, so many treatments are unheard of when a suitable polyantibiotic paste is used. Doesn't that denote progress?

Now let's examine further some statements made by Dr. de Boer. He says: "Grossman advises to enlarge the canal widely with reamers and files. This in itself is no news. Already more than 50 years ago root canals were cleansed to the very end by means of root canal files and sulphuric acid .... Of importance, however for an exact judgment of the value of the polyantibiotic paste as disinfectant in root canals is the fact that Grossman indicated, even makes it an absolute condition for the success of treatment, that the canals should be enlarged very much, much more than usual so far, in order to remove all debris". That this is no news does not matter. It is also no news that night follows day and that summer follows spring. These are axiomatic

principles which are taken for granted. Certain principles of surgery were laid down even before Dr. d e B o e r and I were born, and the fact that they are still being followed only shows how correct these principles are. The idea of cleansing a wound of dead or dying tissue holds just as well for surgery of a root canal as for surgery of the abdomen, or any other part of the body. That it is an old principle does not detract from its utility or universality. This principle of thorough debridement and enlargement of the root canal was *not* invoked by me as a companion piece to polyantibiotic treatment but had been advocated by me a number of years prior to the discovery of antibiotics. In the first edition of my book on "Root Canal Therapy" published in 1940,

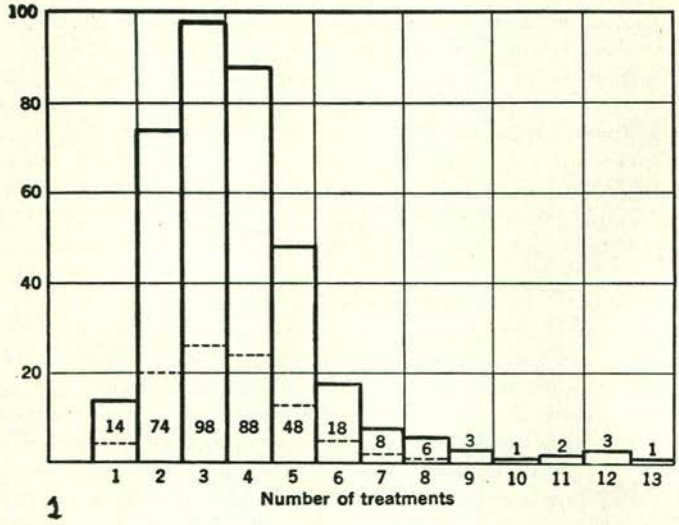

Fig. 1. Number of treatments to get negative culture 1928–1929 and 1929–1930, combined 364 cases. Putrescent pulps; camphorated monochlorphenol. Broken lines indicate per cent (A p p l e t o n)

page 126, I stated: "Adequate mechanical preparation of the root canal, rather than reliance on antiseptics, cannot be stressed too strongly". This was merely a reiteration of what I had stated previously in other publications. In other words, I have always advocated thorough cleansing and enlarging of root canals. Therefore any comparison between the effectiveness of the older root canal medicaments and the polyantibiotic compound which I have introduced, should omit mechanical instrumentation as a factor, since this item is cancelled out in both cases. The cards are not stacked in favor of antibiotics! It is a case of wide canals plus a root canal medicament versus wide canals plus a polyantibiotic. In this equation the wide canals are equal to each other and are cancelled out.

But, as the Chinese say: "one picture is worth a thousand words".

Let us examine the facts pictorially. Fig. 1 is taken from Dr. Appleton's book published in 1933, therefore the data are not biased either for or against antibiotics. Fig. 2 is taken from one of my recent papers. It shows that *diagnosis for diagnosis*, in an equal number of cases, the polyantibiotic (PBSC) required about one-third the number of treatments to secure negative cultures as compared with the older root canal disinfectants (Control Group) which included Walkhoff's monochlorphenol. Is reducing the number of treatments to one-third a sign of progress?

Dr. de Boer quotes from the writings of Richmond (1884), Callahan (circa 1894), Kells and Rhein (circa 1900) and implies that they too had good results by cleansing the canal and using an antiseptic. Need it be pointed out that *most* of their work was done before the days of the x-Ray, even though Kells was the first to use

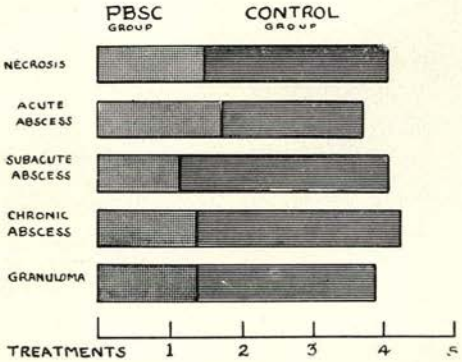

Fig. 2. Showing number of treatments required to secure negative cultures when polyantibiotic was used and when older medicaments were used, diagnosis for diagnosis. (Grossman)

x-rays for root canal treatment? Also, publication of a single isolated case or even of a few cases does not prove anything, just as "one swallow does not make a summer". It is only when one evaluates a few hundred cases that such evidence becomes meaningful.

And now for the statement made by Dr. de Boer that "bacteriologic checks are very disputable, because it is impossible to completely remove the disinfectant from the root canal . . . and the therapeutic is brought into the culture medium". First of all the medicament or antibiotic is greatly diluted in the culture medium, so that it has little or no antibacterial effect. Secondly, it should be pointed out that no neutralizing agent was ever added to the culture medium when the older disinfectants were used. Thirdly, an inhibiting or neutralizing agent is added to the culture medium to inactivate penicillin and streptomycin. Fourthly, bacitracin cannot be neutralized, but if the microscopic amount transferred from the root canal to the test tube on a paper point is so effective in destroying the microorganisms in the test tube, think how much

more of the antibiotic was left behind in the root canal and how much more it is effective there!

Finally, I am in complete accord with Dr. de Boer's statement: "Viewed in this light the method of Grossman draws near to the ideal, at least speaking purely scientifically. For the root canal is prepared widely, sterilized after that without any damage to periapical tissue and finally entirely obliterated by means of a gutta percha filling". He has summarized the principles I have advocated for a number of years even better than I could myself. To attain this, the technical requirements are not too high. "Whatever is worth doing, is worth doing well".

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