DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By

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ENCOURAGING THE USE OF THE X-RAY MACHINE BY THE INDIVIDUAL DENTIST*

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THE subject which I have chosen is one to be considered from many angles. Although it is impossible for me to cover it thoroughly, I will endeavor to bring out a few thoughts for your consideration.

It is a fact well recognized that every dentist in the United States now realizes the value of the x-ray, and if called upon for his opinion he will say that the time has come when the use of the x-ray in dentistry is indispensable. It seems, however, that the principal question is how are we to obtain dental radiograms in the most efficient and economical way. Let us first consider the commercial x-ray laboratory as we now know it. For a few dentists located in the cities there are x-ray laboratories in the same building, perhaps on the same floor, other dentists send their patients out of the building and at times across the cities, while still other dentists in the small towns are compelled to send their patients into the cities to have their radiograms made.

In any of the above cases noted it is almost impossible to give a real efficient and scientific diagnosis as it is between twelve and twenty-four hours before the dentist receives the radiogram, unless the dentist is willing to depend upon the diagnosis of the radiographer, who at the present time I am sorry to say is usually a layman. The above is only one of the many inconveniences the dentist meets with in sending his work to an outside radiographer.

Now let us consider the dentist making the radiograms in his own office and its advantages. Why has not the average dentist an x-ray machine in his individual office? There are four principal reasons, any one of which will sufficiently answer this question. The first is, the expense of installing an x-ray machine, the second, the time consumed in making the radiograms,

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the third, lack of floor space necessary to install the equipment, and fourth, the lack of knowledge of the technical work and interpretation of the radiograms.

I will read a short tabulation prepared by Dr. Henderson. This tabulation is a very concise and pointed answer to the first two reasons mentioned above. Dr. Henderson says in part that he is engaged in the practice of general dentistry in a small county seat and his report covers a period of twenty-five weeks. The report is tabulated, giving the number of minutes consumed in taking the number of radiograms and giving the financial returns for this work. The report begins October 5, and closes March 26. The total number of minutes consumed are 430, the total number of exposures made are 130, the financial returns are \$258.50. Dr. Henderson has figured his investment on a basis of \$725 at 7 per cent, which is \$25.37. The cost of films is figured at \$6. The salary of his nurse, at 50 cents an hour while she is actually engaged in handling the radiograms is figured at \$7.58. The cost of dental mounts is \$4.05. The cost of developing is given as \$1.39, making a total expense of \$44.30. This gives a net return of \$214.20, and after computing on the per hour basis actually consumed in making and handling the radiograms, Dr. Henderson's income is \$29.09 an hour.

Referring to the expense of installation, there are x-ray outfits on the market at the present time which sell for as low as \$575 which are complete, and these outfits can be purchased on terms of \$35.00 a month. I believe this completely covers the first two reasons.

For the third reason, the lack of floor space necessary to install the equipment. The x-ray outfit above mentioned covers an area of seventeen and one-half square inches, it is mounted on castors, is freely movable, and can be attached to any 110 volt, A.C. current, and is so constructed that when not in use the tube arm can be extended upwards and the seventeen and one-half inches above mentioned is all the space necessary to allow for the machine.

The fourth reason, lack of knowledge of radiographic work, and the interpretation of the radiograms is the most important subject to be considered at this time. The technic of operating the machine and developing and finishing the radiograms is very simple and can be learned in a very short time, after installing the machine.

I do not feel that it would be too broad a statement to make, to say that dental radiography is as indispensable as the practice of dental science today. It seems that we should have some definite technic of making and reading our pictures. Suppose, for instance, we classify our tissue in Classes 1, 2, 3, 4, and 5, Class 1 to be known as the cheek and gum tissue, Class 2 as the alveolar process, Class 3 as the root, Class 4 as the crown, Class 5 as the filling materials and metals.

We would then start to read the radiogram from the free margin of the film first which is the cheek, then the gum, etc. If we find that the free margin is not properly exposed or developed, we at once know that the picture is not going to give us the proper detail in any part, regardless

of the angle from which it was taken. This will I believe convince you that the average record kept of bone reconstruction is not accurate because of the possibility of burning out the detail or the lack of some technic of the first and subsequent pictures; for instance, most of those present have been called upon to read radiograms for others in the profession and at a glance you were able to detect the lack of development or the use of too hard a ray.

As an illustration, in a clinic last week, several of us were discussing radiographic check-up work and for demonstration we made a picture of an upper lateral which we knew to have a large area at the apex. This first picture was made at the proper angle with the proper back-up and gave us full detail. The apex was then amputated and all necrotic tissue curetted and immediately another picture was made with the back-up six inches and 35 milliamperes with just a slight elongation, therefore a great deal of the detail was burned out and the condition looked as though new bone had been built in. This is only one of the many cases which prove that it is necessary that each and every dentist should learn more of the real principles of radiography, and I believe the only way is to put in some of our time in learning to operate our own machine, thereby saving time for ourselves, and inconvenience and suffering for our patients.

DISCUSSION

Dr. Clarence O. Simpson.—It is easy to discuss Dr. McAlpin's paper because I disagree with most of the points presented. Had he said that the use of the x-ray was indispensable to the practice of dentistry, there would be no argument. What he said, every dentist in the United States realizes the value of the x-ray and considers it indispensable, he is charitable but more than half wrong. Perhaps the standard of practice in San Francisco is exceptionally high, but generally about 75 per cent of dentists either do not use the x-ray or only occasionally as a last resort. One does not have to go outside of the cities to find this proportion either.

If possession of radiographic equipment would result in its efficient use, it should be made compulsory, but this is no more true than the possession of the necessary instruments results in the efficient practice of prophylaxis. The manufacturers and dealers are spreading enough sales propaganda without this Society starting a campaign. We have a more useful field in improving the practice and developing the science of oral radiography. All dentists who cannot obtain competent radiographic service conveniently should install equipment and learn to properly use it. Other dentists will find it to their financial and professional advantage to refer the work to a specialist. This is not merely an opinion, but it is founded upon more convincing evidence than that quoted from Dr. Henderson. There is no doubt about a dentist's making an x-ray machine profitable if that is his sole motive. He could do the same with loaded dice. The question is, will it be profitable if his motive is the best service?

There are some questions which might be submitted to Dr. Henderson before accepting his calculations. Did he encounter any nervous, "gagging," or loquacious patients in his average record of 3½ minutes per radiogram? Was all of his time productive in other operations excepting the 3½ minutes? How does he obtain an average fee of \$2.00 per film including those which are worthless (if the suggestion is pardonable), when the popular conception is that 50c each is the market price? Is his fee scale in a small town \$25 per hour, and if not, why should his fees for x-ray examinations be larger than for other operations? When a dentist undertakes to calculate the cost of production he usually cheats himself, and gets a larger profit on paper than he can get in the bank. The suggestion that this

Society investigate the economics of radiodontic practice was for the benefit of those who are less successful than Dr. Henderson. He does not need *this* "treatment."

Dr. McAlpin disposes of the knowledge required for radiographic examinations, by stating that the operation of the machine and finishing the radiograms is very simple and can be learned in a short time. Whether intentionally or not, by this statement he contributes to the impression that oral radiography is quite easy, an impression which has been the greatest factor in the neglect of this branch of practice. I cannot say how long a time is required to master radiodontia, because I still have so much to learn, but men who are giving it serious study are unanimous in believing it a difficult science worthy of intelligent application.

Dr. McAlpin's example of incorrect technic is confusing. He states that an exposure with an excessive penetration immediately after curettage "burned out" the detail, and appeared in the radiogram as though repair had occurred. This is the reverse of facts, for excessive penetration would exaggerate bone destruction and minimize repair. However, there is no occasion for caution in overpenetration with a \$575 apparatus which he mentions.