

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

JAMES DAVID MCCOY, D.D.S., EDITOR
LOS ANGELES, CALIF.

THE RELATION OF RADIOGRAPHY TO ORTHODONTIA*

BY WILLIAM A. GIFFEN, D.D.S., DETROIT, MICH.

THE roentgen ray as a diagnostic aid in the practice of orthodontia is indispensable. It is a fact that there is no other branch of dentistry in which the findings of this agent are so definite.

I shall first enumerate the conditions in which the roentgen ray will eliminate all guess work for the orthodontist in making a diagnosis of his case:

If the roots of the deciduous teeth are interfering with the eruption of the permanent teeth.

If the permanent teeth are present.

If they are in a normal position.

If the supporting osseous tissue is of normal density.

If there is delayed eruption—what is the interference.

If permanent teeth have been injured by instruments in removing roots of deciduous teeth.

If in delayed eruption the cause is want of space in a certain direction, can sufficient space be obtained?

The progress of eruption of teeth which have been delayed.

If devitalized first molars or other teeth are present, are the surrounding areas free from infection or evidence of toxic irritation.

If there are any supernumerary teeth present.

If there are cysts or odontomas or other anatomical deformities present.

If pyorrhea pockets exist.

The orthodontist, as well as the general dental practitioner, must take advantage of this valuable aid in the future in order to protect his professional reputation.

It is the writer's opinion that the chief reason so many dentists do not take advantage of the roentgen ray is their desire to save their patient the expense of such an examination. This is a foolhardy policy upon which to conduct a dental practice, for even if an occasional patient does object to the expense or for any reason does not see the importance of such an examination, it is the plain duty of the dentist to at least explain to his patient the possible advantage of the examination; for as a matter of fact owing to the publicity which has been given to the bacterial origin of most human ills through the

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current magazines, the laity are not so ignorant of health questions as many seem to think they are. A dentist should not be afraid to lose patients with so little intelligence they can not realize the value of good health and appreciate honest effort of their dentist to protect it.

AVAILABILITY.

There is no reason why any one of you can not learn to make radiographs if you feel inclined to go to the necessary expense to equip yourselves and can give the time necessary to work out the details of the technic. The essential requirements are an efficient apparatus, industry, common sense, and a knowledge of the danger of too lengthy or too often repeated exposures to the rays. However, this is the simplest part of the work as it requires a great deal of study and practice to become proficient in the interpretation of the radiographs after they have been made, no matter how good they may be.

It is a fact that fifteen operators have sacrificed their lives in this country alone, and many operators and patients have been maimed and disfigured from the same cause. So should any of you decide to take up this work, never fail to fully protect yourself and your patient.

SYSTEMATIC TECHNIC NECESSARY.

As in all other dental operations a definite procedure should be followed in making the examination. A clinical record should first be made by marking on a chart of the mouth all lesions which can be seen or discovered by a digital survey, such as fistulous openings through the mucous membrane, swollen or tender areas, ulcers, enlarged areas either hard or soft over the labial and buccal or lingual surfaces of any of the roots of the teeth; all missing deciduous or permanent teeth crossed out; also check off any teeth suspected of being nonvital. Fillings should also be marked on the chart. With this chart record to refer to the operator will be enabled to sum up the findings of his roentgenograms and arrange them properly on his mountings, accurate and in the minimum of time.

The position I prefer for the patient is in the dental chair tilted back, and for centrals and laterals place the film parallel to the long axis of the medial line and direct the rays on the film as nearly at mean angle between long axis of tooth and film as is possible. For cuspid and molar region place film parallel to long axis of first molar and direct rays on film as near the mean angle as possible, the patient holding the film in position with the thumb. For right side of face use left thumb and for left side of face use right thumb, either upper or lower. In the lower cuspid and molar region place the film parallel to the long axis of the first molar and direct the rays as near to right angles of film as is possible.

As a rule children rather enjoy the examination when they understand that it will not be painful, although it is hard to get them to hold the film for lower bicuspid region occasionally when the soft tissues of the floor of the mouth must be depressed. In difficult situations of this kind place the patient on a table with the head on a soft pillow, using a 5x7 film on the outside of the mandible.



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

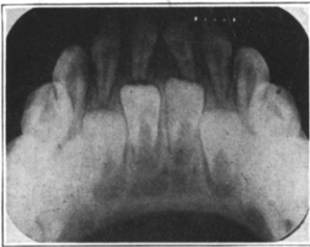


Fig. 5.

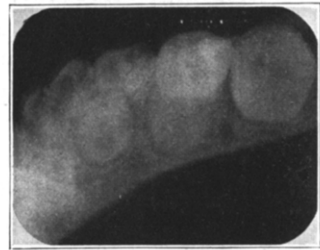


Fig. 6.

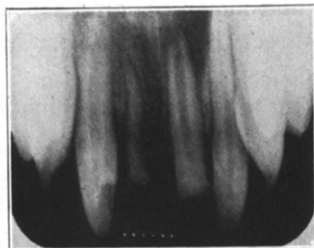


Fig. 7.



Fig. 8.—An unusual case of missing lower centrals.

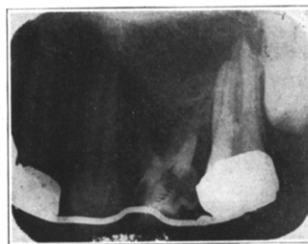
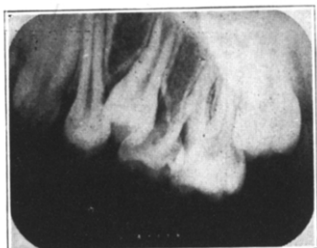


Fig. 9.—Bicuspids not present. Lack of bone development.



g. 10.—Delayed eruption caused by retention of deciduous molar root.

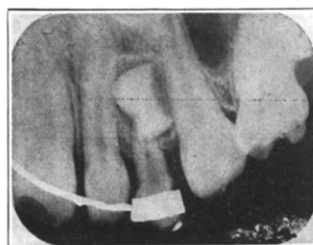
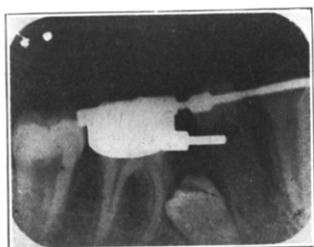


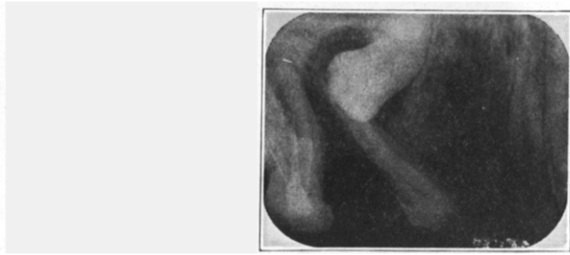
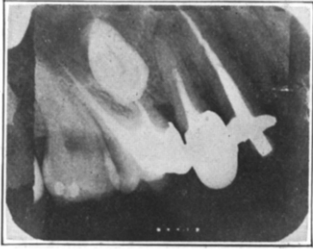
Fig. 11.—A remarkable case. One bicuspid tooth absent, the crown of the other bicuspid being malposed, the cuspid having erupted distal to it. Development of bicuspid has been arrested and also shows a great lack of osseous development mesial to first molar.



Figs. 12 and 13.—Delayed eruption. Lack of space.



Fig. 14.—Showing encysted central. Girl 16 years of age.



Figs. 15 and 16.—Showing serious results produced by unerupted teeth.

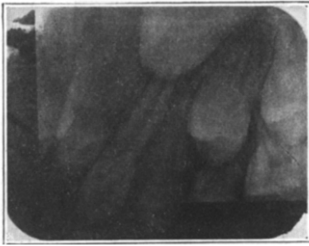


Fig. 17.—A supernumerary lateral apparently perfectly developed.



Fig. 18.—Two permanent cuspid and lateral teeth fused together.



Fig. 19.—Deciduous lateral and cuspid fused together. Permanent lateral missing.



Fig. 20.—Shows evidence of toxic irritation at apex of mesial root of lower first molar.

The best detail from a photographic standpoint on the negative is obtained in young patients by using Hydrogen Tube on transformer with a spark gap resistance of four inches, while passing thirty-five milliamperes at a target distance of eighteen inches through an aluminum filter and two and one-half inch compression diaphragm. Three second exposure for incisors and lower molar regions and four seconds for upper molar region.

INTERPRETATION OF RADIOGRAPHS.

Figs. 1, 2, 3, 4, 5, and 6 represent a roentgen ray examination of a normal mouth of a normal little girl at the age of five (the daughter of a Detroit dentist).

The deciduous teeth are normal, except for gold fillings in upper molars. The permanent teeth are all present and in a normal position. The supporting osseous tissue appears to be of normal density.

Fig. 7 shows upper incisors of a girl of eleven years with the following history taken from her record as filed by the Detroit Board of Education.

Minnie: Eleven years old. Mental age 6 years, 8 months. Height 4 feet, 9 inches.

Mother: Lizzie, 37 years. Weighs 102 pounds. Married at 16. Three living children—1 dead. Six miscarriages before Minnie was born. Minnie is tenth pregnancy. Had right ovary and tube removed following Minnie's birth. Positive Wassermann, Aug., 1915. Mercurial and salvarsan treatments. Attributes condition to infection from husband.

Father: Died at age of 42 years, Dec. 28, 1916, of paralytic stroke. Was intoxicated at time of stroke. Sick one week. Was chronic alcoholic.

Minnie: Full term normal birth. Born in hospital. Mother ill 3 months before birth and 3 months following. Bottle-fed. Has had measles, mumps and whooping cough. Eye trouble was first noticed March, 1916. Taken to Children's Free Hospital, July, 1916; there until August. Wassermann, negative.

Diagnosis.—Interstitial keratitis. Congenital syphilis. Weight 62 pounds. Head circumference $19\frac{1}{2}$ inches. Black hair, brown eyes. Poor appetite. Personal hygiene fair. Eyes in such poor condition that she must either stay out of school or be in class of partial sighted children. Attended kindergarten and B first grade irregularly. Home conditions unsanitary; ordered by Board of Health to move.