SAVE THE PULPLESS TOOTH

By GEORGE C. SHARP, D.D.S., F.I.C.D.

PASADENA, CALIF.

1948

Save the Pulpless Tooth

By GEORGE C. SHARP, D.D.S., F.I.C.D.

Root canal treatment is justified. Fifty years of treating and saving pulpless teeth, using Dr. M. L. Rhein's method of root canal therapy with some modifications, have proved that extraction of pulpless teeth is unnecessary.

My experience with comfortable, satisfied patients has revealed not one symptom of a systemic nature that could reasonably be attributed to their treated teeth. Frequent x-ray check-ups show bone regeneration around the properly treated and filled teeth. Histological examination of those teeth which have been extracted reveals normal cell formation around and newly formed cementum covering the filling material. Records in my files of both infected and non-infected teeth treated and filled 35 years ago show them to be in perfect condition today.

Surgical asepsis is the basis for success in root canal treatment. Without it the finest technical skill is worthless. The greatest care must be taken to see that:

1. The rubber dam is properly adjusted so that no leaks can occur.
2. All materials and instruments are sterile.
3. The sterilized canal is not contaminated.

Treatment Procedure

The first requisite in any form of root canal therapy is to gain free access to all pulp canals.

The use of a rubber dam is imperative. At the very first sitting, after the rubber dam has been adjusted carefully, the canal should be opened gradually, using a small size file and a small amount of sodium potassium (Schreier's paste). The pulp cavity should be moist, but the presence of free moisture will cause the drug to ignite.

A broach should not be used to enlarge the root canal, but if the canal is large enough, and there is sufficient connective tissue in the pulp so that it is possible to insert the broach without binding, then the broach may be inserted and turned very carefully so that the pulp tissue may be removed with safety. (A broach can be tested for safety by flicking it with the finger. If the broach does not break, it is safe to use in the mouth.)

A few minutes after the sodium potassium has been applied, the file (No. 1 Kerr or similar) is started up the canal, the instrument worked gradually forward and back. Then the canal is flooded with a solution of bichloride of mercury 1-500 in Marchand's peroxide, and the canal enlarged to the desired size with root files (not broaches).

Files of different sizes may be used, and the operation may be hastened by using the several sizes of Gates-Glidden drills, but great care and patience should be taken not to force the drill too fast but rather to depend upon the files to enlarge the canal. It is advisable to avoid making a shoulder by using a small file first and then the next size and so on until the canal is sufficiently enlarged.

The canal (or canals) should be enlarged as much as possible at the first sitting, drained if necessary, and washed repeatedly with bichloride solution after sodium potassium has been used.

Penetration to the end of the canal should be accompanied by small amounts of sodium potassium and bichloride solution. Sodium potassium, with the help of Marchand's peroxide in which there is enough bichloride of mercury to make a solution of 1-500 is, to my knowledge, the best way to clean out a canal. Free moisture should not be present when sodium potassium is first inserted, but it is perfectly safe to use *when the rubber dam is properly adjusted.* It also helps to prevent discoloration of the teeth.

Curved roots call for the use of the apexographer. One of the different sizes may be used to get around the curve in the root without going through the angle. The smooth shank of the apexographer and the few barbs at the apex lessen the danger of filing through the side of the canal.

It is of the utmost importance that the canal be enlarged sufficiently to permit a dense filling to reach the end of the root.

When the canal is clean, enlarged, and free of all debris, it should then be partially dried with paper points. If solution of sodium potassium is left in the canal and sealed, it will cause pain.

Infected Teeth

The procedure with an infected tooth is similar. All debris is first removed with cotton saturated with bichloride of mercury in Marchand's peroxide 1-500 and Shreier's paste is then used on a file. The canal is gradually worked through with a fine file and flooded again with the bichloride solution. Paper points should be used to absorb the contents of the canal and to dry it partially, then the file, with very small quantities of sodium potassium, is worked gradually down the canal to the apex.

It is essential to go straight through the apex of an infected tooth at the first sitting regardless of the amount of time it takes. As in lancing an abscess, the seat of the trouble must be reached so that drainage, if necessary, can take place. Use of sodium potassium in the same tooth at the second sitting is seldom advised.

If the tooth is badly infected, the canal should be enlarged considerably at the apex. The more of that part of the tooth that is removed, the better.

Diagnostic wires should then be sealed in and x-rays taken to make sure that the apex has been penetrated.

After the canal has been carefully cleaned, it should be washed with paper points wet with the bichloride solution, the contents thoroughly absorbed with paper points, and the canal sealed. Complete absorption of the canal contents

with paper points after using sodium potassium and bichloride is necessary. Its neglect may cause pain after the canal is sealed.

However the canal should not be completely dry before it is sealed. In my own practice, canals are dried only when they are ready to be filled permanently.

In the case of much infection, serum will collect around the apex of the tooth within 12 to 24 hours, when it should be drained. Sometimes the secretion is clear, sometimes it consists of blood followed by clear serum. Almost always, the serum contains the streptococcus viridans.

If no secretion is found on opening the tooth the second time, the canal is again flooded with the bichloride-peroxide solution, dried with paper points (not air), and sealed. No drugs are used prior to sealing.

If in the meantime the patient feels discomfort, he should return at once and the tooth should be opened and (always using the rubber dam) the canal drained thoroughly. It may be necessary to keep the patient in the chair from fifteen minutes to an hour, and even then it is found that the canal can not be drained completely. It is always safe to seal the tooth if the secretion is merely clear serum.

Drainage is the only treatment recommended. No drugs should be put into the canal before it is sealed, for there is the source of much pain and discomfort. The patient may need to return two, three, or possibly four times. Each time nothing more should be done than to drain the canal until the secretion slows up. After draining, the tooth is always sealed carefully with a paper point left in the canal, and no drugs. A canal should never be left open.

Electromedication

This treatment may be supplemented with electromedication. The canal should be washed out carefully with a normal salt solution, the canal being left filled with the solution. A dry canal should never be treated electromedically.

A pure zinc point (positive pole) is used in the tooth with the normal salt solution. The use of iodine is not recommended because of the discoloration which it may cause. The negative pole, enmeshed by means of a wire in a sponge which has been saturated with salt solution, is placed on the cheek under the rubber dam holder. The sponge should be sufficiently large to prevent the metal from coming in contact with and burning the patient's cheek. The beards of men and the cosmetics used by women prevent perfect contact. The sponge should be wet and kept wet with the salt solution. The tingling sensation will not be annoying if there is proper contact.

Since the electrode should not be permitted to come in contact with metal, either all metal should be removed from the tooth or the wire electrode coated with chlora percha or varnish.

Treatment consists of using one, two, or more milliamperes of current, if the patient has no pain, for fifteen minutes; then the solution is replenished and the treatment repeated for another fifteen minutes.

A current weak enough so that the patient is just conscious of the current but feels no pain yields equally good results. A little lower strength may be tried at first, the current reversed and increased gradually until it is worked up to one milliampere, or better, two or three.

Some patients are unusually sensitive to the current, and experience pain at one-half milliampere. In such a case, it is advisable to let the patient feel pain for a few seconds at one-half milliampere, then increase the current to one or two milliamperes, then gradually decrease it, and it will be found that the patient no longer feels pain.

In the case of severe infection, in treating the canal fifteen minutes at one, or better, two milliamperes, the current should be increased to three milliamperes, provided the patient feels no pain. The canal is then washed with normal salt solution, leaving the solution in the canal, and the treatment is repeated for another fifteen minutes, making thirty minutes in all.

It is advisable to take the electrode out of the mouth before turning off the current. For an unknown reason, some patients experience pain immediately when the current is turned off.

If necessary, electromedication may be repeated in two days.

The important factor in treating the root canal electromedically is that *the canal should not be drained or dried out after treatment except when the tooth is to be filled permanently.*

The tooth must be completely sealed after each treatment. If any odor is subsequently detected, it is proof that fibers of cotton have been allowed to extend beyond the temporary filling and the cotton fibers, acting as a wick, permit capillary attraction which results in reinfection of the canal with the resultant characteristic odor of putrescent teeth. The use of paper points instead of cotton is strongly advised.

Following electromedical treatment, after the electrode needle has been removed from the root canal, the tooth is sealed in the following manner:

1. A sterile paper point or points to absorb the contents of the canal are placed and left in the canal, with the sharp tip cut off so it does not go through the apex.
2. The pulp cavity is dried with air.
3. A piece of pink base plate gutta percha is placed over the canal.
4. Chloroform is used to dissolve the gutta percha partially.
5. Another piece of pink base plate gutta percha is placed.
6. Chloroform is again used.
7. The rubber dam is removed before the final step in order to avoid disturbing the gutta percha root filling in the process.
8. The cavity is dried with cotton saturated with chloroform, and a piece of white base plate gutta percha is placed. White base plate gutta percha insures less danger of disturbing the red gutta percha in the crown of the tooth because it softens at a lower temperature than the red.

My experience with badly infected teeth treated according to this procedure has been that in from three to twelve months the bone regenerates around the tooth just as it does when a permanent filling is put into the canal.

Permanent Filling

Readiness of the root canal for permanent filling can be determined either by bacteriological test or by observation of the paper points used. Blood on the tip of the paper point is a positive indication.

The canal should be washed out carefully with a normal salt solution, the canal being left filled with the salt solution, the electromedical treatment given according to the procedure detailed above, one canal at a time.

After electromedication, the canal should be dried thoroughly with paper points and hot air. The sharp tip of the paper point should be cut off so it will not go through the apex.

Permanent filling of the canal involves the following procedures:

1. Two dishes are prepared: one containing small triangular pieces of red or pink base plate gutta percha; the other containing a square of base plate gutta percha in chloroform.

2. With a small root canal plugger, of which several sizes are available, some of the soft square of base plate gutta percha in chloroform is picked up and used to pick up the triangular pieces of gutta percha. It is best to shape the triangular pieces of gutta percha so that they taper gradually. When they are broad at the base they are more difficult to pack.

3. The softened base plate gutta percha is gradually condensed into the canal, and in the case of infected teeth, a cap of the filling material should extend over the end of the root. When no infection is present, over-filling the canal is not necessary, but experience has proved that over-filling is preferable to under-filling, and the gutta percha should be condensed thoroughly.

4. X-ray of the filled canal should always be taken to determine whether the canal has been thoroughly filled and to see that no air or fumes from the chloroform have been pocketed ahead of the filling to cause pain.

5. If the x-ray shows that the right amount of gutta percha has been placed in the canal, then oxychloride of zinc may be used to complete the filling of the canal. If on the other hand, x-ray shows that the right amount of gutta percha has not been achieved, five to seven days should elapse before correction. By that time, the gutta percha in the apex has had time to harden and it is possible to remove part of the gutta percha in the canal without disturbing that in the apex. Oxychloride of zinc must be used to protect gutta percha root fillings if permanent results are to be successful and future reinfection is to be prevented in case decay should start at the gingival of the tooth and reach the root canal filling.

6. The filling of the canal from this point on depends on whether or not a post for an inlay or crown is to be inserted. If there is to be a post, about one-third of the canal should be filled with gutta percha, covered with oxychloride of zinc, the balance of the canal being left open for the post.

7. In the case of an incisor, oxychloride of zinc should be used almost to the floor of the pulp cavity, then white oxyphosphate of zinc cement used to fill the pulp cavity. Porcelain cement is not advised because of its tendency to discolor.

8. After filling the root canal, the temporary filling used in the crown of

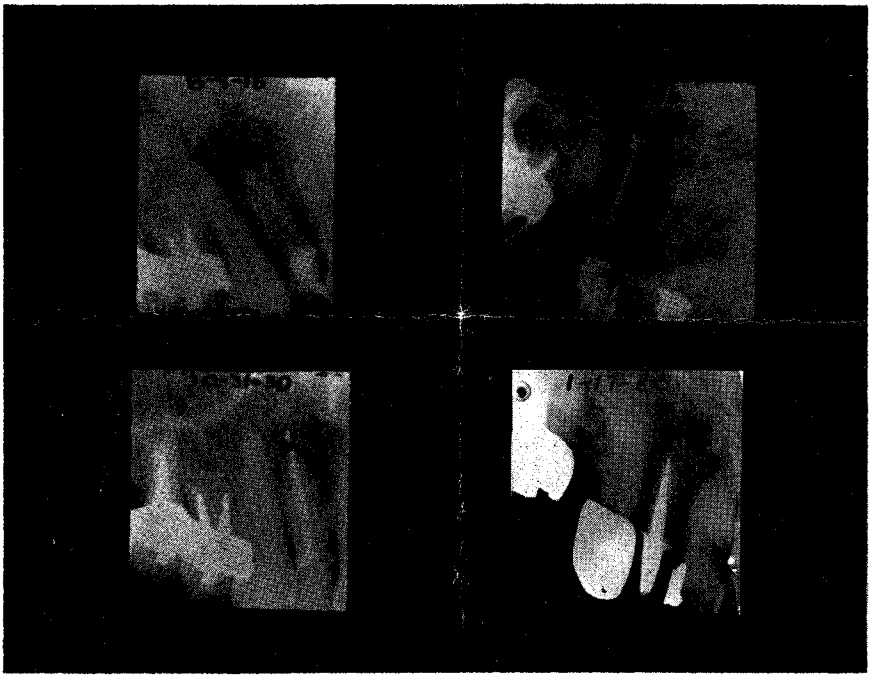
the tooth pending preparation of inlay or crown must not be so high that the opposing tooth will strike it or pain will result.

Clinical evidence indicates that infected teeth seldom cause pain after filling, but those from which a pulp has been freshly extracted may be painful for half an hour, may possibly be sore for several days. A canal from which a normal pulp has been removed should not be filled for at least a week, the cavity sealed tightly in the meantime.

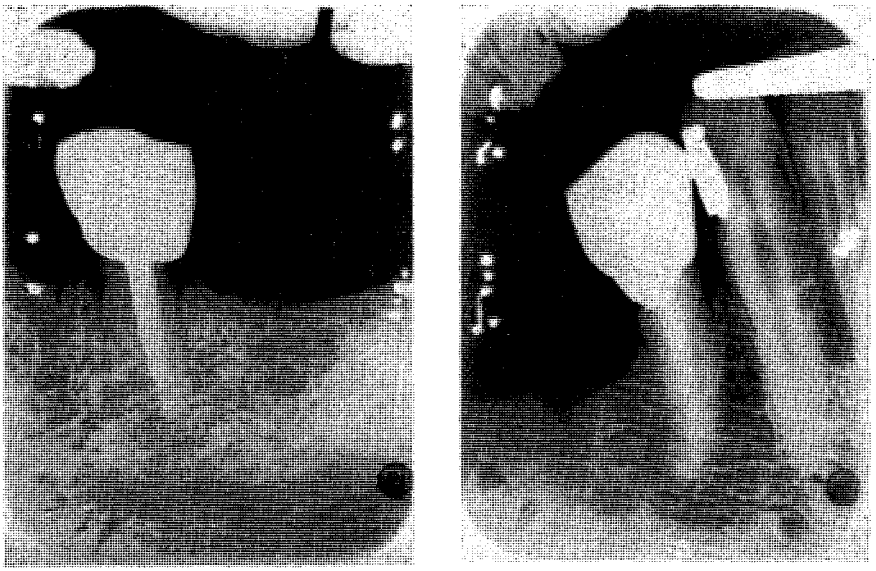
Many useful teeth have been condemned by carelessly-read radiographs and incorrect diagnoses by both physicians and dentists. All too often physicians order the extraction of teeth when the apex comes near the different foramina in the jaws, mistaking the foramina for areas of infection. Sometimes dentists use strong drugs in the tooth canal, then mistaking drug irritation for infection, extract healthy teeth.

In a large percentage of cases, infection can be removed from diseased teeth and their surrounding tissues without extraction, thus saving useful organs for the patient.

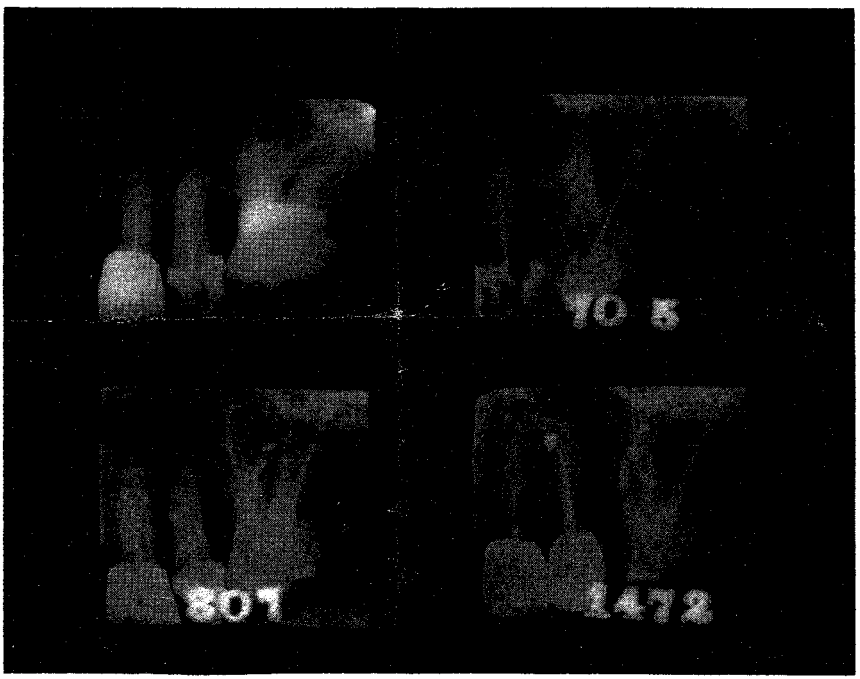
Drs. Rickert, Coolidge, Blayney, Grossman, Marshall, Johnson and Walker use methods that differ somewhat from each other, but they all get good results. The method described here has proved the most successful in my practice over a period of more than fifty years.



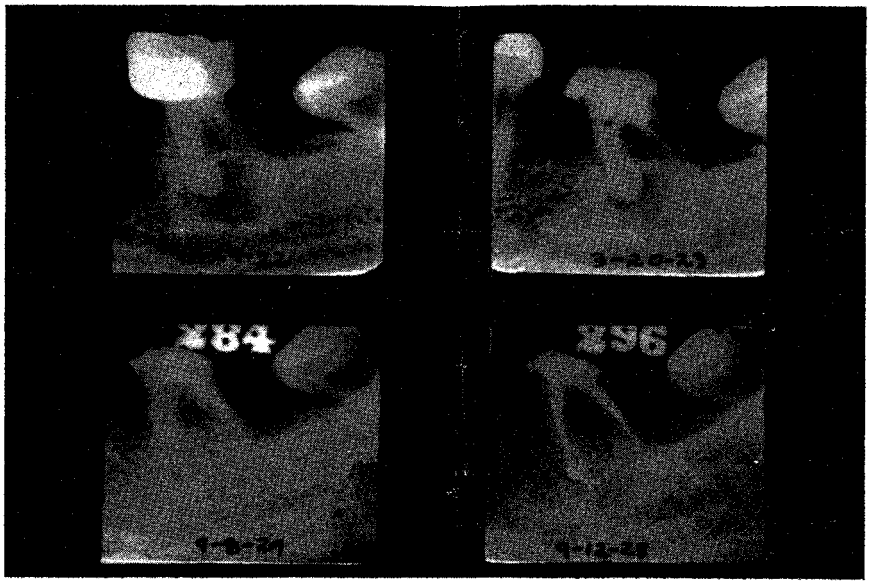
42 years of age when filled.



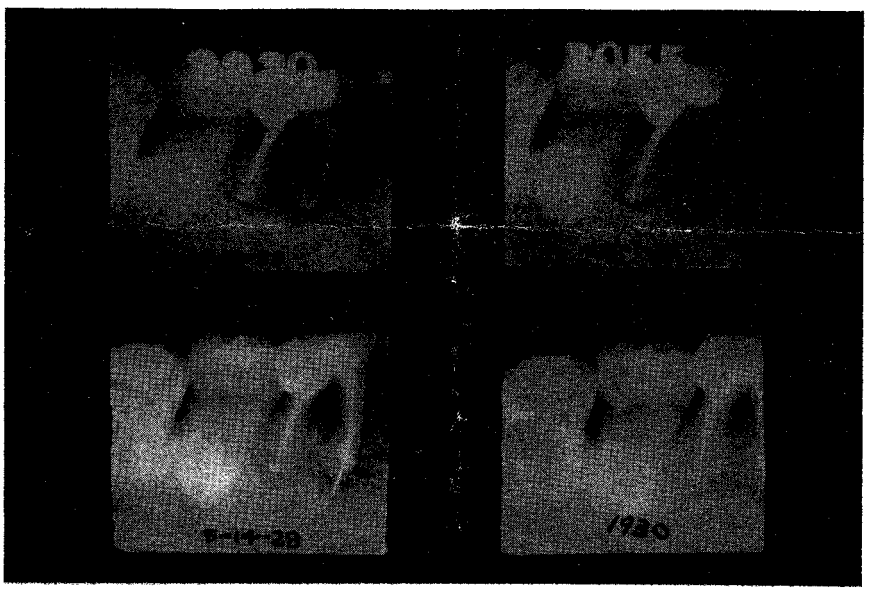
34 years of age. Filled in 1917.



30 years of age when filled.

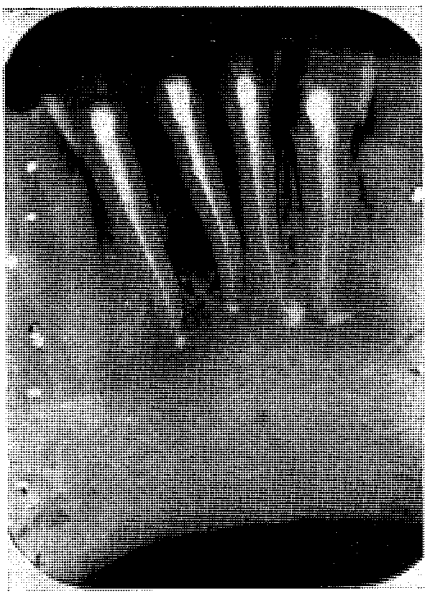


25 years of age when filled.

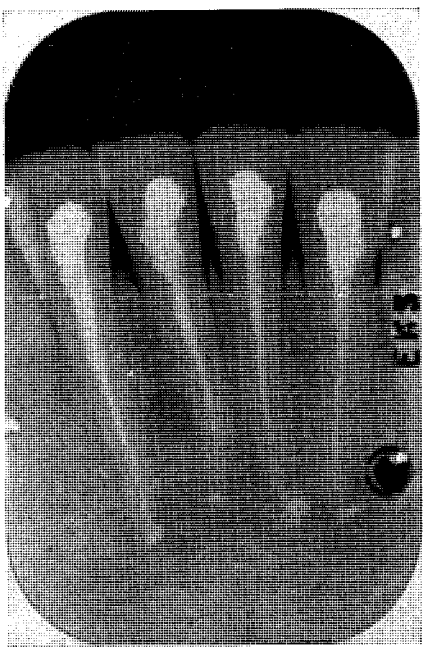


50 years of age when filled.

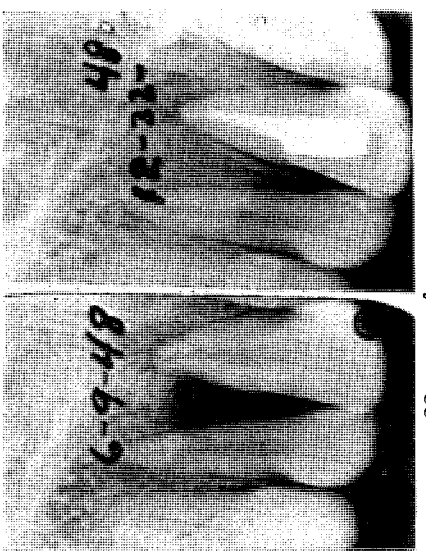
August 21, 1948



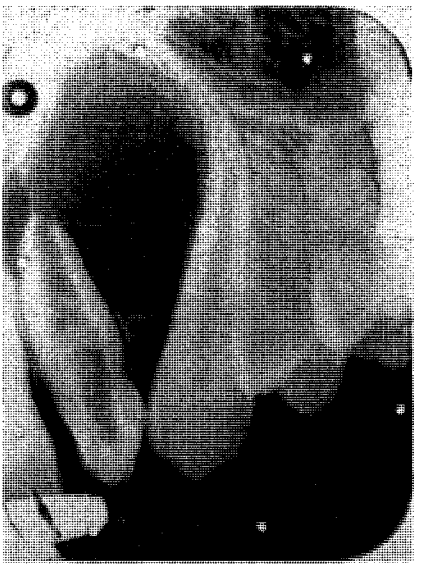
September 11, 1948
20 years of age when filled.



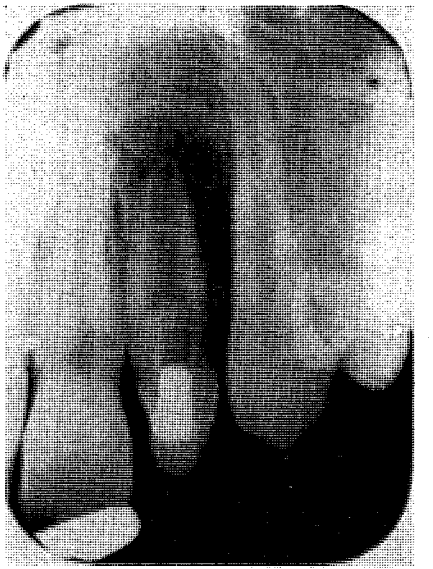
February 2, 1949



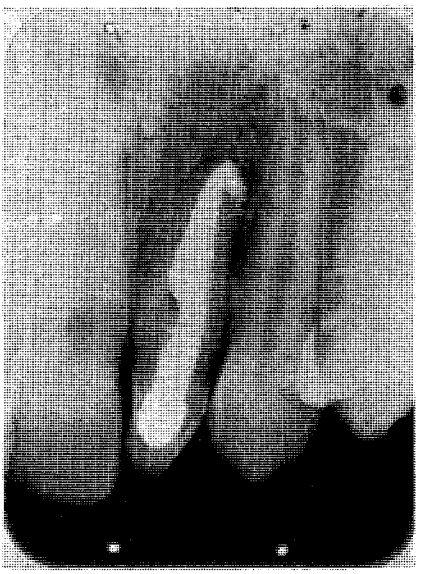
22 years of age.



13 years of age, April, 1944

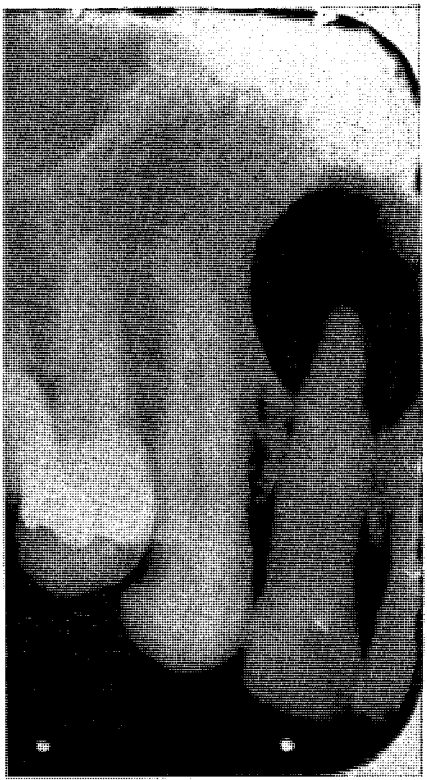


April, 1945

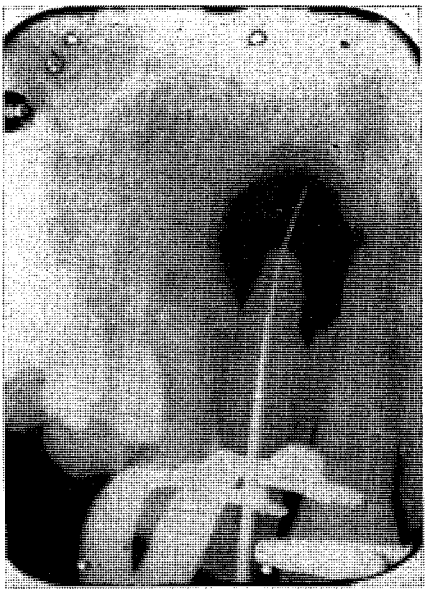


February, 1948

January, 1950



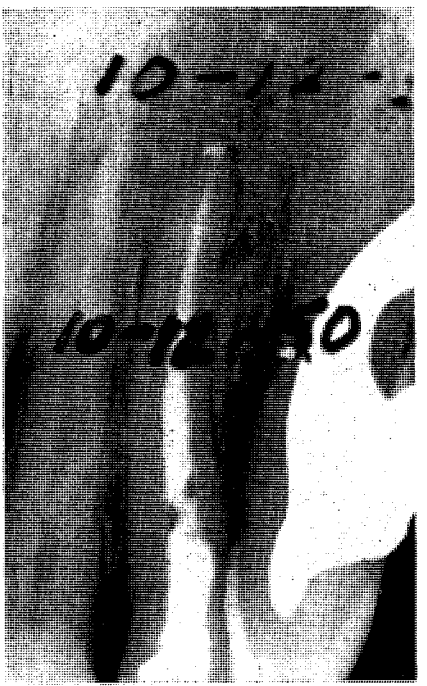
December, 1946



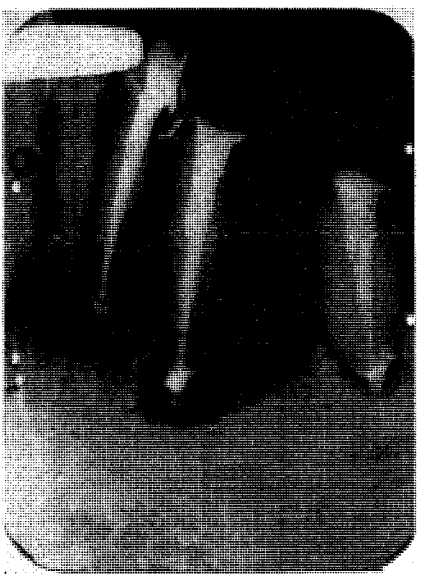
December, 1946
45 years of age.

February 10, 1947

February 10, 1947



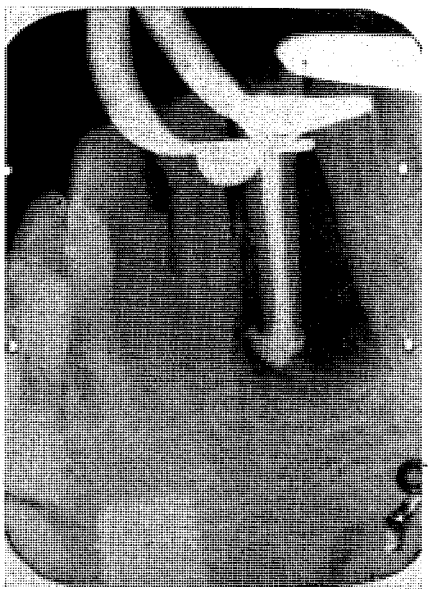
Right and left lateral
of patient on opposite page.



October 19, 1940
40 years of age.

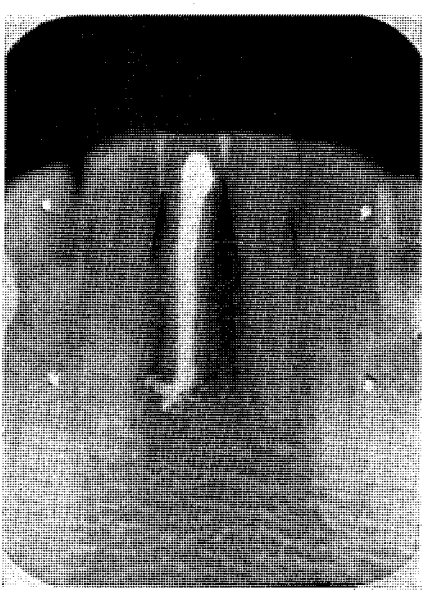
April 29, 1946

July 2, 1945



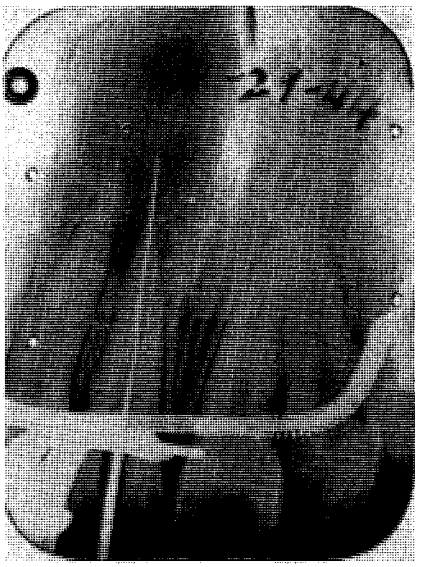
September 13, 1945

22 years of age when filled.

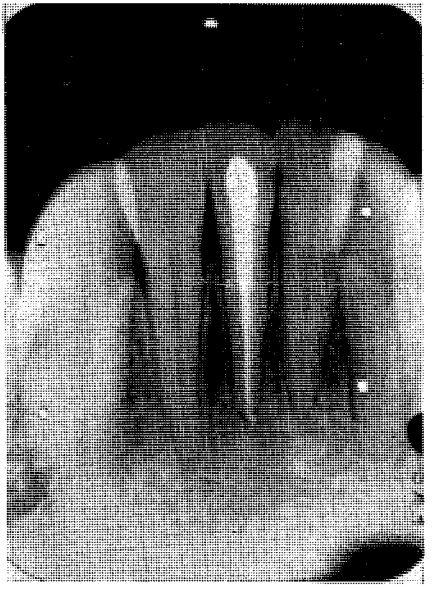


February 2, 1949

January 17, 1951



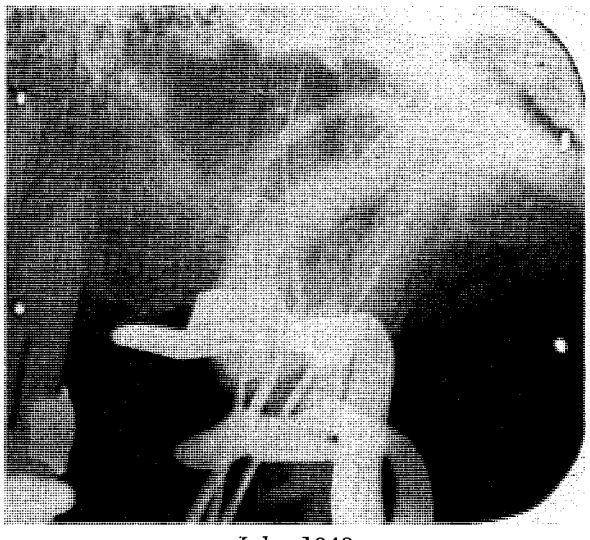
16 years of age when filled.



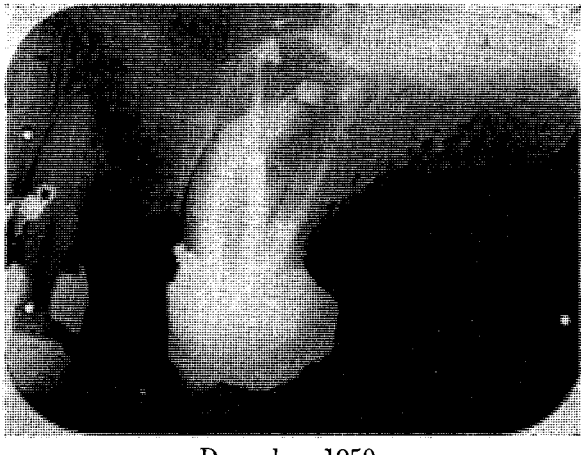
October 2, 1946 December 5, 1948

16 years of age when filled.

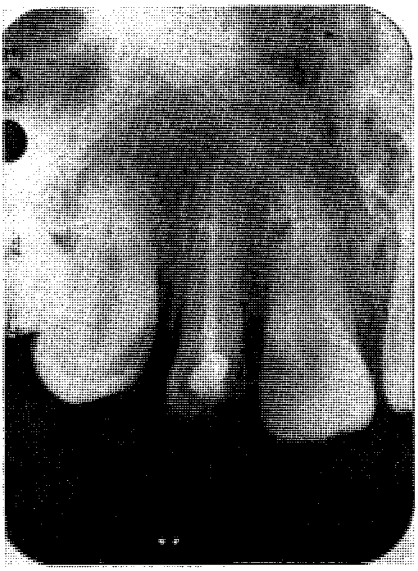
40 years of age, June, 1948.



July, 1948



December, 1950.



August, 1948
20 years of age.