Summary

The basic principles of endodontic treatment are the complete cleansing, shaping, disinfecting and three-dimensional obturation of the root canal system.[10]

When I attended Northwestern Dental School from 1937-1941, I was taught to use a sectional, vertical condensation technique. We were trained to file, ream, hone and shape the root canal so that we could place sections of gutta percha at the apex. We used sodium hypochlorite and peroxide to cleanse the canal. We did not take cultures, and we did not use caustic mummifying agents, which are now known to be carcinogens and are highly condemned. Then, with a warm condensing instrument, we would condense and compress the gutta percha piece by piece against the sidewalls of the canal, obtaining three-dimensional obturation.

Having crossed the threshold into the twenty-first century, we look back and see that the basic principles have not changed over the course of the past sixty-five years, and we now have considerable scientific and clinical evidence to support these principles. Some important advances include the use of calcium hydroxide in root canal therapy, the routine use of root canal sealer, both with and without gutta percha, and the warm gutta percha technique with three-dimensional condensation.

Today we know that the major causes of root canal failure are bacterial contamination, incomplete obturation of the root canal space and lack of a positive apical seal. Bacterial contamination is due primarily to incomplete removal of pulpal remnants, inadequate disinfection and bacteria remaining in the dentinal tubules.

When dealing with a necrotic pulp, studies have shown that the use of calcium hydroxide as an intracanal dressing will dissolve remnants of necrotic pulp tissue and enhance the cleansing effect of sodium hypochlorite.[5]

. . . we look back and see that the basic principles have not changed over the course of the past sixty-five years, and we now have considerable scientific and clinical evidence to support these principles.

Taking all of this into consideration, the following procedures are recommended prior to obturation of the root canal.

When dealing with a necrotic pulp without periapical complications, after biomechanical preparation and cleansing with sodium hypochlorite, place Pulpdent Paste, TempCanal or Multi-Cal in the canal for one day to one week as an antibacterial dressing and to dissolve necrotic pulp remnants. Irrigate the canal with sodium hypochlorite before obturation.[6]

When a small periapical lesion exists, after biomechanical preparation and cleansing with sodium hypochlorite, place Pulpdent Paste, TempCanal or Multi-Cal in the canal for one week to one month. It is best to change the calcium hydroxide dressing at least once during this period of time. Irrigate the canal with sodium hypochlorite before obturation.

When a large periapical lesion exists, after biomechanical preparation and cleansing with sodium hypochlorite, place Pulpdent Paste, TempCanal or Multi-Cal in the canal for one to three months, or until healing is visible radiographically, before obturating the canal. It is best to change the calcium hydroxide dressing every two to four weeks during this period of time. Irrigate the canal with sodium hypochlorite before obturation.

When treating an abscess with purulent exudate, open the canal as much as possible and allow the tooth to drain. It may be advisable to place the patient on an antibiotic at this time. The tooth can be left open for one day to allow for drainage before final biomechanical preparation, cleansing with sodium hypochlorite, and placement of Pulpdent Paste, TempCanal or Multi-Cal. It is best to change the calcium hydroxide dressing every two to four weeks until healing can be seen radiographically. Irrigate the canal with sodium hypochlorite before obturation.

In incompletely formed teeth with wide-open apices, treat the tooth with Pulpdent Paste, TempCanal or Multi-Cal until apexification or apexigenesis occurs. This can take three to twelve months. Change the calcium hydroxide dressing every few weeks for the first three months, and every three months thereafter.

In replanted teeth, treat the tooth with Pulpdent Paste, TempCanal or Multi-Cal for six to twelve months, or even longer, to discourage traumatic rejection, changing the calcium hydroxide dressing on a regular basis. If traumatic rejection is occurring, continue calcium hydroxide treatment as long as necessary.