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Decompression of a Large Periapical Lesion: A Short Treatment Course

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Conservative reduction of a large periapical lesion was accomplished by early root canal obturation and unintentional interruption of the drainage/lavage regime within 10 days of a decompression procedure. Uneventful healing followed and osseous repair was almost complete within 1 yr.

Reduction of the size of large periapical lesions by decompression techniques, cannulization for depressurization, and marsupialization has been reported in the literature (1–5). These are basically alternate techniques if nonsurgical endodontic therapy is not successful or if surgical enucleation is to be avoided. Surgical intervention into a large periapical lesion may compromise the vitality of adjacent teeth, encroach on anatomical structures, and result in serious irreversible damage to the patient. A conservative approach in many cases permits the lesion to heal or reduce its size so that surgical management can be accomplished without compromising adjacent structures.

There are two major disadvantages of an indwelling plastic tube, a plastic chuck, or a cannula as they are presently used. These involve patient cooperation for long-term irrigation and patient availability to shorten the tube or cannula at 2- to 4-wk intervals for an extended time period. Presently, decompression treatment lasts from a few months to more than 1 yr depending on the rate of healing. Freedland (3) questioned the need to maintain drainage for so long a time and Neaverth and Burg (1) noted that leaving the tube in for only several weeks has proven to be equally as effective. The decision to remove the tube, chuck, or cannula is at the discretion of the clinician, with no predetermined optimum time. This case report presents a shortened treatment regimen with obturation 1 wk after canal instrumentation and cessation of irrigation by the patient approximately 1 wk after obturation.

CASE REPORT

A 16-yr-old black female presented for treatment with extensive symptomatic nonfluctant swelling of the palate and moderate swelling of the right anterior maxillary vestibule. The patient's past medical history was negative. Her oral temperature was 101.6°F but no lymphadenopathy was noted. Her mother reported a sequence of trauma first at age 5½ and again at age 9 when the crown of the right maxillary central incisor fractured. Intermittent palatal swelling and spontaneous drainage had been noted for about 1 yr. Radiographs showed a large radiolucent lesion involving the apices of the right maxillary central incisor, lateral incisor, and cuspid (Fig. 1). The central incisor did not respond to thermal or electric pulp tests while the lateral incisor and cuspid gave normal responses. On the basis of the repeated trauma, recurrent swelling, and pulp test results, a diagnosis of total pulp necrosis with a symptomatic chronic apical periodontitis (Phoenix abscess) was made.

The maxillary central incisor was opened without local anesthesia and copious amounts of suppurative exudate were released. The canal working length was established (Fig. 2), instrumentation was completed, a sterile unmedicated cotton pellet was placed, and the access was sealed with a Cavit temporary (Premier Dental Products Co., Norristown, PA). Because of her elevated temperature antibiotic therapy (Penicillin VK, 500 mg, one tablet four times a day) was started along with Tylenol #3, one tablet four times a day as needed for pain.

The patient returned for the second appointment 1 wk after the acute episode. Under local anesthetic the canal was obturated (Fig. 3) with gutta-percha using lateral condensation with Roth 801 Elite Sealer (Roth Drug Co., Chicago, IL). A vertical incision approximately 1 cm in length was made through the mucoperiosteum mesial to the right central incisor in the area of the root apex. The flap was elevated with a periosteal elevator and the perforation of the cortical plate was enlarged with a #8 round bur in the slow-speed straight handpiece with sterile saline as a coolant. After drainage of 2 to 3 ml of purulent exudate was removed, the lesion was aspirated and gently irrigated with 50 ml of sterile saline. A sterile plastic chuck (Midwest American, Melrose Park, IL) was inserted through the perforation into the lesion (Fig. 4). The plastic chuck fit flush with the labial mucosa and no trimming of the tube was required.

FIG 1. Pretreatment panoramic radiograph.

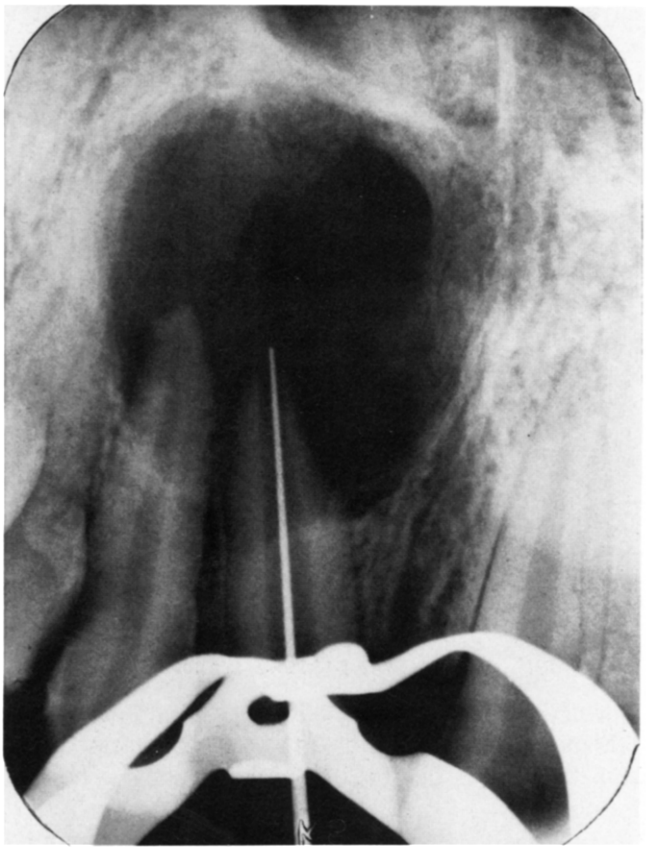

FIG 2. Working length radiograph.

One suture was placed at the superior aspect of the incision, forming a snug collar around the tube portion of the plastic chuck. The patient was instructed how to irrigate the lesion through the plastic chuck and was provided with a syringe and a bottle of sterile saline.

The patient cancelled the suture removal appointment but stated that she was irrigating the lesion three to four times a day, that the swelling was gone, and that she was experiencing no discomfort. Ten days after placement of the plastic chuck the patient returned to the office. Inspection of the maxillary vestibule revealed displacement of the chuck (Fig. 5) and its lodging in the mucous membrane. After the suture and plastic

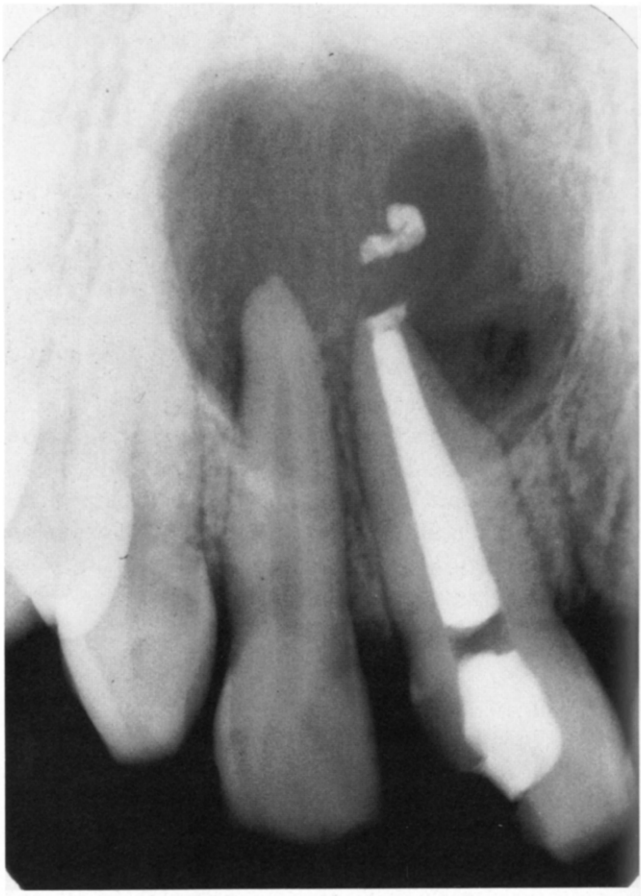

FIG 3. Obturation with extruded sealer.

FIG 4. Sterile plastic chuck in place.

chuck were removed (Fig. 6), we observed that the incision had closed. There was no evidence of lingual or facial swelling and the patient had been asymptomatic since the second day after the decompression procedure had been initiated. It was decided not to perform another surgical procedure to replace the chuck. The patient was observed at periodic recalls and healing was uneventful. Postoperative radiographs

of 3, 9, and 12 months (Fig. 7) show progressive osseous repair while all other teeth involved in the original lesion responded within normal limits to thermal and electric vitality testing.

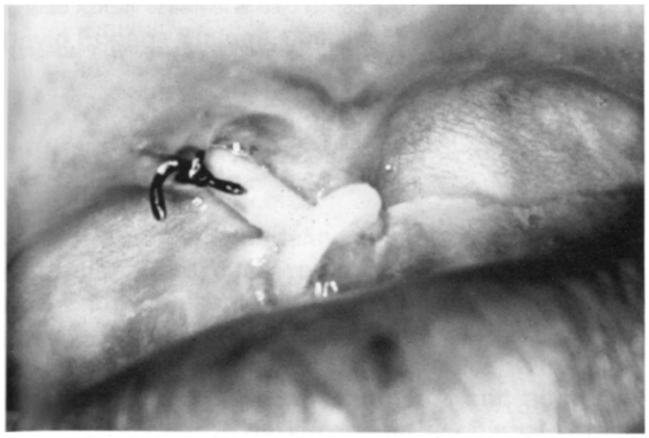

FIG 5. Displacement of the plastic chuck.

FIG 6. Reversible tissue damage.

DISCUSSION

Although most periapical lesions heal after nonsurgical endodontic therapy, those lesions that do not resolve are either retreated nonsurgically or treated surgically. According to Simon (6) if the lesion were a true cyst, it may not heal with nonsurgical therapy but if it is a bay cyst it may. When large periapical radiolucencies present or persist after nonsurgical treatment, long-term decompression may be considered. It is an alternate treatment to apical surgery to reduce the possibility of further complications. The current duration of the treatment is determined by the depth of the defect. This is accomplished by regular checks of the tube length, shortening of the tube, and measuring the depth of the defect every 2 to 4 wk. When the defect is completely filled the treatment is considered to be complete.

The case presented in this article was originally designed for long-term treatment. The canal was obturated without culturing 7 days after instrumentation, followed by the incision, irrigation/lavage, and placement of a plastic chuck. The patient did not return as scheduled for suture removal and for some reason was unable to remove and cleanse the chuck or irrigate the defect even though assurances were given that this had been done. Possibly suturing the plastic chuck into place as described by Arens et al. (7) could have aided this patient in the early postoperative phase of treatment. But regardless of the type of indwelling drain and the duration of placement it was the initial drainage, irrigation/lavage, of the lesion that was essential to initiate the healing process. Once the periapical environment had been suitably altered and the patient was without the clinical signs and symptoms of edema and discomfort, the healing process continued to a suc-

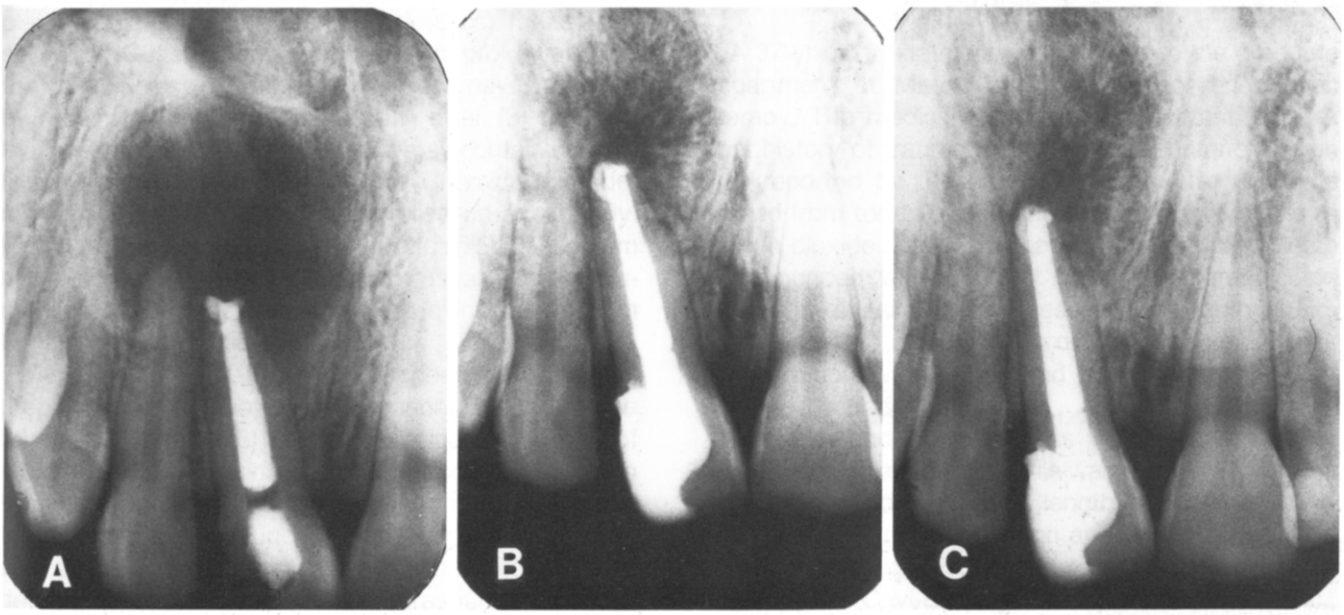

FIG 7. *A*, Three-month posttreatment radiograph. *B*, Nine-month posttreatment radiograph. *C*, One-year posttreatment radiograph.

cessful conclusion without the need of a prolonged patent opening.

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