

3

Definition, Scope, and Indications for Endodontic Therapy

ARNALDO CASTELLUCCI, M.D., D.D.S.

Richard Bence² defines Endodontics as the specialty of dentistry concerned with the diagnosis and treatment of diseases and injuries of the pulp and periapical tissue. In its 1987 Quality Assurance Guidelines, the American Association of Endodontists defines this field as that branch of dentistry concerned with the morphology, physiology, and pathology of the human dental pulp and periradicular tissues. The scope of endodontic therapy encompasses the following:

- differential diagnosis and treatment of oral pains of pulp and/or periradicular origin;
- vital pulp therapy, such as pulp capping and pulpotomy;
- root canal therapy, such as pulpectomy, non-surgical treatment of root canal systems with or without periradicular pathosis of pulpal origin, and the obturation of these root canal systems;
- selective surgical removal of pathological tissues resulting from pulpal pathosis;
- intentional replantation and replantation of avulsed teeth;

- surgical removal of tooth structures, such as in apicoectomy, hemisection, and root amputation;
- endodontic implants;
- bleaching of discolored teeth;
- retreatment of teeth previously treated endodontically;
- treatment procedures related to coronal restorations, by means of post and/or cores involving the root canal space.

It is important to note that the term “periapical” has been justly substituted by “periradicular”: the diseases that affect the tissues beyond the pulp are not necessarily nor always limited to the zone closest to the apical foramen (Fig. 3.1), but may involve any other part of the root surface (Fig. 3.2), if not indeed the entire surface itself (Fig. 3.3). It suffices to consider the lesions that correspond to the lateral canals, which may be found at any level of the root surface, the combined endo-periodontal lesions, and the lesions that develop following vertical root fracture (Fig. 3.4).



Fig. 3.1. **A.** Preoperative radiograph of the maxillary second premolar with a necrotic pulp and a periapical lesion. **B.** Eighteen-month recall.

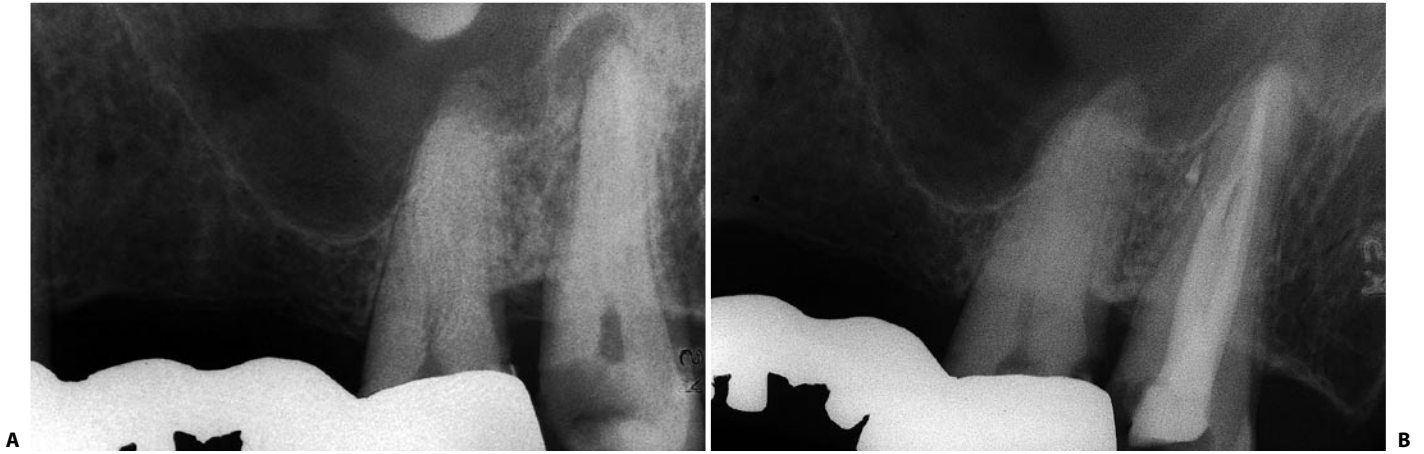


Fig. 3.2. **A.** Preoperative radiograph of the maxillary third molar with a necrotic pulp. Two radiolucencies are evident: a larger one in the periapical area and a smaller one on the medial aspect of the middle one third of the root. **B.** Twenty-seven months later. Note that the two radiolucencies have healed. The smaller one was sustained by a lateral canal.



Fig. 3.3. **A.** Preoperative radiograph. Note the endodontic lesion between the first and second molars involving large portions of the radicular surfaces. **B.** Twentyfour months later.



Fig. 3.4. The radiolucency extends along the entire mesial aspect of the distal root. On extraction, the root was found to have a vertical fracture.

BASIC PHASES OF ENDODONTIC THERAPY

As described by Schilder,³⁰ Weine,³⁷ Bence,² and the entire modern literature, three basic steps of endodontic treatment can be identified: a) the diagnostic phase, in which the cause of the disease is identified and the treatment plan is prepared; b) the preparatory phase, in which, by cleaning and shaping the root canal, the root canal contents are removed and the root canal space itself is shaped to receive a three-dimensional filling; and c) the obturation phase, in which the root canal system is filled with an inert material to ensure a tight seal.

Success in Endodontics depends on following in strict sequence these three steps, which will be discussed in detail below.