The vital organ of the tooth is the attachment apparatus, which consists of three components: cementum, bone, and periodontal ligament. The function and durability of the tooth depend upon it. In fact, the viability of a tooth in the arch depends more on the health of its attachment apparatus than on the presence of pulp tissue within its root canal system. Destruction to this vital organ impairs the ultimate retention of the tooth.

The attachment apparatus can be affected by a variety of diseases, which may be of endodontic, periodontal, or occlusal origin. These different pathologic processes may also coexist in the attachment apparatus of the same tooth, giving rise to so-called “combined” lesions. Awareness of the reciprocal relationship between endodontic and periodontal pathologic processes is of particular importance in diagnosing the endodontic and periodontal components of lesions.

As a matter of fact, this is the most frequent combination of pathologic processes, and it often causes great diagnostic problems. The two disease processes may have many signs and symptoms in common, such as edema of the marginal gingiva, the presence of fistulae draining through the gingival sulcus, probing, sensitivity to percussion, mobility, and periradicular or even periapical radiolucency. This can cause great diagnostic difficulties which become even greater when the two pathological processes coexist or when one simulates the clinical or radiographic appearance of the other.

The importance of a correct diagnosis is obvious (Is the lesion of endodontic origin? Is it of periodontal origin? Is it a combined lesion?), inasmuch as proper...
therapy depends on it (Is only endodontic therapy called for? Is only periodontal therapy indicated? If one has to perform both, which must be done first?), as does the prognosis of the affected tooth.

The goal of this chapter is to examine the reciprocal influences that the pulp and periodontal tissues exert on each other, the means of communication, and the interrelationship between pulp disease and periodontal disease and between pulp therapy and periodontal therapy.

In setting a discussion of the lesion of endodontic origin in a more general chapter on the diseases of the attachment apparatus of the tooth, one may consider endodontic therapy to be a specialized form of periodontal therapy. After all, its final goal is also to maintain the health and function of the tooth’s support tissues.

Periodontists treat damage to the attachment apparatus at its “margin”. Endodontists treat damage to the attachment apparatus in the “periapical” area.99 There is one clear difference between the two cases, as is well known to most clinicians: attachment apparatus lost due to crestal resorption is rarely regained, while the result of an endodontic treatment is complete regeneration of periapical bone, and with it, regeneration of the previously destroyed attachment apparatus.22,99

Many infra-bony pockets fill in with bone, while many do not, the chances increasing with the number of walls remaining in the original infra-bony pocket defect. A three-walled pocket has a greater chance of repair than does a two-walled pocket. On the other hand, as every endodontist knows, the chances for repair of periapical endodontic lesions are enormously high. In periodontal terms, we are dealing with a six-walled infra-bony pocket in most cases, occasionally with a five-walled pocket, and in our worst situation, when the buccal and palatal plates have been destroyed, with a four-walled pocket.

With classical periodontal lesions, the clinician must frequently satisfy himself with elimination of infection and inflammation, and arresting of the lesion. Many periodontal procedures are predicated on the acceptance that the lost attachment is gone for good, and that the result of therapy should be to stop its further loss.

On the other hand, as already said, in case of an endodontic lesion, the result of endodontic treatment is complete regeneration of periapical bone and of the attachment apparatus. In this case, the endodontist has performed periodontal therapy in the periapical area. He has effected therapy on the attachment apparatus that a periodontist treating a tooth with crestal defects could not expect to achieve.

Of course, the greater success with the treatment of the attachment apparatus by the endodontist, as compared with the success encountered by the periodontist, is not due to greater skill or magical powers on the part of one specialist as opposed to another, but is due to the more favorable anatomic environment encountered by the endodontist as compared to that encountered by the periodontist: the endodontist is working in a closed system, while the periodontist is working with an open system.

Once the rubber dam is placed, and access is gained through the crown of the tooth to its apex, the noxious protein breakdown products, tissue debris, bacteria, and toxic products can be eliminated, and the eventually sterilized root canal may be filled.

On the other hand, in the crevicular space, inflammation and reinfection, introduction of food particles and bacteria are constant occurrences.99

Since, even though their therapies have the same goals, the two diseases have different prognosis, a correct diagnosis and treatment plan are extremely important, especially when the two pathologic processes are or seem to be combined.

ENDODONTIC-PERIODONTAL COMMUNICATIONS

In addition to the apical foramen or foramina (Fig. 28.2), the pulp communicates with the periodontal

Fig. 28.2. S.E.M. micrograph of the apex of a lower lateral incisor with three apical foramina (x25).