49. APICOECTOMY, SURGICAL TREATMENT OF PERIAPICAL PATHOLOGY

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Introduction. The management of periapical pathology is considered a cornerstone of endodontic practice; however, in many cases, the periapical lesions are not resolved despite the application of technically successful endodontic treatments. These lesions are often associated with complicated root canal anatomy or extra-radicular microbial deposits and may result in continuous bone destruction and potential systemic consequences if not properly managed. Even though nonsurgical retreatment is considered the first approach in the management of these lesions, the need for surgical intervention is mandatory when nonsurgical procedures are not successful. Apicoectomy is a successful approach for the preservation of the affected tooth by providing access to the infected area, followed by the excision of the infected area of the root and the application of a bacteria-tight seal. Microsurgical techniques and the application of biocompatible materials have made the apicoectomy procedure a reliable and predictable approach for the management of periapical lesions, replacing the former approach of using this technique as a last resort for the management of these lesions.

Aim of study. To evaluate the clinical effectiveness of the apicoectomy approach in the management of periapical lesions.

Methods and materials. Scientific literature from the electronic databases PubMed, Medescape and relevant dental journals. The search was limited to articles published in English between 2015 and 2025.

Results. The available evidence clearly indicates that apicoectomy is an effective treatment for the management of periapical pathology, with success rates of between 90% and 91.3%. An important finding that was established from the literature was the discrepancy that exists between radiographic and histological findings. Although the majority of the lesions, that is, approximately 68.4%, were radiographically consistent with cystic lesions, the histopathological findings established that only 15.8% of the lesions represented true radicular cysts, whereas the majority, that is, 84.2%,represented periapical granulomas. The introduction of the use of the microsurgical preparation techniques coupled with the use of bioceramic materials such as Mineral Trioxide Aggregate (MTA) has significantly enhanced the healing of periapical lesions.

Conclusions. Apicoectomy can be considered an effective modality for periapical pathology when conventional endodontics fails. Its success is closely related to modern microsurgical techniques, materials and imaging. Histopathology is the gold standard for definitive diagnosis. Apicoectomy is the most important factor for a long-term success of apical periodontitis.

Keywords. Apicoectomy,Periapical pathology,Endodontic surgery, Mineral Trioxide Aggregate (MTA).

https://doi.org/10.66603/medespera2026.127