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Extended Abstract

The Outcome of Primary Root Canal Treatment in Post-Irradiated Patients: A Case Series †

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Radiotherapy (RT) is an effective treatment for head and neck cancer. A multimodal approach combining RT with surgery and chemotherapy has produced a significant increase in patients' survival rates. Patients who undergo RT may experience several adverse oral effects, among which Osteoradionecrosis (ORN) is the most severe, and tooth extractions in irradiated jaws are considered as the most severe risk factor.

It is recommended that patients undergoing head and neck RT should have a dental assessment before the start of the RT to minimize the risk of developing ORN by removing oral foci. Sadly, not all patients are referred to a dentist before the beginning of the RT; thus, some patients might require dental extractions during or after radiotherapy. In these circumstances, endodontic treatment is generally preferred to extractions even in non-restorable elements [1].

A preoperative diagnostic digital radiograph was taken to assess the apical status and the dental conditions. All periapical radiographs showed the absence of a periapical radiolucency. All therapies were performed by the same surgeon in a single visit. An intraoperative, a postoperative and follow-up radiographs were taken. The maintenance of a normal contour and width of the periodontal ligament and the absence of clinical signs and symptoms were considered radiographic and clinical success [2].

All patients, after a 277-days (584-90 days) mean follow-up, were asymptomatic, and no teeth presented periapical radiolucency. No ORN was detected in the area of treated teeth. The administered radiation dose in the periapical area of treated teeth was calculated by contouring a 0.5 cm^3 on the radiotherapy planning CT-scan. The patients received a total mean dose of 65 Gy, and the periapical mean dose was 39.36 Gy (range 22.4–63.4 Gy).

The success rate was 100%, regardless of the dose of RT received at the apex of the teeth or the time since patients underwent head and neck radiotherapy. No ORN was observed.

The novelty of this study was the measurement of the periapical radiation doses received by each treated tooth, since a correlation between apical periodontitis and radiation dose in irradiated patients has been shown [3]. However, the absence of ORN onset confirms the safety of the endodontic therapy in irradiated patients. A higher sample size is required to assess the success rate of primary root canal therapy in irradiated patients and to establish a correlation between success and radiation dose.

Conflicts of Interest: The authors declare no conflict of interest.

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