



ENDODONTIC TREATMENT IN A PATIENT PREVIOUSLY TREATED FOR SQUAMOUS CELL CARCINOMA OF THE PREMAXILLA AND UPPER GINGIVO-BUCCAL SULCUS: A CASE REPORT

Dental Science

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ABSTRACT

Osteoradionecrosis (ORN) of the jaws is a self-progressive process of bone destruction and is one of the most serious oral complications of radiation therapy to head and neck. Endodontic treatment plays a vital role in patients submitted to radiotherapy, both for the control of pain symptoms in teeth with acute pulpitis, and for the prevention of osteoradionecrosis lesions that might develop if tooth extractions are performed.

KEYWORDS

Non-Surgical Endodontic Therapy, Osteoradionecrosis, Radiotherapy

INTRODUCTION:

Osteoradionecrosis (ORN) of the jaws is a self-progressive process of bone destruction and is one of the most serious oral complications of radiation therapy to head and neck.

The risk of osteonecrosis of the jaws increases with invasive dental procedures like extractions that expose alveolar bone. Therefore, avoiding extractions using nonsurgical root canal therapy (NSRCT), and restoration has been recommended when those patients have teeth with pulpal and apical diseases.⁽¹⁾ The purpose of this paper is to report and discuss endodontic management in patients who are susceptible to osteonecrosis of the jaw.

CASE REPORT:

A 42-year-old male presented to the Dept. of Conservative Dentistry and Endodontics, C.K.S Theja Institute of Dental Sciences and Research, Tirupati, Andhra Pradesh, India, with moderate carious involvement on upper left second molar (tooth 27). The tooth was non-tender on percussion and did not respond to electric pulp test and heat test (done with gutta percha) confirming it to be a non-vital tooth. A periapical radiograph showed deep proximal caries on the tooth, and a widened periodontal ligament space was associated with the roots of tooth 27 [Figure 1].

Figure 1



Pre-operative radiograph showing the tooth 27 with carious involvement and periapical changes

A diagnosis of necrotic pulp with asymptomatic apical periodontitis was made for the tooth 27. The patient had a history of treatment of squamous cell carcinoma of the upper gingivo-buccal sulcus (GBS) and premaxilla 3 years previously [Figure 2].

Figure 2



Post-surgery for carcinoma- excised premaxilla

His treatment included surgical excision of the premaxilla, external radiation therapy to maxilla and chemotherapy with Inj. Cisplatin 700mg IV. A treatment plan, which included non-surgical root canal therapy (NSRCT) followed by crown placement and the also the prognosis for the same was presented and explained to the patient and a consent was obtained from him by the Department of Endodontics. The patient's radiologist and doctors from the Department of Oncology were consulted for opinion regarding the treatment protocol which might require local anaesthetic with adrenaline, antibiotic coverage and periapical radiographs and their approval was obtained.

Necrosis of alveolus and subsequent osteoradionecrosis may occur in these patients due to physical aggression to the periodontium.[2] Therefore, several neighbouring teeth were anchored by wrapping them under the rubber dam sheet and instead of metal clamps, dental floss was used to secure the rubber dam sheet around the teeth for isolation as atraumatically as possible. Conventional access cavity preparation was done and the working length was determined using Woodpex V PLUS apex locator (Guilin Woodpecker Medical Instrument Co.,Ltd., China) with a size 15 K-file (Mani Inc., Japan). The instrumentation was performed with NeoEndo rotary files (Orikam, India) to size 25/0.04 in both the buccal and one palatal canals, respectively. Copious irrigation was done throughout, with 3% sodium hypochlorite with a side-vented needle, and a final rinse with saline. Canals were then obturated using corresponding gutta percha points. The access cavity was restored with amalgam and crown preparation was done to restore the tooth with a metal ceramic crown [Figure 3].

Figure 3**Post-operative radiograph showing the tooth 27 which has been restored****DISCUSSION:**

It is important to be aware of the necessary precautions and the care that has to be taken during various stages of the treatment in patients previously subjected to radiation therapy. Osteoradionecrosis (ORN) of the jaws is a self-progressive process of bone destruction and is one of the most serious oral complications of radiation therapy to head and neck.^[3] Irradiation damages osteocytes and microvascular structures thus thickening the blood vessels and marrow is replaced with connective tissue. Consequently, lack of new bone formation and decreased ability of bone healing may result in bone necrosis.^[4] Although osteonecrosis of the jaws can develop spontaneously in irradiated patients, invasive dental procedures especially extractions can increase the risk.^[5] Therefore, nonsurgical root canal therapy (NSRCT) and restoration has been recommended for treating teeth with pulpal and apical diseases in irradiated patients, thus avoiding extractions.^[6]

Endodontic treatment should never be performed during the period which the patient is receiving radiation therapy. Shafer (1987) stated that 60 to 120 days after radiotherapy ends is the ideal period for endodontic treatment at which time any bone alterations would be less present. Protecting the corners of the radiographic film with the help of utility wax is recommended when performing a periapical radiograph in irradiated patients, to prevent possible trauma in the oral mucosa. This avoids transformation of dormant bone necrosis into more severe bone necroses. The anesthetic technique should be done as atraumatically as possible. Use of artificial saliva and creams may be recommended for these patients as they may present with decreased salivary flow and / or dry mouth (xerostomia). Electronic apex locator should preferably be considered for root canal length measurements and confirmed by periapical radiography. Mechanised instrumentation of root canals with rotary or reciprocating endodontic motors is strongly recommended for irradiated patients, as the automated technique makes the treatment faster and comfortable and also provides a very good cleaning and shaping efficiency. In non-vital teeth an intracanal medicament such as calcium hydroxide has to be placed as an interappointment dressing to reduce the bacterial load in necrotic cases. The endodontic filling step should be performed with the least irritating materials and extra care should be applied in order to not overfill the canal. Bodrumlu demonstrated that it is safe to use resin-based materials in patients that received radiotherapy.^[2]

Endodontic treatment plays a vital role in patients submitted to radiotherapy, both for the control of pain symptoms in teeth with acute pulpitis, and for the prevention of osteoradionecrosis lesions that might develop if tooth extractions are performed. Endodontic treatment serves as the best treatment option that rehabilitates the patient with both aesthetic and functional restoration of the teeth and improves their quality of life.

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