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Case Report

Localized Interdental Bone Necrosis: A Case Report

K Krishna Mohana Reddy[1], B Shiva Shankar[2], K Amarendher Reddy[3], S Nagalakshmi Reddy[4], Jaradoddi Sudhakar[5], P Sunil Kumar Reddy[6]

Contributors:

[1]Professor & Head, Department of Periodontology & Implantology, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India; [2]Associate Professor, Department of Periodontology & Implantology, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India; [3]Professor, Department of Endodontics & Conservative Dentistry, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India; [4]Associate Professor, Department of Endodontics & Conservative Dentistry, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India; [5]Associate Professor, Department of Periodontology, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India; [6]Associate Professor, Department of Prosthodontics, G Pulla Reddy Dental College & Hospital, Kurnool, Andhra Pradesh, India.

Correspondence:

Dr. Shankar BS. Department of Periodontology & Implantology, G Pulla Reddy Dental College & Hospital, Kurnool - 518 002, Andhra Pradesh, India. Email: periopal@gmail.com

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Abstract:

Restorative dentistry involves use of various intracoronal and intracanal medicaments. Commonly used endodontic medicaments include paraformaldehyde, sodium hypochlorite and hydrogen peroxide. These agents are caustic and in higher and in inappropriate concentrations can cause immediate damage to the surrounding hard and/or soft tissues. Proper knowledge of such agents and careful use of such intracanal medicaments is necessary to avoid iatrogenic injuries. This report presented a case of localized alveolar bone necrosis which is an iatrogenic damage occurred because of improper use of intracanal medicaments and improper management of carious tooth structure. Subsequent management of the case is also discussed in this case report.

Key Words: Hydrogen peroxide, iatrogenic injuries, intracanal medicaments, localized alveolar bone necrosis, paraformaldehyde, sodium hypochlorite

Introduction

There are few endodontic materials, which when used injudiciously can harm the surrounding hard and soft tissues. For instance improper use of vital and non-vital bleaching agents, sodium hypochlorite, hydrogen peroxide and paraformaldehyde can be damaging to the hard and/or soft tissues surrounding. This is a case report of a 23-year-old male patient who landed up with interdental bone necrosis because of improper use of endodontic medicaments. Subsequent management of the case is also discussed in this case report.

Case Report

A 23-year-old systemically healthy patient reported to the Department of Endodontics with the chief complaint of constant throbbing and radiating type of pain in his right upper back tooth. Clinical examination of chief complaint site revealed deep mesiooccluslal Class II deep dental caries in relation with upper right first molar. The mesial proximal wall was more damaged because of carious lesion. Radiograph showed radiolucency in the crown involving enamel, dentin, and pulp. Patient was diagnosed as symptomatic irreversible pulpitis and endodontic treatment was advised accordingly. Endodontic treatment was successfully completed in three stretched appointments. After 2 weeks of successful endodontic treatment, patient again reported back to the endodontics department with the complaint of mesio-proximal food lodgment and localized dull pain with the same.

Patient was referred to Department of Periodontology to address patient's complaints and further needful treatment. Clinically in the chief complaint site, there was recession of mesial interdental papilla between first molar and second premolar and 5 mm exposure of white bare interproximal bone was noted (Figure 1). On probing there was minimal bleeding with dull pain. Post-obturation amalgam filling showed significant loss of mesial wall. Haziness of interdental bony trabeculae and alveolar bone crestal changes were

Figure 1: Pre-operative view showing bare bone exposure.

observed on the radiograph. The possible explanation for localized pathological interdental bone necrosis was because of leaching of devitalizing intracanal medicaments into the interproximal periodontal structures through damaged mesial wall of tooth. Patient was explained about the pathological condition and surgical treatment was advised. Necessary pre-operative blood investigations advised, which involved hemoglobin%, computed tomography, blunt trauma, hepatitis B surface antigen and tridot. All blood investigations were normal. Under local anesthesia full thickness mucoperosteal flap elevated (Figures 2 and 3) and surgical site accessed and white bare alveolar bone of 5 mm by 3 mm dimensions (Figure 4) was found loosely attached to the underlying healthy bone. Necrotic bone sequestrum was gently removed, and underlying concave osseous defect was thoroughly debrided and alloplast hydroxyappatite bone graft material was placed and the flap was sutured with 3-0 mm black Mersilk suture. Adequate post-operative medications and instructions were advised. After 1 week during suture removal there was no evidence of any uneventful changes (Figures 5 and 6). Mesioproximal papillary recession was quite evident, so necessary interdental oral hygiene with interdental brush was strongly advised to maintain plaque free environment. After 3 weeks of adequate healing and monitoring patient was referred to Department of Prosthodontics for placement of crown.

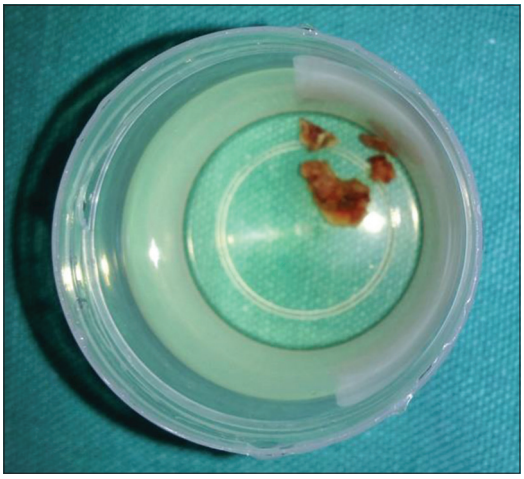

Figure 4: Necrotic alveolar bone collected and fixed in formaldehyde.

Figure 2: Intraoperative full thickness mucoperiosteal elevation.

Figure 5: Post-operative buccal view.

Figure 3: Intraoperative removal of necrotic bone.

Figure 6: Post-operative occlusal view.

Discussion

Management of carious tooth structure matters a lot during endodontic treatment. Removal of soft caries, unsupported enamel rods, rubber dam isolation and building lost walls of the tooth is of vital importance to prevent seepage of intracanal medicaments into surrounding periodontal structures and subsequent associated soft and/or hard tissue changes. Different endodontic medicaments are employed to devitalize pulps prior to extirpation. Paraformaldehyde containing products are very commonly used.[1-3] Paraformaldehyde which is used as an intracanal medicament is a fixative and a strong disinfectant.[4] paraformaldehyde when placed in contact with the tissues is extremely toxic. Paraformaldehyde and sodium hypochlorite as intracanal medicaments are potentially quite caustic to create soft tissue and/or hard tissue necrosis. Sodium hypochlorite is cytotoxic agent. When in contact with vital tissue, it causes hemolysis, ulceration, and damages endothelial and fibroblast cells.[5,6]

Careful manipulation of intracanal medicaments is mandatory to prevent iatrogenic injuries. Kishore reviewed the literature concerning oral tissue complications during endodontic irrigation, the etiology, symptomatology and management of complications during root canal irrigation.[7] Hülsmann and Hahn reviewed the literature concerning the etiology, symptomatology and therapy of complications during root canal irrigation. Clinical symptoms are discussed, as well as preventive and therapeutic considerations.[8]

In this case, the possible explanation for the localized necrosis of alveolar bone is because of seepage of intracanal medicaments into the interproximal periodontal structures through damaged mesial wall of tooth. So building lost walls of tooth is of paramount in such clinical situations so that operator can totally restrict the intracanal medicaments within the root canals. During isolation using rubber dam operator has to take adequate care, while punching right size holes. A large size hole punched on the rubber dam will fit loosely around the tooth, and there is a possibility of seepage of intracanal medicaments intra operatively.

Conclusion

This report presented a case of localized alveolar bone necrosis which is an iatrogenic damage occurred because of improper use of intracanal medicaments and improper management of carious tooth structure. Iatrogenic damage to dental hard and soft tissues because of improper use of intracanal medicaments is totally preventable. Adequate knowledge about harmful effects of the intracanal medicaments and careful execution of clinical procedures are must to avoid such untoward events.

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