Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v30i3.2636

MANAGEMENT OF CERVICAL RESORPTION TO PRESERVE NATURAL TOOTH: A CASE REPORT

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Abstract
Invasive cervical resorption (ICR) is a severe pathological complication, uncommon, and often aggressive form of external root resorption. Due to its resorptive nature, the tooth structure is destructed which may lead to fracture in the crown portion. The clinical features vary from a small defect at the gingival margin to a pink coronal discoloration of the tooth crown resulting in ultimate cavitation of the overlying enamel. Resorptive condition is often detected by routine radiographic examination. The treatment should aim towards the complete suppression of all resorbing tissues and the reconstruction of resorptive defect by the placement of a suitable biocompatible material. Preservation of natural tooth is the biggest challenge in case of extensive invasive resorption. This article describes a case report of ICR of anterior teeth and its management to maintain the natural tooth and esthetics of the patient.

Keywords: cervical, trauma, re-attachment, resorption

INTRODUCTION

The objective of contemporary dentistry is to restore normal shape, function, comfort, aesthetics, speech, and health of the oral cavity regardless of the atrophy, illness, or damage of the stomatognathic system. The choice to either maintain the patient's natural dentition or have the tooth extracted serves as the basis for clinical decision making.[1]

External root resorption, recognized also as invasive Cervical Root Resorption (ICR), can affect both pulpless and vital teeth, and can be detected on the coronal section of the alveolar process and the root surface below the epithelial connection.[2] The degradation of coronal enamel and dentin by odontoclasts causes thinness of the surviving enamel, showing up as a pink stain.[3]

Intra-coronal bleaching is the most common cause of resorption, while predisposing factors include periodontal treatment, chemical trauma, guided tissue regeneration, bruxism, trauma, transplanted teeth, segmental orthognathic surgery, and orthodontic treatment. [4]

In most cases, resorption does not cause any discomfort and may be discovered during radiographic examination. A lesion's radiographic features might range from well-defined to patchy radiolucency

with uneven borders. Predentin, which covers the pulp creates a unique radiopaque line that may be seen in the radiograph.[4]

The clinical categorization of invasive cervical resorption that has been suggested by Heithersay G.S. is as follows, based on the degree of damage that has occurred: Class 1: an invasive resorptive lesion located close to the cervical region, having just a superficial penetration into the dentin; class 2; dentinal necrosis that has progressed into the radicular dentin but demonstrates little or no penetration into the coronal pulp chamber; class 3; infiltration into the root canal system that extends beyond the coronal portion of dentin and into the root canal system and class 4; the coronal part of the root has been invaded by a big, invasive resorption process. [5]

A treatment of external cervical resorption and reattachment of fractured crown using Biodentine is described in the present report.

CASE HISTORY

A twenty-five year old male patient complained of discomfort and swelling in the upper-anterior region of his gums. The patient reported that he had recurring localized swelling in the buccal mucosa of his maxillary right central incisor throughout the previous three months. During the clinical examination, it was found that the buccal gingiva of the tooth was painful to palpate. The existence of a lesion was seen in the cervical third on the palatal side. The sensitivity tests, which included an electric pulp test and a heat test, were negative, although the tooth next to it reacted properly. During the periodontal examination, the probing depth on the buccal sulcus of the tooth was about 6 millimeters, and there was visible bleeding when the tooth was probed. The tooth was mobile, and there was no evidence of cavities or any prior fillings. Intraoral periapical radiograph showed radiolucency in cervical area and coronal third of the root and a fracture line was present between crown and root (Figure 1).

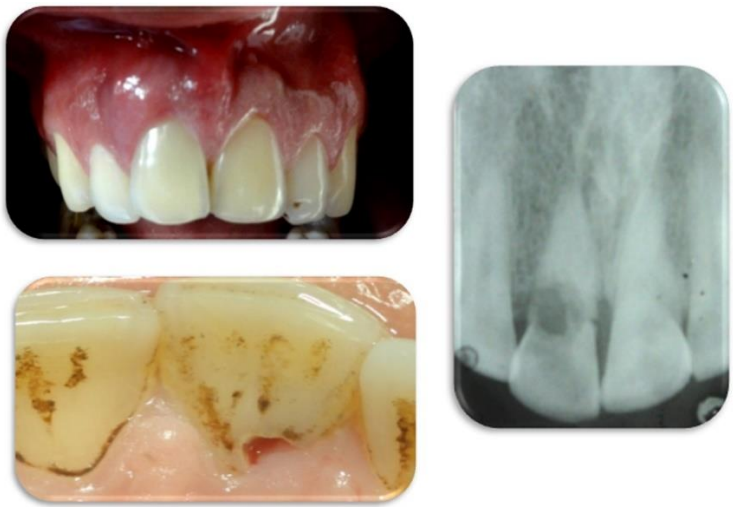

Figure 1: Pre-operative buccal and palatal aspect and preoperative radiograph

The patient gave his verbal and written agreement after being fully informed. A buccal and lingual infiltration of 2 percent lidocaine with 1:80000 was delivered and a flap with the whole thickness of the mucoperiosteum was reflected. The resorptive location had caused fracture in the crown, which ultimately resulted in the crown being mobile. It was possible to remove fractured portion of the crown. With the assistance of a hand excavator, granulomatous tissue was removed from the resorptive region. A treatment consisting of an aqueous solution of trichloracetic acid at a concentration of 90% was applied to the cavity. Following the finding of the root canal, the working length was determined using a #15 K-file (Mani, Tochigi, Japan). Next, the root canal was cleaned and shaped utilizing the ProTaper rotary system S1, S2, F1, along with F2 rotary files up to working length. Gutta-percha and AH-Plus sealer were used to completely obturate the canal. (Dentsply, Tulsa Dental, Tulsa, OK, USA). Peso reamers were used to remove the gutta-percha from the coronal two

thirds of the root canal in order to get it ready for the postplacement. After testing the fibre post (FIBRAPOST PD, Switzerland) in the canal, the length of the post was cut to the required specifications. In addition, space in the pulp chamber of the broken crown piece for the coronal section of the post as well as the core to be inserted into the tooth was made. After installing the post, the alignment of the piece of the coronal tooth was checked. After this, the root canal was etched with orthophosphoric acid at a concentration of 37 percent, washed, then blot dried with paper points before a bonding agent (PRIME and BOND NT, DENTSPLY) was applied. Dual-cured resin luting cement was used to secure the post in place inside the canal (RelyX, 3M, USA).
After ensuring that the appropriate shade matching, the inner section of the coronal fragment was etched in the same manner and then bonded to the tooth using flowable composite resin (Esthet-X Flow, DENTSPLY). Biodentine was used to restore the resorptive region. (Figure 2).

Figure 2: Flap reflected, and Root canal and post cementation completed and re-attachment of fractured fragment.

At the completion of the procedure, the flap was relocated, it was sutured, the occlusion was examined, and the patient was given instructions for postoperative care. Patient was recalled for one year follow up and occlusion for evaluated. Postoperative evaluation showed acceptable healing. (Figure 3)

Figure 3: Post operative follow up after 1 year

DISCUSSION

New standard care, albeit promising, must be approached cautiously in the face of a decision between endodontic therapy and dental implants. Patients who have ICR are often looking for total resorption and repair of the affected region.[6]

A cervical resorptive defect with pulpal and periapical infection leading to crown fracture needs surgical access to seal the resorptive region with Biodentine after root canal therapy.

Traumatic damage seems to be the underlying cause of the current case's resorption. Because the affected tooth was left untreated for an extended amount of time, the consequence of this would have been a resorptive deformity. Trichloroacetic acid (TCA) induces granulation tissue to undergo coagulation necrosis, which renders the tissue avascular and makes its removal easier.[7] Additionally, TCA has the capability of deactivating tissue that is found in infiltrative channels as well as recesses. Treatment for resorption might include surgery, nonsurgical methods, or a hybrid approach that combines both surgical and nonsurgical procedures.[8] Fragment reattachment is an ultraconservative procedure for treating coronal tooth fractures with accessible fragments. In addition to providing functional rehabilitation and being economically acceptable, it also has the potential to give excellent aesthetics that will endure for a long time. Recent developments in the field of adhesive dentistry have made it possible to replace a broken tooth using the patient's own tooth fragment, resulting in outcomes that are both expedient and aesthetically acceptable. For the purpose of reattaching, a method that was both self-adhesive and self-etching has been utilized. This dual cure resin cement offers a strong bonding ability, guarantees full curing, and minimizes microleakage.[9] Because it promotes the creation of hydroxyapatite, stimulates the differentiation of stem cells, and may induce the development of hard tissue, biodentine is utilized as a material for the restoration of resorption sites. In addition to having great mechanical qualities and an excellent sealing ability, it has a setting time of less than 12 minutes. Calcium ion is released by biodentin, which helps to make the surrounding environment more alkaline and hence more favorable for osteoblastic activity. [10]

CONCLUSION

The long-term retention and successful result of the tooth may be achieved by performing an accurate diagnosis, selecting the appropriate treatment, and putting the plan into action. To preserve the beauty and harmony of the oral tissues, one treatment option that may be explored is the comprehensive removal of resorptive tissue along with adoption of a mix of surgical and nonsurgical approaches to retain natural tooth.

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