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Clinical Technique/Case Report

A Case Report of Gingival Enlargement Associated With Invasive Cervical Resorption

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Clinical Relevance

Invasive cervical resorption is a rare external dental resorption with unknown etiology. Lesions are mostly misdiagnosed as internal resorption or caries, which leads to erroneous treatments. So it should be noted that both clinical examination and radiological examination are important in the treatment of invasive cervical resorption lesions.

SUMMARY

Invasive cervical resorption (ICR) is a rare external dental resorption with unknown etiology; it progresses asymptomatically in the cervical area of the permanent teeth. Lesions are mostly misdiagnosed as internal resorption or caries, which leads to erroneous treatments. This case report presents the clinical and radiological diagnosis, as well as the results of treatment and 3-year follow-up in a 50-year-old female patient with gingival enlargement associated with ICR in tooth No. 25. Granulation tissue was removed by accessing the cervical resorption area through a flap operation. Following the endodontic treatment, the tooth was restored using composite resin and the hyperplastic lesion was excised. In conclusion, it should be kept in mind that clinical, radiological, and pathological evaluation in the differential diagnosis of localized hyperplastic lesions in the gingiva is of importance and that ICR could play a role in the etiology of these lesions.

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INTRODUCTION

Invasive cervical resorption (ICR) is a rare clinical condition of the permanent teeth that progresses asymptomatically and is defined as a destructive form of external dental resorption.[1] Pathological mechanisms in the etiology of ICR are not known definitively; however, dentoalveolar surgery, orthodontic interventions, periodontal disease and trauma caused by its treatment,[2] and intracoronal bleaching procedures are considered to be the factors likely to play a role in the development of ICR.[3] Furthermore, developmental defects such as cemental hypoplasia and hypomineralization are also considered to be predisposing factors. It has been reported that necrotic pulp–originated pathogens generally do not affect the occurrence and development of ICR; however, injury to the periodontium in the cervical area may contribute to the

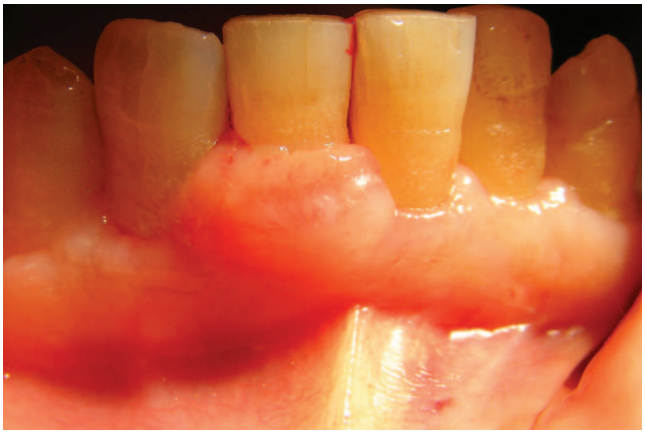

Figure 1. *Intraoral view of the lesion.*

development of lesions.[4,5] Lesions have been reported to occur without any determined etiological factor in approximately 15% of ICR cases.[6]

Histopathologically, ICR is defined as a localized resorptive process that commences in the coronal aspect of the root surface and develops in the zone of connective tissue attachment supported by alveolar bone below the epithelial attachment. This pathological process can extend to the pulp space following resorption of the cementum and dentin.[2] In the clinical examination of ICR, a lesion usually does not demonstrate any sign in the early period, and the proliferative tissue occupying the defect, which is caused by resorption, is hyperemic and prone to bleeding. The resorption extends into the coronal surface, weakening the enamel and causing a pinkish appearance. Sometimes the defect may be probed from the gingival margin; in that case, the dentin may appear intact.[7]

Surgical removal of fibrovascular tissue in the resorption area and repair of the defective area with a restorative material are recommended for the treatment of ICR.[8] The relation of resorption to the pulpal tissue is important to determine the need for endodontic therapy. The pulp is usually vital in the presence of a thin predentin layer between a ICR lesion and the pulp tissue. Considering this, it has been reported that removal of the fibrovascular tissue from the resorption area should be cautiously performed and pulp perforation should be avoided.[9]

This case report presents clinical and radiological diagnoses, as well as the results of treatment and 3-year follow-up, in a patient with gingival enlargement in the mandibular incisor, which is rarely encountered together with ICR.

Figure 2. *Radiolucent image in the cervical region.*

CASE

A 50-year-old female patient who was admitted to the Dental Clinic of Bursa Military Hospital with gingival enlargement in the anterior mandible underwent an intraoral examination. Her history revealed that she noticed gingival enlargement and redness without pain approximately one and a half months ago. Systemic examination and consultations revealed controlled hypertension and a thyroid disorder. Her extraoral examination was unremarkable; intraoral examination showed poor oral hygiene and a gingival lesion of $7 \times 5 \times 5$ mm on the facial gingival margin of tooth No. 25 (Figure 1). The patient had no parafunctional habits and had not undergone orthodontic treatment. Probing the pocket depth showed a 5-mm pseudopocket in the vestibule of tooth No. 25; neither bleeding nor occlusal trauma was detected. Periapical radiography demonstrated a radiolucent image in the cervical region of tooth No. 25 (Figure 2). The tooth was determined to be non-vital upon vitality testing; a presumptive diagnosis of ICR was made. The

Figure 3. *Defect area in the cervical region and defective facial crown/root surface after removal of the granulation tissue.*

patient was informed about the planned treatment and her consent was obtained. Oral care training was provided for the patient, and a complete oral and dental surface cleaning was performed. The lesion was excised one week later under local anesthesia using a flap procedure and an appropriate route of entry into the cervical resorption area was created. Granulation tissue in the resorption area was removed; it was determined that the lesion extended to the pulp (Figure 3). The excised tissue was transferred to the pathology department. Histopathological examination showed remarkable fibrosis and hyalinization in the lesion area, as well as vascular proliferation, lymphocyte and plasmacyte infiltration below the ulcerated squamous epithelium (Figure 4). During the flap operation, the root canal was filled with gutta-percha (DiaDent Group International Inc, Seoul, Korea) and AH 26 sealer

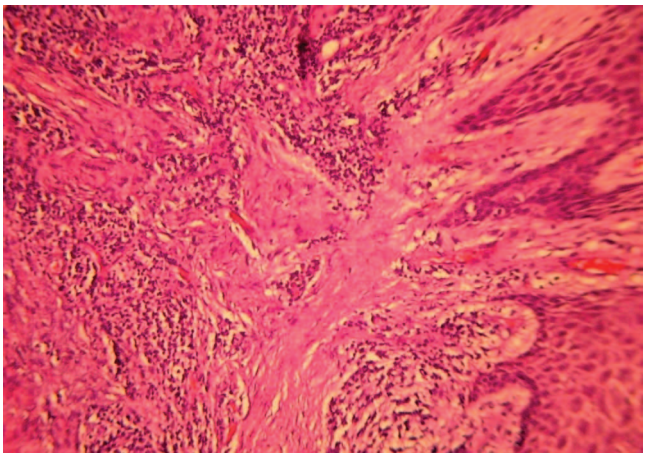

Figure 4. *Histopathological view of vascular proliferation, perivascular lymphocyte and plasmacyte infiltration, and fibrosis below the hyperplastic squamous epithelium (hematoxylin and eosin staining, 100×).*

Figure 5. *Restoration of the defect area in the cervical region with composite resin.*

(Dentsply DeTrey GmbH, Konstanz, Germany) using a lateral condensation method. The cervical area of the tooth was restored with composite resin (Filtek Z250, 3M ESPE, St Paul, MN, USA) (Figure 5). The flap was closed and sutured following endodontic and restorative treatments.

The patient received amoxicillin + clavulanic acid (1000 mg, two times daily for 5 days). After being controlled in the first week, the patient was followed up at the sixth month and first, second, and third years after treatment. On the six month control visit, she had no relapse and her intraoral photographs (Figure 6) and radiographs (Figure 7) were obtained. On the control visits performed at the first, second, and third years after the endodontic and restorative treatments, no relapse was observed in the patient or in her intraoral photograph (Figure 8) and periapical radiograph (Figure 9).

Figure 6. *Clinical view six months after the endodontic and restorative treatments.*

Figure 7. *Radiological image six months after the endodontic and restorative treatments.*

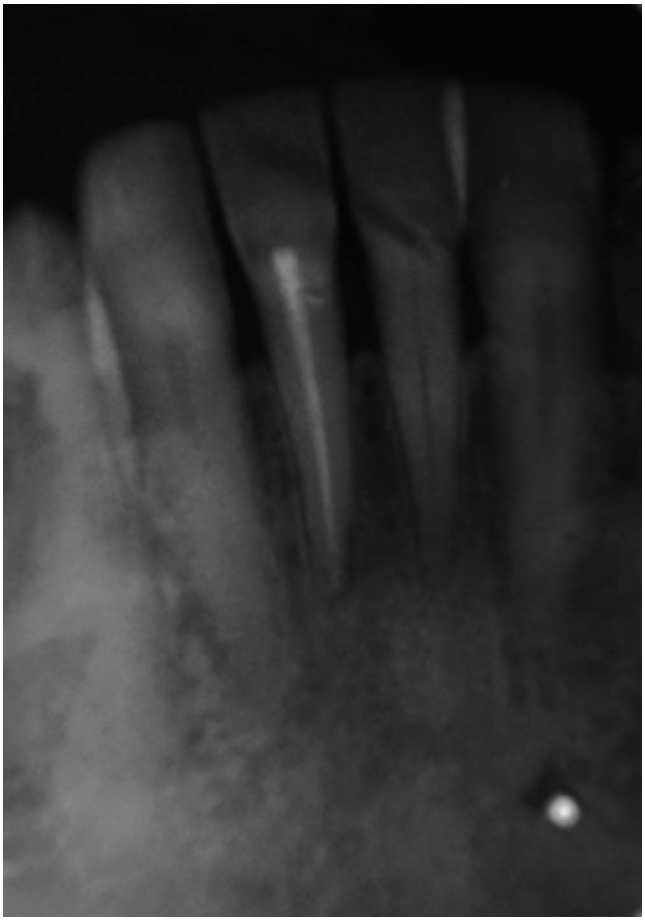

Figure 9. *Radiological image three years after the endodontic and restorative treatments.*

DISCUSSION

In the present case report, the diagnosis, treatment, and three-year follow-up results of localized gingival enlargement associated with ICR including the dentin, which is rarely encountered, are presented. The most common causes of localized gingival enlargement, which is defined as fibrous epulis, include subgingival plaque, tartar, and inappropriate restoration margins. In the present case, it was thought that cervical resorption might have been provoked by an inflammatory reaction in the periodontium due to inadequate plaque control. It was also thought that extensive hypoplasia in other teeth of the patient might also have played a role in the etiology. Natural cementum defects[10] or root surface damage[2] are being investigated as predisposing factors in the pathogenesis of cervical resorption. In his study, Heithersay[6] found no predisposing factor in 16.4% of 257 teeth with ICR and reported that developmental defects such as hypomineralization or hypoplasia of the cementum might play a role in the etiology. In the present case, however, developmental defects in the cementum could not be evaluated because the tooth was kept in the mouth and histopathological examination could not be performed.

Figure 8. *Intraoral clinical view three years after the endodontic and restorative treatments.*

The cellular mechanism that causes ICR is quite complicated. It has been demonstrated that multinucleated giant cells or inflammatory cells, which have the potential to cause resorption, accumulate in the area due to numerous inflammatory mediators scattered into the medium caused by the inflammation or injury of hard dental tissues.[1] It has been reported that traumatic or bacterial stimulants lead to resorption by causing an inflammatory response in the periodontal ligament due to cervical changes in or local damage to the root surface, and thus, stimulating multinucleated giant cells having destructive activity.[11] In the present case, we thought that the patient had no traumatic stimulant; however, she had bacterial stimulants due to poor oral hygiene.

Etiological factors should be considered in the treatment of ICR. Elimination of these factors constitutes the first step of the treatment. In addition to dental extraction, various treatment options have been recommended in the literature including subgingival curettage[12] and calcium hydroxide administration to the defect in order to provide neutralization around the lesion.[13] In their study, Meister and others[14] recommended exposing the resorption defect by a surgical approach together with systemic antibiotic use and performing mechanical debridement. With the present patient, the gingival enlargement was excised by a flap operation and the granulation tissue was removed by reaching the resorption area in the cervical region. In addition to mechanical debridement, the patient received systemic antibiotic therapy. She did not relapse within the three-year follow-up period, which verified the success of the treatment method.

Knowing the vitality of the tooth in the treatment of ICR is crucial. Precise clinical and radiological examination and assessment of pulp vitality via vitality tests are of great importance for the selection of the treatment method in teeth with resorption. It is thought that endodontic treatment along with a surgical approach could prevent the bleeding complication that is likely to occur during root canal treatment in the presence of a necrotic pulp.[15] In addition, there are studies reporting that endodontic therapy performed before surgery prevents leakage of irrigation fluid from the canal into the periodontal ligament and surrounding tissues.[16] With the present patient, the surgical procedure was performed simultaneously with endodontic treatment in order to prevent both the leakage of irrigation fluid out of the tissue and bleeding complications. No clinical or radiological pathology related to endodontic treatment was observed during the three-year follow-up period.

In the literature, treatment options in the early period of ICR include topical application of trichloroacetic acid, root canal therapy without surgery, curettage of the tissue in the resorption area, restoration of this area with glass ionomer cement, and a careful follow-up during the healing period.[17] The basic principle of topical application of trichloroacetic acid is to create coagulation necrosis in the surrounding tissues. This chemical agent acts not only in the resorptive area but also in the interrelated canals and in the depth of the tissue.[18] Moreover, topical application of bisphosphonates, which are used for the treatment of osteoporosis, has also been suggested as another therapy option.[19] However, in the present case, no agent was applied to the resorption area in addition to surgical treatment.

In the literature, for restoration of a defect area in ICS, glass ionomer,[17,20,21] amalgam,[22-24] or composite resin[20,25] have been used. In the present case, we used composite resin for the restoration of the defect area in the cervical region because the defect area was above the gingival margin after excision of the gingival enlargement.

This case report presents the results of a surgical procedure that was performed simultaneously with endodontic treatment followed by a three-year follow-up period in a patient diagnosed with ICR. The results of the three-year follow-up revealed that early detection of ICR—detection of a defect area in a cervical region before progression into the root, which can be asymptomatic—with precise clinical and radiological examination would enhance the success of treatment. Endo-perio treatment options should be considered before deciding to extract the tooth.

Note

This case was presented as a poster at the Turkish Society of Periodontology, 40th Scientific Congress, May 14–16, 2010, İzmir, Turkey.

Conflict of Interest

The authors of this manuscript certify that they have no proprietary, financial, or other personal interest of any nature or kind in any product, service, and/or company that is presented in this article.

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