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Interdisciplinary approach for management of external cervical resorption in the esthetic zone

KEYWORDS

External cervical resorption;
Resorptive defect repair;
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External cervical resorption (ECR) is a distinctive type of external inflammatory root resorption, which is characterized by its location and invasive nature.¹ Etiology of ECR is still poorly understood; nevertheless, dental trauma and/or orthodontic treatment are most commonly associated.² ECR is often accidentally detected by radiographic check-ups whereas clinical examinations show no symptoms and signs or as a finding result of pulpal problems. Nowadays, cone-beam computed tomography (CBCT) provides great diagnostic value and is important for treatment decision making.²

A 28-year-old Caucasian male was referred by a local dentist due to his maxillary left central incisor (tooth 21) turning pink since 2019. The tooth was pinkish at cervical to middle third of crown (Fig. 1A). Root canal therapy (RCT) of tooth 21 had been previously initiated, and probing depth was 5 mm adjacent to the resorptive lesion at the mesial-facial aspect of the tooth. An extensive apical radiolucency, 13.5 × 14.0 × 9.3 mm³ in size, associated with tooth 21 and maxillary left lateral incisor (tooth 22) was shown on CBCT scan (Fig. 1E and F), while pulp sensitivity test of tooth 22 was positive. CBCT scan also revealed an irregular cavitated lesion and ruffled root surface at coronal and cervical portion of tooth 21 consistent with the feature of ECR (Fig. 1C and D). The ECR lesion was classified as Patel classification 2Dp and Heithersay class II (Fig. 1G) according to CBCT scan and periapical radiographs, respectively.

After comprehensive treatment planning, our goal was to eliminate the infection, recover the esthetics, and preserve the tooth structure for its longevity. RCT of tooth 21 was done with orthograde obturation using mineral trioxide aggregates. Intentional RCT for tooth 22 was performed in case of possible apical surgery in the future (Fig. 1H). One month after RCT, the ECR-repairing surgery was arranged. Crown lengthening combined with composite resin repairing was demonstrated not only to camouflage asymmetric gingival line but also to facilitate ECR management. The defect was adequately exposed after flap reflection and marginal bone reduction, and a reasonable biological width was created regarding to future restoration. Palatal and distal surfaces of the root were neither exposed nor treated, in light of anatomic structures preservation. Granulomatous tissues were removed then the defect was treated with 3% sodium hypochlorite cotton pellets (Fig. 1L and M).³ The tooth outline was directly built with composite resin (SlickBands™ XR Matrix Bands, Garrison Dental Solutions, Inc., Übach-Palenberg, Germany) (ESTELITE® Flow Quick High Flow and ESTELITE® POSTERIOR QUICK, Tokuyama Dental Corp., Tokyo, Japan) under rubber dam isolation during surgery (Fig. 1I and N), and the intracoronal space was restored with the same material later. The patient was symptom-free after the treatment, and the apical

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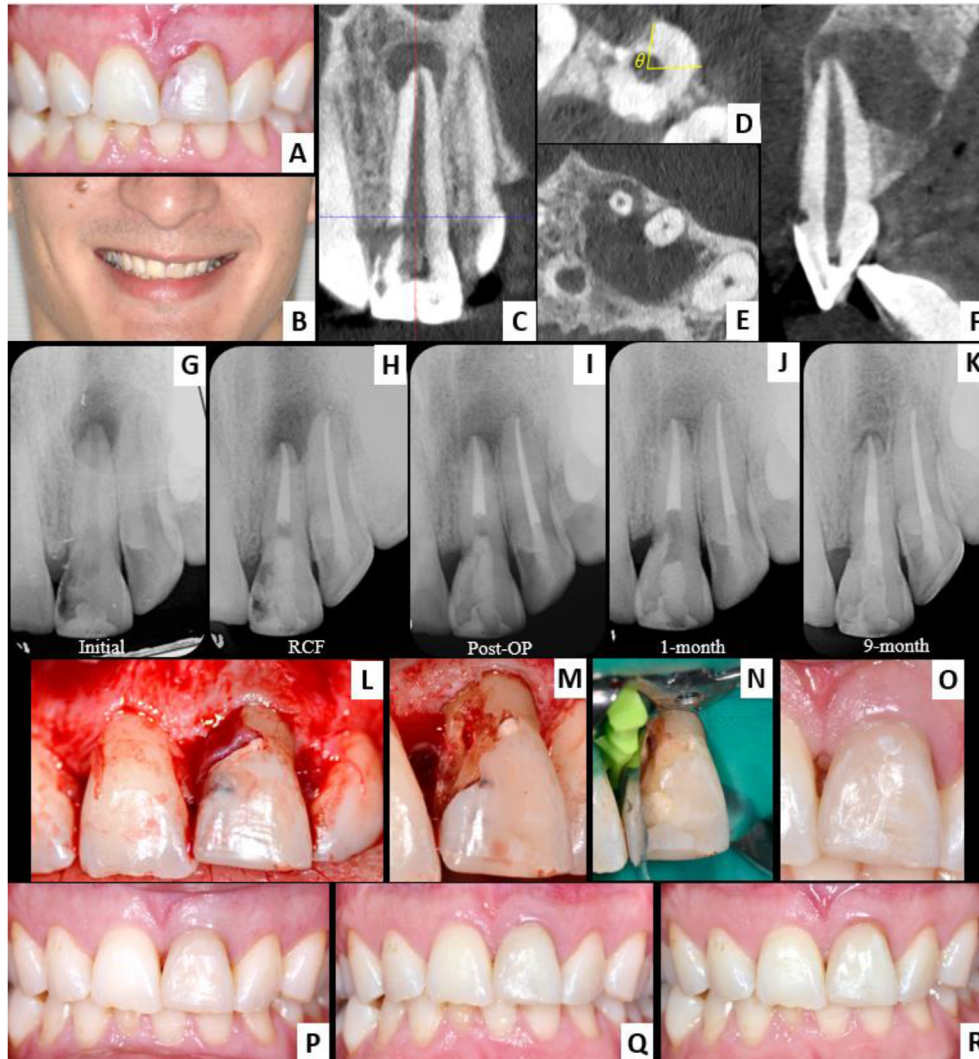


Figure 1 Clinical photographs and radiographs of the patient. (A) Pink discoloration on tooth 21 with inflamed marginal gingiva. (B) Asymmetric lip line and canting incisal plane. (C) Small field of view cone-beam computed tomography showed that the external cervical resorption (ECR) lesion was confined to crown portion and coronal third of the root. (D) Axial view at horizontal level of the blue line in (C). The ECR lesion contributed to extensive ruffled root surface over 280.5° . (E and F) The dimension of apical lesion was measured 13.5 mm mesio-distally, 14.0 mm facio-palatally, and 9.3 mm corono-apically, in which both tooth 21 and 22 apices were involved. (G) Pre-operative radiograph. (H) Periapical radiograph after root canal treatment. (I) Post-operative radiograph. (J) One-month follow-up radiograph. (K) Nine-month follow-up radiograph. Apical lesion had decreased in size, yet complete resolution has not occurred. (L) The ECR defect with ingrowth of granulation tissues. (M) The ECR defect was curetted. Exposed pulp canal space could be observed. (N) Defect repaired with composite resin under rubber dam isolation. (O) A week after surgery. (P) (Q) (R) Clinical photograph at 1-month, 4-month, and 6-month follow-up, respectively. Marginal gingiva showed mild inflammation due to plaque deposition but probing depth was within 4 mm.

radiolucency significantly decreased in size and increased in density during follow-up period (Fig. 1J and K).

Treatment of ECR should be focused on arresting resorptive process, defect restoration, prevention of recurrence, and restoring the esthetics of affected tooth.¹ Different treatment modalities should be chosen depending on the extent, nature, and accessibility.² The survival rate was 100% in ECR-affected teeth underwent surgical intervention in a mean review time of 20 months.⁴ Practitioners should adopt interdisciplinary collaborative approach which may lead to optimal results in challenging ECR cases.⁵

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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