Invasive cervical resorption: a diagnostic enigma

ABSTRACT
Invasive cervical resorption is a very rare form of external resorption leading to rampant tooth destruction. With its etiology yet to be determined, it remains a riddle to researchers globally. We report a rare presentation of multiple teeth with invasive cervical resorption and describe clinical and radiographic features to aid clinicians in diagnosis and appropriate treatment of this condition. The radiographic features distinguishing this condition from internal resorption are also outlined.

Key words: Molar; Radiography; Tooth resorption

Introduction

Resorption of hard tissues of permanent teeth is not a normal occurrence and is usually a result of inflammatory conditions, mechanical stimulation, or neoplasm. Based on the location of resorption in relation to the tooth surface, there can be internal or external resorption. There are four types of external resorption: external surface resorption, external inflammatory root resorption, replacement resorption, and ankylosis. Invasive cervical resorption is a relatively uncommon type of external inflammatory resorption characterized by its cervical location and aggressive nature and can be mistaken for internal resorption. We report a case of invasive cervical resorption involving two adjacent posterior teeth in the absence of defined predisposing factors, and discuss the radiographic features distinguishing invasive cervical resorption and internal resorption.

Case report

A 32-year-old Asian female presented with a complaint of mobility in a posterior tooth on the right side of the mandibular jaw of 6-month duration. The patient presented to our department in February 2011. She had no associated pain or difficulty in chewing on the right side. There was no history of trauma or orthodontic treatment. She had undergone extraction of a decayed maxillary right second molar 5 years ago, as well as restoration of the mandibular right first and second molars 3 years ago. Her medical history and family history were unremarkable. General examination also indicated that she was in a good state of health. Intraoral examination revealed satisfactory oral hygiene. The third molar in all quadrants and the maxillary right second molar were missing clinically. Intact amalgam restorations were present on the occlusal surfaces of 36, 37, 46, and 47. There was no evidence of attrition or abrasion, and periodontal status was satisfactory and no soft tissue...
pocket was found. There was also no evidence of significant mobility in any tooth in the region of complaint. Pinkish discoloration of the crown of the mandibular right second molar was noted. Careful probing revealed a subgingival defect near the cervical region of the mesiobuccal aspect of the same tooth (Fig 1). The teeth were not tender on percussion. The vitality test was performed, with a normal response to the stimulus suggesting that the associated teeth were vital.

Intraoral periapical radiography of the mandibular right posterior quadrant showed radiopacities in the crowns of 46 and 47, representing metallic restoration. There was a large coronal radiolucency beneath the restoration in both the teeth which was overlapping the pulpal shadow and extending to the cervical one-third of the roots (Fig 2). Tooth 48 was horizontally impacted and normal follicular space was seen in close proximity to the distal surface of 47. There was loss of crestal outline and apical migration of interdental bone suggestive of localized periodontitis. The pulpal chamber outline was not discernible on the radiograph in both the teeth but the canal outline could be appreciated within the roots. The lamina dura was intact, with slight widening of the periodontal ligament space in the apical area. There was no evidence of generalized interdental bone loss. Subsequently, a panoramic radiograph was obtained to rule out similar involvement of other teeth. The radiograph revealed horizontally impacted mandibular left and right third molars, but similar cervical resorption was not identified in any other tooth (Fig 3). A diagnosis of invasive cervical resorption was made given the pink discoloration of the cervical portion of 46 and 47, healthy gingival and periodontal tissues, normal response to vitality testing, as well as radiographic evidence of irregular radiolucency involving the entire cervical region, with intact root surface and root canal outline.

**Discussion**

Invasive cervical resorption was first described by Wade in 1960. This form of external resorption shows a predilection...
toward a cervical location and is of an aggressive nature. Owing to its invasive nature, it was suggested that the condition should be given the nomenclature of fibro-osseous disorder of teeth. For invasion to occur, a defect in the cementum or cementoid layer is a prerequisite. The defect may be developmental in origin or may be acquired over time as a result of physical or chemical insult in the region. There are several theories explaining the activation of resorption and invasion of fibrovascular tissue. One of the hypotheses suggests the role of sulcular microorganisms as the activating factor. It suggests that inflammatory processes in the periodontium at the attachment level do not reach a damaged root surface initially, and that it is only with eruption of the tooth or gingival recession that inflammatory mediators can attract resorbing cells to the root surface. A contrary view argues for a non-microbial pattern to the resorptive process and suggests a breakdown in an antiresorptive biological control mechanism originating in the periodontal ligament, and possibly exerted by the epithelial cell rests of Malassez. However, there may be no direct role of microorganisms in the resorptive process according to this theory, though, it may be associated with secondary invasion of microorganisms.

Of the potential predisposing factors reported in the literature, orthodontic treatment is the most common, followed by trauma and operative procedures involving the region. In the present case, none of these factors were reported by the patient.

Radiographic examination plays an important role in diagnosing this enigmatic condition. Internal resorption presents with uniform enlargement of the root canal, whereas invasive cervical resorption presents with irregular destruction involving the cervical areas. In invasive cervical resorption, the canal is unaltered and its outline can be followed through the resorptive defect unless the resorption is deep and has invaded the canal extensively. In the present case, the canal outline could be appreciated through the irregular areas of radiolucency involving cervical areas of the first and second molars.

Invasive cervical resorption commonly involves a single tooth; involvement of more than one tooth is a rare feature and adds to the complexity of the condition. Our case had involvement of the mandibular right first and second molars with unidentified predisposing factors.

In both invasive cervical resorption and internal resorption, the tooth may present clinically as a so-called ‘pink tooth,’ caused by inflamed pulp tissue in the case of internal resorption and inflamed periodontal granulation tissue in the case of invasive cervical resorption. In the case of internal resorption, the pulp is involved first and so pulpal symptoms may be a feature. If the pulp succumbs to resorptive process completely and the periodontal tissues become inflamed, symptoms of periodontitis may be seen.

Owing to the undefined etiopathogenesis of this invasive cervical resorption, treatment becomes difficult. Identification of predisposing factors and their elimination serves as an immediate remedy to the condition. Most of these lesions are not detected at an early stage due to their quiescent clinical nature. Radiographs are of great help in diagnosing these lesions. Early diagnosis holds the key to management. Treatment options for invasive cervical resorption vary depending on the extent and severity of the resorptive process. Treatment may involve the periodontium, as well as the tooth and pulp, and management requires an interdisciplinary approach. However, the mainstay of treatment is the removal of resorptive tissue and reconstitution of the defect by placement of suitable filling material or by use of biological systems, such as membrane. Other suggested modalities include the topical application of trichloroacetic acid and guided tissue regenerative techniques, but these treatment modalities still require further research to determine their clinical efficacy. Mineral trioxide aggregate (MTA), resin-modified glass ionomer materials or composite resins have also been used to restore these lesions. The choice of restorative material largely depends on the position of the resorption cavity. Restorative, esthetic, and functional aspects should be considered for supragingival restorative cavities, whereas MTA and glass ionomer cement are preferred when the defect is subgingival. In our case, treatment options were discussed with the patient, but she opted to undergo treatment at her usual locality and was lost to follow-up.

Invasive cervical resorption is a rare condition which can pose diagnostic difficulty owing to its quiescent clinical course. The present case emphasizes the role of radiography in early identification of the condition and thus achieving
a favorable prognosis. Future research determining the etiology and pathogenesis is likely to provide a firmer basis for appropriate treatment modalities for various stages of the condition.

References