Palatogingival Groove: Endodontic-Periodontal Management—Case Report

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Abstract

This report presents a case of a maxillary lateral incisor with a deep palatogingival groove extending up to the root apex with severe periodontal destruction. Despite an apparently poor prognosis, the tooth was successfully managed by endodontic and surgical periodontal therapy. The rationale behind the treatment modalities is also discussed. *(J Endod 2010;36:1717–1720)*

Key Words

Interdisciplinary approach, maxillary lateral incisor, palato-gingival groove

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Palatogingival groove is a developmental anomaly that starts near the cingulum of the tooth and runs down the cementoenamel junction in apical direction, terminating at various depths along the root. This anomaly is most commonly encountered in maxillary incisors, predominantly lateral incisors along the palatal surface, and hence it is also termed as distolingual groove or radicular lingual groove (1). The groove can occur on the mesial or distal surface as well as on the facial surfaces of the central incisors (2) termed as the facial radicular groove (3, 4). The anomaly might be unilateral or bilateral (5, 6). A single tooth can have 2 grooves, one on the facial surface and the other on the palatal surface (7). In addition, the presence of a palatogingival groove has been observed in maxillary second molars (8).

The etiology of the groove is not fully understood. Some authors proposed that this defect is a mild form of dens invaginatus (6, 9), whereas others believe that it is the incomplete attempt of a tooth to form another root (10). In an interesting report, Ennes and Lara (11) suggested that an alteration of genetic mechanisms could be responsible for the groove occurrence. The prevalence rate of palatogingival groove has been reported to be 2.8%–8.5% (2, 6, 12). The existence of 18% incidence of palatogingival groove in Chinese population (13) suggests a possible racial link in the etiology.

The significance of this funnel-shaped defect lies in the fact that it makes the tooth a susceptible niche for bacterial plaque accumulation and subsequent inflammation. Lee et al (9) were the first to report an association between palatogingival groove and localized periodontitis. Complicated by the palatal occurrence and patient's inability to keep the area clean, periodontal breakdown is inevitable. The groove might vary in depth along the root, and it might also communicate with the pulp cavity (14, 15), complicating the prognosis (9, 10). But the main communication between the pulp and the periodontium in incisors with a radicular groove is probably the accessory canals, which might be anywhere along the groove. The clinical significance of the palatogingival groove is related to the incidence of localized periodontitis with or without pulpal pathosis, depending on the depth, extent, and complexity of the groove.

The radicular groove might escape detection until the patient presents advanced periodontal pathosis and secondary pulpal involvement. This article presents a case of a lateral incisor anatomically complicated with palatogingival groove. The management of the tooth was done with an interdisciplinary approach.

Case Report

A 24-year-old male patient with good general health presented to the Outpatient Department with pain in his left upper anterior quadrant. During the clinical examination, the left maxillary lateral incisor (#22) had an intact crown without caries or fracture, with negative vitality testing and positive to percussion. The mobility of the tooth was within physiological limits. On examination, there were a 10-mm pocket and purulent exudate associated with a radicular groove on the distopalatal aspect of the tooth (Fig. 1*A*). Facially the gingival sulcus had normal probing depth. Oral hygiene was poor, with calculus present all around the tooth.

Radiograph revealed the presence of a lateral localized periodontal defect almost reaching the apical portion of the root. Apical periodontal widening was also evident. A patent root canal was seen with another (Fig. 1*B*) parapulpal radiolucent line, which is a typical radiographic representation of the palatogingival groove. A diagnosis of

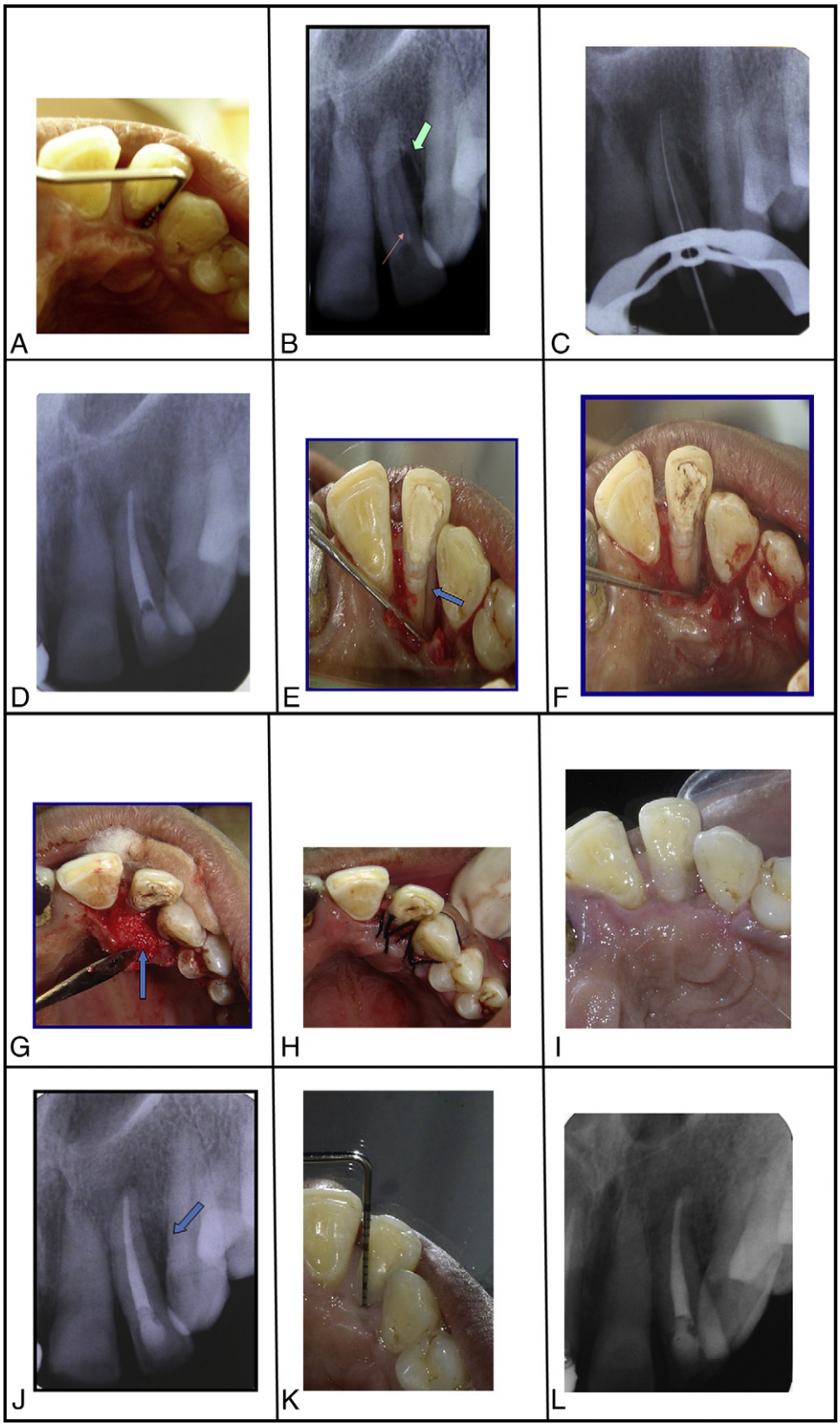

Figure 1. Lateral incisor showing palatogingival groove and its management. (*A*) Preoperative clinical; (*B*) preoperative radiograph, the pink arrow points to parapulpal radiolucent line and the green arrow points to a lateral periodontal defect; (*C*) working length radiograph; (*D*) postobturation radiograph; (*E*) surgical opening of palatogingival groove, as marked by the arrow; (*F*) sealing of palatogingival groove by using glass ionomer cement; (*G*) bone graft placement as marked by the arrow; (*H*) suturing; (*I*) postoperative 4 weeks; (*J*) postoperative radiograph at 4 weeks, the arrow points to filling in of the lateral defect; (*K*) postoperative 1 year; (*L*) postoperative 1-year radiograph. (This figure is available in color online at www.aae.org/joe/.)