

Labiogingival Groove - The Hidden Culprit

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Abstract

Labiogingival groove is a congenital morphologic dental anomaly in which an in folding of the inner enamel epithelium and Hertwig's epithelial root sheath create a groove extending varying depth into root. Epithelial attachment can be breached by gingival irritation secondary to plaque accumulation creating a periodontal defect that spreads to the pulp causing primary periodontal /secondary endodontic. We present here a case of a 41 year old man who reported with the complaint of painful tooth with pus discharge in the upper front region for past 3 months. Intra oral examination revealed bluish red gingiva with loss of contour in relation to 11, 21 and purulent discharge in relation to 21. A provisional diagnosis of localized chronic periodontal abscess in relation to 21 (primary periodontal and secondary endodontic involvement) was given and the required treatment was carried out. On exposure of the involved tooth a labiogingival groove was noticed which could have been a contributing factor for the progression of the condition.

Key Words

Labiogingival groove; periodontal disease; endodontic involvement

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INTRODUCTION

The labiogingival groove/ notch is a developmental phenomenon that can be easily misdiagnosed and improperly treated. The labiogingival notch seen on the central incisors was first described by Brin and Ben-Bassat in 1989 in a population survey of 1,880 Israeli school children. They found a labiogingival notch in 123 children, with 6.5% prevalence on at least one central incisor. In 96 (5.1%) of the children, the notch appeared unilaterally, while in 27 children (1.4%), the notch appeared bilaterally.^[1] The labiogingival notch appears as an enamel depression close to the cemento-enamel junction, with a depth that varies from a shallow depression to a deep groove. It can be identified by using a periodontal probe. The gingival margin closely follows the enamel contour, appearing almost normal in the case of a shallow notch, while in the case of a deep notch, it acquires an irregular contour because of extension of the gingival tissue into the defect. Many consider it a defect due to trauma during childhood.^[2] Brin and Ben-Bassat also noted this defect in children who suffered injury to their

deciduous teeth. Thus one must enquire about the possibility of any injury during childhood when such a defect is noted. Clinically it may or may not pose a problem depending on the depth of the defect. A shallow defect may not be visible unless probed, while a deeper defect may require treatment for aesthetic purposes. In such cases placement of a restoration and gingival recontouring may be considered.

CASE REPORT

A 41 year old male patient reported to the outpatient department of Department of Periodontology with a chief complaint of painful tooth with pus discharge in the upper front region for past 3 months. On intra oral examination, gingiva was bluish red in colour with loss of contour in relation to 11,21 and there was purulent discharge in relation to 21. Miller's class I gingival recession with probing depth of 9mm in midbuccal region of 21 and CAL of 11mm was observed. On radiographic evaluation, the periapical radiograph revealed a widened periodontal ligament space in relation to 21, 22 and periapical lesion in relation to 21. A provisional



Fig. 1: Incision Placed



Fig. 2: Flap Reflected



Fig. 3: Debridement

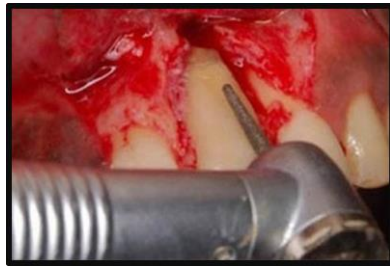
Fig. 4: Elimination of Groove
by Odontoplasty

Fig. 5: Sutures Placed

diagnosis of localised chronic periodontal abscess in relation to 21 (primary periodontal and secondary endodontic involvement) was given. The treatment modality considered for this particular case consisted of an interdisciplinary approach i.e., periodontal as well as endodontic therapy. A labial infiltration was given in relation to 12-22 and a trapezoidal full thickness flap was elevated from distal aspect of 11 to distal aspect of 22, where a dehiscence was observed on the facial aspect of 21. Complete curettage of granulation tissue was done and the site was irrigated with saline. Obturation of 21 was done followed by apicectomy. The buccal radicular groove which was evident on flap reflection was eliminated by odontoplasty and the flap was repositioned and simple interrupted suture was placed. The area was covered by using Coe-Pak periodontal dressing. The healing in the particular area was uneventful.

DISCUSSION

A labiogingival notch appearing on the enamel of maxillary central incisors seems to be a potential factor for compromised gingival and dental health.^[1] It is a congenital morphologic dental anomaly in which an in folding of the inner enamel epithelium and Hertwig's epithelial root sheath create a groove extending varying depth into root. Epithelial attachment can be breached by gingival irritation secondary to plaque accumulation creating a periodontal defect that spreads to the pulp causing primary periodontic/secondary endodontic.^[1,2] It is a notch which starts on the cervical enamel and extends to the radicular surface and has also been

termed as labial-cervical vertical groove (LCVG) or labiogingival notch., In a study conducted by Shpack *et al.*,^[5] out of 1250 patients examined, 66 exhibited LCVG (5.3%) in one of the upper incisors. LCVG was present mostly in single configuration (71.2%) with a significantly more distribution in the central incisors (94%). Earlier the etiology of this defect was thought to be due to trauma to the developing tooth bud,^[3] but recently it has been considered as a developmental defect due to the vertical extension of the mamelon groove.^[4] Various morphologic anomalies can predispose to periodontal diseases that include cervical enamel projection, palatoradicular grooves, enamel pearls, etc. The radicular groove involves the external surface of both the crown and root; this unique clinical feature allows localized periodontal disease to develop readily and breakdown the fragile sulcular attachment adjacent to the defect.^[6] The groove can vary in depth, extent, and complexity; mild grooves are gentle depression of the coronal enamel which terminates at or immediately after crossing CEJ.^[7] LCVG was graded as mild, moderate or severe in which the mild severity score 1) was defined as a superficial subgingival LCVG depression with no supragingival extension; moderate severity score; 2) was defined as a shallow supragingival LCVG located within the crown with a length less than 2mm extending subgingivally and the severe severity score; 3) was defined as a deep supragingival LCVG with a length greater than 2mm, adjunct with a subgingival apical extension.^[8] The diagnosis of radicular

groove is not always easy as patients may present with pulpal involvement in teeth that have no caries or history of trauma. The gingiva adjacent to the groove is often edematous, erythematous or cyanotic. Periodontal probing is recommended for these patients. Grooves may be visible on a periapical radiograph as one or more dark lines extending along the length of the root parallel to or superimposed over the root canal. Differential diagnosis must include a long-standing crack on the crown or a vertical root fracture.^[6] The prognosis of teeth with radicular grooves depends on the severity of the periodontal problem, accessibility of the defect, and the type of groove (shallow-deep short/long). Based on these the treatment that have been put forth are gingivectomy or subgingival curettage, combined endodontic and periodontal treatment in severe cases, odontoplasty or saucerisation and conservative treatment by eliminating the grooves with restorative materials. The last treatment option for the presence of the labiokingival groove in a tooth with hopeless prognosis is extraction.^[9-10] The particular case reported here was treated successfully by an interdisciplinary approach which consisted of periodontal and endodontic treatment modalities.

CONCLUSION

The diagnosis of presence of a palatokingival groove is an important factor in determination of the prognosis and success of a combined periodontal and endodontic lesion. It serves as a contributing factor for periodontal as well as endodontal problems. Often this goes undiagnosed but if it is diagnosed carefully and treated in a proper way it may solve both the periodontal and endodontal problems.

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