

## Case Report

## Gingival and Alveolar Fenestration of Lower Left Central Incisor: A Rare Case Report

Suman Mukherjee<sup>1</sup>✉, Sharmistha Dasgupta<sup>2</sup>

### ABSTRACT

Gingival and alveolar fenestration is a clinical condition in which the overlying gingiva and underlying bone are denuded, thus exposing the tooth roots directly to the oral cavity. If left untreated, it leads to an increment in plaque deposition and root sensitivity. This case report describes a rare case of fenestration of a 40-year-old female patient. She was initially treated for generalized attrition and abrasion, with multiple endo-perio lesions and fenestration in the lower left incisor region. Following numerous therapies in two years, the defect didn't heal. Opinions were taken from the dental specialty of Prosthodontics, Endodontics, and Oral Medicine. Succeeding the discussion, the treatment options were either to extract the anterior teeth or maintain them with symptomatic relief care. The treatment plan desired couldn't be performed due to complications. An in-depth detailed investigation and discussion with other specialties are crucial for successful long-term outcomes.

**Keywords:** dehiscence, fenestration, graft, implants, oral

### Introduction

The alveolar process holds the teeth in their sockets. It is an extension of the maxilla and mandible, with valleys of root prominence and depressions of interdental bone. In a healthy periodontium, the crest of the interproximal bone is 2 mm apical to the cemento-enamel junction (CEJ). Every time there is an invasion of the cortical

plate, anatomical dentoalveolar defects or mucogingival defects can occur.

Fenestration and Dehiscence are dentoalveolar lesions seldom reported in the literature. In Latin fenestra means "window". In this condition, the surface of the root is denuded of bone, with the gingiva and periosteum covering it. The marginal bone is intact. In dehiscence, the denudation of bone past the marginal bone.

1. 2nd Floor, Shakuntala Garden, Block -D, Ranchi Road, Behind Mayur Hotel, Purulia. PO + PS + Dist. – Puruliya, West Bengal, Pin – 723101

2. RHT Multispeciality Clinic, T-540, Khirki Extension, Gate No. 2, Near Krishna Mandir, Malviya Nagar, New Delhi - 110017

✉ email: smjee234@gmail.com

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According to Davies et. al.<sup>1</sup>, when  $\geq 4$ mm of cortical bone is exposed apical to the margin of interproximal bone the defect can be considered Dehiscence. The frequency of fenestration and dehiscence of bone defects has been studied on dry human skulls through an autopsy in several countries.<sup>2,3</sup> A frequency range of 0.99% to 53.62% and 0.23% to 69.57% has been observed respectively for dehiscence and fenestrations.<sup>4,5</sup>

In the bulk of the literature, the frequency of these lesions on different classes of facial skeletal deformities has been determined.<sup>6,7</sup> Alveolar defects are more predominant in the buccal root surfaces. Patients with class II malocclusion have shown a greater prevalence of fenestrations than the Class III and Class I groups. Fenestrations had greater prevalence in the maxilla, and dehiscence in the mandible. Clinically, gingival recession invariably leads to alveolar bone dehiscence.<sup>6</sup>

The absence of acute symptoms and thereby patient awareness led to many lesions being left unattended. Consequently, the fenestration lesion may become exposed to plaque and calculus accumulation, dentinal hypersensitivity, and compromise the aesthetics and periodontal stability of the affected tooth. Due to the sparse and scanty literature, the etiology for fenestration is ambiguous. But several elements have been associated including local factors plaque and calculus, acute and chronic trauma, cervical enamel projections, mis-positioning and malocclusion of teeth, and not spontaneous factors. Even if some Gingival Fenestration (GF) lesions can be managed non-surgically with monitoring and meticulous oral hygiene, surgical correction involving various periodontal plastic surgical procedures is preferred. Successful treatment of GF by bone grafts and barrier membranes, and other regenerative approaches, has been reported in the literature.

Root coverage is indicated in cases of root hypersensitivity, treatment of shallow caries lesions, cervical abrasions, and aesthetic and cosmetic needs.

This case report describes a common situation with rare findings: full mouth generalized attrition and abrasion along with gingival and alveolar fenestration of lower left incisor. (Fig. 1, Fig. 2) An in-depth investigation and 2 years of follow-up led to the conclusion that the lesion is past the point of surgical intervention.

### **Case presentation:**

A 40-year-old female reported to the Dental OPD with chief complaint of cold sensitivity and a hole in the lower left central incisor region. Also, she reports pus discharge and plaque accumulation with oral malodour for the past 2 years. On examination, a portion of the root of the lower-left central incisor was visible through the labial surface of the lower central incisor. (Fig. 3a) The patient has a history of tobacco (gutka) chewing for the past 20 - 24 years.

### **Investigations**

The lower anterior teeth were endodontically treated with a Porcelain Fused Metal (PFM) crown placed over them. (Fig. 1, Fig. 2) The patient was referred to an endodontist. IOPA (Intraoral periapical) radiograph didn't give a clear picture (Fig. 3b). CBCT (Cone beam computed tomography) showed the lower anterior region is completely denuded of buccal cortical bone (Fig. 3c).

### **Treatment, Outcome and follow up:**

The fenestration was cleaned with an air and water jet, followed by oral prophylaxis. Desensitizing toothpaste was recommended to the patient for temporary relief. The patient was recalled at 6- months intervals. The investigations and treatment outcome are presented in Figure.



**Figure 1:** Pre operative intraoral photographs. Patient presented with severe attrition, abrasion and abfraction of teeth with a reduction of the vertical height of teeth



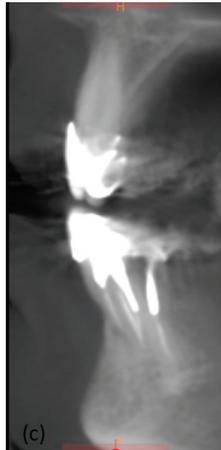
**Figure 2:** Post operative final cementation of PFM crowns. Broadricks plane analysis and full PFM crown was done



**Figure 3a:** Clinical photograph of gingival & mucosal fenestration



**Figure 3b:** IOPA of 32 to 42 region



**Figure 3c:** CBCT of 32 to 42 region showing absence of buccal bone in the region

## Discussion

This article reports a rare, unique case scenario of combined alveolar and gingival fenestration of the root apex with a possible sequel from pulpal peri-radicular etiology. The combined destruction of hard and soft tissue in the lower anterior buccal region jeopardized the overall prognosis of the teeth.

The most likely etiology, in this case, is periapical infection. Other causes that may have contributed here are prominent root apex, chronic infection, and absence of buccal cortical plate. In literature, limited literature on fenestration and dehiscence is available.

The success of therapy lies in timely diagnosis and prompt intervention. The most desired treatment approach is regenerative therapy blend with root coverage to cover the open communication between the oral environment and the alveolar bone.

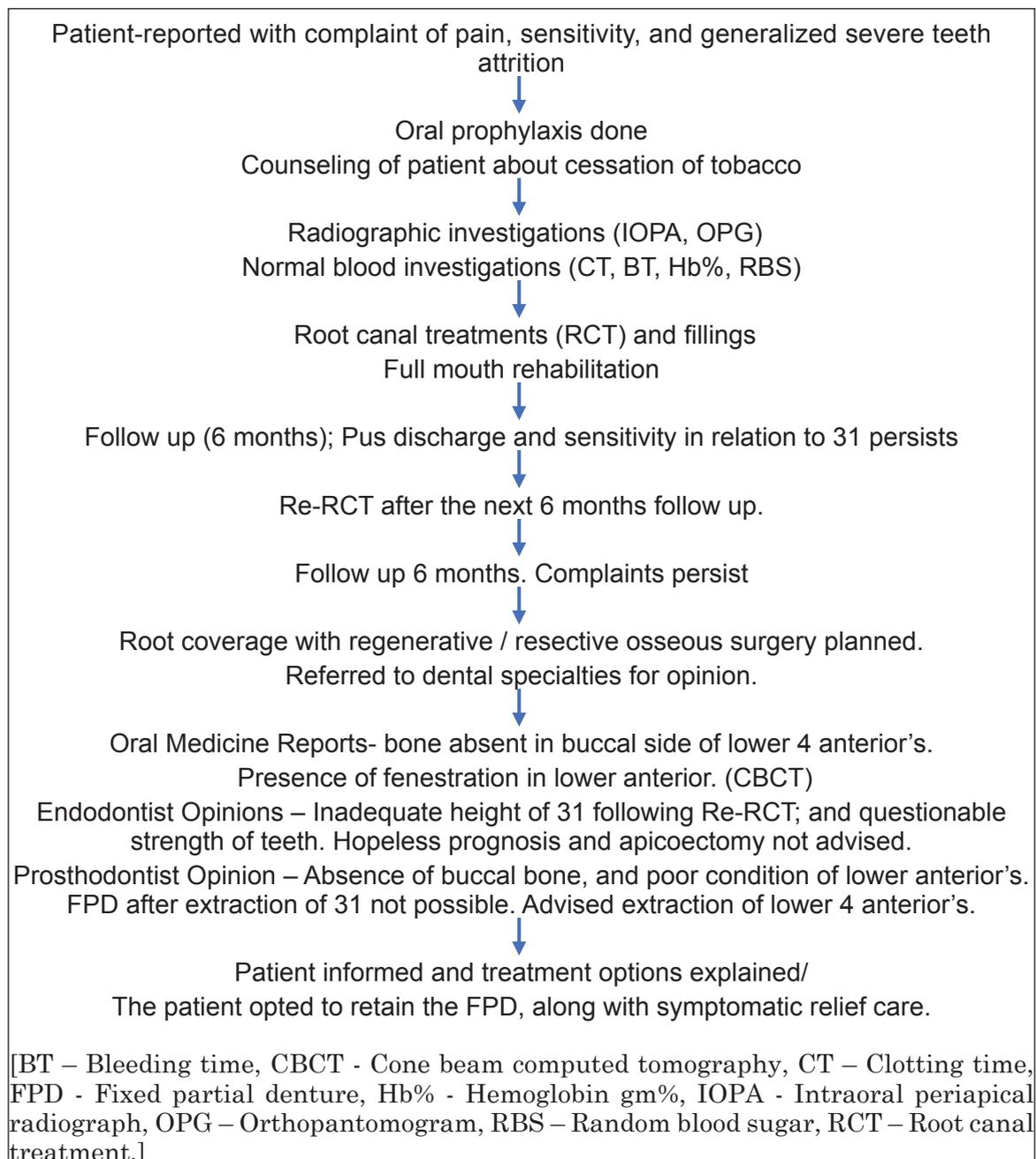
A case report on fenestration has presented the buccal inclination of the anterior's and very thin or absent buccal cortical plate along with local infection as

the etiological factor for fenestration. An interdisciplinary orthodontics-periodontics approach combined with endodontic treatments including RCT (Root canal treatment) followed by root-end resection and soft tissue management showed successful results.<sup>8</sup> Interdisciplinary<sup>9</sup> and Multidisciplinary<sup>10,11</sup> therapies with successful outcomes have been reported in the literature.

A factor to be considered in this case is the patient's history of tobacco chewing/gutka. Gutka contains areca nut mixed with tobacco which causes injury to the oral mucosa. Besides causing vascular and immunological changes, it also contributes to abrasion and erosion of teeth, increasing the masticatory load. We can be certain that gutka has been a contributing cause for the development and progression of gingival and alveolar fenestration. A Similar case report in tobacco chewers has been reported, where a modified tunnel and pouch technique had shown successful results.<sup>12</sup>

Other studies had using PRFs (Platelet-rich fibrin)<sup>13,14</sup>, bone allografts<sup>14</sup>, connective tissue grafts<sup>15</sup>, amnion chorion membranes<sup>16</sup>, and root coverage procedures or combinations have also given successful results. When all treatments are unfavourable or deemed to fail, extraction and replacement is the best choice of treatment. In a case report, Implants along with PRF has been used to envelop the fenestration defect has shown successful outcome.<sup>17</sup>

Inclusive and exclusive of all the factors discussed above, Plaque is the key etiological factor. Every single treatment would fail and be of no avail in its presence. Poor oral hygiene maintenance and unaware self-awareness of tobacco misuse have spiked the severity of the case. Although surgical intervention has shown successful outcomes, a late tardy response from the patient has unquestionably lessened any hope for regenerative procedures.



**Figure 5:** Patient Treatment Report

## Conclusion

A regenerative therapy for complicated cases leaves little space for error. The treatment time and cost are also important factors to be considered while case selection.

To achieve a successful therapy, patient co-operation and dexterity in oral hygiene maintenance are important. Sometimes, it's simpler to give the symptomatic therapy or replace the teeth in question, then indulge in long-term, tricky, uncertain novel trials.

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### **Abbreviation**

CBCT - Cone beam computed tomography

CEJ - Cementoenamel junction

GF - Gingival fenestration

IOPA - Intraoral periapical

PFM - Porcelain fused metal

RCT - Root canal treatment