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Research Paper

Management of a Case of Mucosal Fenestration: A Case Report

Goldar K[1], Chaubey K.K[2], Tandon S[1], Agarwal T[3]
[1]*PGT, Department of Periodontics, Kothiwal Dental College and Research Centre,*
[2]*Professor and Head, Department of Periodontics, Kothiwal Dental College and Research Centre,*
[3]*PGT, Department of Orthodontics, Kothiwal Dental College and Research Centre,*

ABSTRACT
Introduction- *Preservation of natural dentition is the primary goal of dentistry. Patients, today, not only value their teeth, but also express a desire to save their natural dentition in favour of extraction whenever possible. Mucosal fenestration is a pathological finding in which a portion of the tooth root is clinically visible in the oral cavity due to the destruction and loss of the overlying alveolar bone, periosteum, and oral mucosa.*
Aim- *to restore healthy fully functional teeth for mastication.*
Methodology- *A 18 years old female patient was referred from the department of Pedodontics to the department of Periodontics with a chief complaint of presence of a mucosal fenestration with pus discharge w.r.t #11 since last 3 months. So it was decided to remove the diseased epithelial surface and debride the entire granulation tissues #11 and to cover the fenestration with a lateral pedicle flap.*
Results- *Uneventful healing was seen in terms of periodontal consideration and complete obliteration of the fenestration after 15 days.*
Conclusion- *This case highlights closure of a mucosal fenestration with lateral pedicle graft as an innovative approach providing better results with minimum patient apprehension and long term stability.*
KEYWORDS- *Fenestration, Chronic Periodontitis, Dehiscence, Apicoectomy, Lateral Pedicle Graft*

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I. INTRODUCTION

Two commonly encountered alveolar defects are dehiscence and fenestration .[1] An alveolar dehiscence denotes a lack of the facial or lingual alveolar cortical plate resulting in a denuded root surface, while an alveolar fenestration is a circumscribed defect of the cortical plate which exposes the underlying root surface, but does not involve the alveolar margin of the bone.[2] Fenestration is an isolated area in which the tooth root is denuded of bone and the root surface is covered only by periosteum and overlying gingiva. Mucosal fenestration is a clinical entity in which the overlying gingiva or mucosa is also denuded thus the root is exposed to the oral cavity.[3] Mucosal fenestration was described for the first time as "bone fenestration by roots of deciduous teeth" by Menendez in 1967.[4] The term apical fenestration was introduced by Kelly et al. in 1976.[5]

It has a variety of aetiology and has normally seen in the anterior region of the arch, especially incisors and more often on the labial side, evidently, because in the anterior region of the arch, the labial cortical plate around teeth is significantly thinner than its lingual counterpart.[3] Overlying gingival biotype, buccally placed root, occlusal factor, orthodontic tooth movement, and associated chronic peri-apical and periodontal infection may also be a contributing factor for its occurrence.[6] Mucosal fenestration, if not treated, may lead to plaque deposition on the root surface as it is exposed to the oral cavity and can give way to the entry of infection causing further progression in periodontal disease. It may also be a cause of concern for esthetics and root hypersensitivity. The tooth is rarely spontaneously sensitive and pain might be perceived primarily during masticatory movements or palpation.

The following case report describes a rare situation where a mucosal fenestration developed in the right maxillary central incisor due to chronic peri-apical inflammation which was successfully treated with proper debridement and closure by lateral pedicle grafting.

II. CASE REPORT

A 18 years old female patient was referred from the department of Pedodontics to the department of Periodontics with a chief complaint of presence of a mucosal fenestration with pus discharge w.r.t #11 since last 3 months.

The history of present illness revealed that the patient was apparently well 1 year back until she noticed pain in her right maxillary anterior teeth region. The pain was sharp shooting type, non-radiating, continuous, aggravated during mastication and relieved on taking analgesics and was diagnosed as irreversible pulpitis #11. She was treated with root canal treatment with post and core with PFM crown and followed by Apicectomy w.r.t 11, 5 months back. But after 2 months, pus discharge was seen #11 and she was referred to our department to seek treatment.

There were no contributory family and habit history. Periodontal examination revealed good oral hygiene with minimal plaque and calculus deposits. On extra-oral examination, the face appeared bilaterally symmetrical, with competent lips and the lymph nodes were not palpable.

Intra-oral examination revealed a healthy gingiva in the first quadrant but with presence of a mucosal fenestration #11 and the cemental surface was felt with the help of probe. (Fig 1)

Fig 1- Presence of mucosal fenestration #11

Intra-oral peri-apical radiograph (IOPAR) #11 revealed improper apical seal, periapical radiolucency, interproximal bone loss. (Fig 2)

Fig 2- IOPAR #11

The haematological investigation revealed that all the blood parameters were within the normal range. After complete clinical, radiological and haematological investigations and analysis the diagnosis was made as Mucosal fenestration #11.

III. TREATMENT PROCEDURE

Informed consent was taken from the patient and after a successful phase I therapy comprising of thorough scaling and root planing and prescribing antibiotics (Augmentin 625mg and Metronidazole 400mg thrice daily for 5 days), the surgical procedure was performed. Extra-oral (with 7.5 % Betadine) and intra-oral (with 0.2% Chlorhexidine solution) antisepsis were performed and after achieving complete anesthesia over that region with 2% Lignocaine hydrochloride with 1:100000 adrenaline, the surgical procedure was performed. The diseased epithelial surface surrounding the fenestration was removed (Fig 3) and then partial thickness incisions were given to reflect a lateral pedicle graft w.r.t #12 (Fig 4) . All the granulation tissues were removed, exposed

root surface was thoroughly cleaned and the apex of root canal treated #11 was sealed well with a heated ball burnisher (Fig 5) and the pedicle graft was positioned to cover the entire fenestrated area (Fig 6) and sutured with 4-0 silk suture (Fig 7). Following surgery, the surgical site was covered with Periodontal Pak (Fig 8) (Coe-Pak™, GC America INC., ALSIP, IL 60803 U.S.A). Post-surgery, mechanical oral hygiene maintenance was avoided for 1 week at the surgical site. Oral hygiene was maintained by using 0.2% Chlorhexidine mouthwash. Fig 9 and 10 depicts 1 month and 6 months post-operative clinical status of the surgical site. There was complete obliteration of the fenestration and no complaint by the patient.

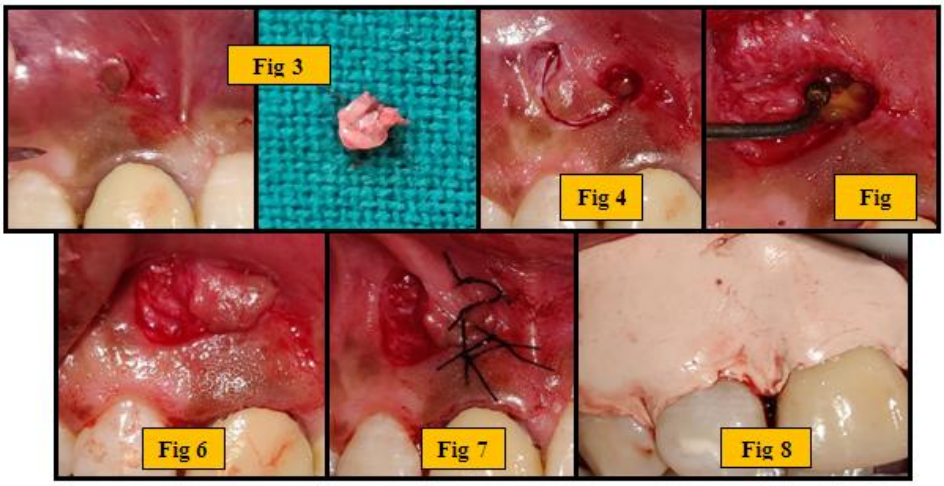

Fig 3-8- Surgical procedure performed

Fig 9, 10- 1 month & 6 months post-operative status

IV. DISCUSSIONS

Fenestration of the root apex is a relatively uncommon complication of pulpal-periradical disease.[3] The first step toward management of mucosal fenestration would be identifying the cause of its occurrence. Despite varied etiology, mucosal fenestration secondary to chronic periapical inflammation has been reported more often in the literature, which in many cases is associated with an extreme buccal inclination of root or with a very thin buccal cortical plate. The fragile overlying mucosa or gingiva with thin biotype becomes more vulnerable to outside frictional injury or falls within the radius of action of the periodonto-pathogens from inside. Exposure of the root promotes plaque and calculus deposition, as also shown in this particular case, which further prevents mucosal approximation.

The tooth # 11 was non-vital, so it was first root canal treated to eliminate the foci of infection. Thorough root planing and degranulation to remove the necrosed cementum and infected tissue. Root-end resection out up to the level of remaining sound alveolar bone so that its margins were flushed with the surrounding bone to reposition the root in the alveolar housing along with root end sealing. Bone graft which acted as scaffold for the regeneration of peri-apical tissue can be used if required. Now to cover the fenestration, lateral pedicle flap or connective tissue graft can be used (Langer and Calagne). Probable reasons for formation of fenestration in this case might be 1.Improper debridement beneath the root surface, 2. Improper apical seal or 3. Improper oral hygiene maintenance by the patient.

It has been seen that although mucosal fenestration without endodontic involvement may best be treated by mucogingival surgery with soft tissue grafts, but where it is accompanied by alveolar bone loss and underlying pathology, open flap technique with regenerative therapy is a better treatment option along with endodontic treatment.[7] A study of five cases conducted by Lin et al. concluded that GTR therapy along with connective tissue graft facilitated fenestration closure and ensured long- term success in the treatment of large intrabony defect with mucosal fenestration.[8] Tseng et al.[9] have treated a large peri-radicular defect with soft-tissue fenestration with combined endodontic and periodontic therapy where GTR and bone graft were used. It resulted in bone regeneration and complete closure of mucosal fenestration. Uchida et al.[10] also treated a similar case of mucosal fenestration with an underlying bone defect with GTR therapy and achieved good result.

But before performing these procedures, case selection has to be done correctly and the restoration is of an acceptable design relative to the occlusal and periodontal needs of the patient as it was done in this case. Careful case selection and a proper treatment planning are influenced by many factors including tooth factors, strategic importance of the tooth, bone quality, soft tissue quality and quantity, accessibility to the area of operation, periodontal status around the remaining root, systemic status of the patient, clinician's expertise and most importantly the self-motivation and maintenance by the patient.[11]

V. CONCLUSION

The periodontal and endodontic surgical techniques in combination, used for the management of alveolar or mucosal fenestrations, applying the osseous graft and MTA, can give optimum outcome. Sub-epithelial connective tissue grafts, which have been widely used in perio-plastic surgery, can be successfully used in obtaining the soft tissue covering of the fenestrated root apices. Further research is needed to demonstrate the long-term outcome and histological evaluation of this combined procedure.

COMPETING INTERESTS- Nil

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