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Coronally advanced flap with a button to reclaim the gingival position: A case report

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ABSTRACT

Gingival recession pose various problems to the patients in terms of aesthetics, sensitivity and possibility of root caries in the future. Therefore, early diagnosis and management of gingival recession is considered significant. The success of the root coverage mainly depends on stability and retention of the soft tissues over the denuded root surface following treatment. Many root coverage procedures have been introduced with varying results. This case report is directed towards the management of Miller's class I gingival recession and to discuss the advantage of positioning the flap coronal to treat those conditions. Coronally advanced flap have shown varying results and various modifications have been proposed. In this case report, the flap which was advanced coronally was maintained stable with the support of orthodontic button fixed on the tooth surface. This technique resulted in superior aesthetics and complete coverage of the exposed root.

Keywords: Periodontitis, Coronally advanced flap, Clinical Attachment Loss, Root Coverage and Auto graft.

1. INTRODUCTION

In this modern era of dentistry, patients demand for highly esthetic treatment outcome has increased significantly. Innovations in the field of dentistry have shifted the way people think about their dental aesthetics (Patil et al., 2020). Individual personality is highly influenced by their facial and dental appearances. Architecting a beautiful smile requires the interdisciplinary approach in the field of dentistry (Seixas et al., 2012). Dentists should be capable of skillfully blending science and art to sculpt a more attractive smile. The presence or absence of teeth, its alignment in the arch, gingival exposure, root exposure, diastema and the amount of display both horizontally and vertically are the factors which lead to the esthetic perception of a beautiful smile (Ioi et al., 2010). Gingival recession is denoted by the change in position of the marginal gingiva by apical shift (Khocht et al., 1993). Receding gums can result in unaesthetic root exposure, sensitivity, secondary caries formation, site for plaque accumulation and may lead to difficulty in

maintaining oral hygiene. The initial step in the root exposure management starts with identifying the etiology associated with it.

Various root coverage techniques free gingival graft and displaced graft have been proposed to treat gingival recession (Allen & Miller, 1989; Goldstein et al., 1996). Displacing the reflected gingival tissue coronal to the exposed root has shown promising results in the past to treat root exposure (Khobragade et al., 2016). The aim of this case report was to assess the impact of incorporating orthodontic bracket in maintaining the stability of coronally displaced gingival tissue.

2. CASE REPORT

A male patient, 54 years old reported to the department of Periodontics and Implantology, Kavalkinaru, Tirunelveli district with the chief complaint of sensitivity of tooth in the upper right back teeth region for past one week. Before examination, patient consent was obtained for all kinds of examinations, investigations and treatment to be undertaken in the hospital. History of presenting illness revealed that, patient was apparently normal before one week after which he developed sensitivity in tooth in the upper right back teeth region. Sensitivity was mild, intermittent, aggravated on intake of cold beverages and relieved gradually over time. Personal history revealed that patient brushes once daily using tooth brush and tooth paste in horizontal brushing method. Patient did not report any other significant past medical history.

Intraoral clinical examination of hard tissues under dental chair light revealed missing tooth in relation to 46, which was extracted due to dental caries before 3 years. Wound healing after extraction was uneventful as reported by the patient. Abrasion was noticed in the cervical region of teeth 13, 14 and 15. No other significant hard tissue findings were detected. Soft tissue examination revealed generalized pale pink, firm and stippled gingiva. The position of the gingiva was apically shifted in relation to 14, 15, 31, 41, 42, 44 and 45. Gingival recession which was noted to be under the class me as suggested by Miller was seen in relation to 14, 15, 31, 41, 42, 44 and 45 (Figure 1). On examination with Williams Periodontal probe, there was a loss in clinical attachment level (CAL) of 4 mm on the buccal aspect of 14, 15, 44 and 45, 2 mm loss in relation to 31, 41 and 42 as shown in Figure 1.



Figure 1 Recession and Clinical Attachment Level (CAL) loss

Tooth mobility was determined with the help of back end of mouth mirror and Williams periodontal probe handle and there was no mobility of teeth according to Millers classification of mobility (Laster et al., 1975). The condition was provisionally diagnosed as Localized chronic periodontitis. Over all prognosis was good and individual tooth prognosis was fair in relation to 14, 15, 31, 41, 42, 44 and 45 (Samet & Jotkowitz, 1985). Treatment plan included Scaling and Root Planing (SRP), restoration of the abrasion, root coverage in which the reflected flap tissue was positioned coronally and replacement of the missing tooth. Patient wanted only the management of sensitive tooth currently and replacement of missing tooth later. On air blowing, 14 were found to be sensitive for patient. Following SRP, patient was referred for restoring the abrasion in relation to 13, 14 and 15. 13 and 15 were restored with silicate glass powder cement and 14 were restored with composite as shown in Figure 2. After one week, patient was asked to report to the department of Periodontics and Implantology for root coverage procedure in relation to 14. Orthodontic bracket was placed on the buccal aspect of 14 prior to the commencement of surgical procedure (Figure 2).



Figure 2 Restoration and Orthodontic Bracket Placement

Local anaesthesia (Lignocaine Hydrochloride) was administered through infiltration technique in relation to 14. After complete anesthetization of the gingival tissues in relation to 14, horizontal incisions were placed in the interdental papilla between 13, 14 and 14, 15 followed by two vertical incisions at the distal line angle of 13 and mesial line angle of 15 as shown in figure 3. Split Full Split thickness flap was reflected as shown in figure 4. Flap was positioned coronally and Independent sling suture was placed around the orthodontic bracket as shown in figure 5. Peridontal dressing was placed over the treated tooth (figure 6).



Figure 3 Placement of Horizontal and Vertical Incisions



Figure 4 Reflection of Split Full Split thickness flap



Figure 5 Coronal Advancement of the flap and Suture Placement



Figure 6 Periodontal dressing

Post operative instructions were given to the patient. Patient was instructed to do mouth rinse twice a day for one week. Patient was advised to report back to the department after one week for suture removal and the area was irrigated using normal saline. Wound healing was satisfactory except for mild gingival inflammation as shown in Figure 7. Patient was recalled at 3 and 6 months for follow up (Figure 8).



Figure 7 wound healing at Day 10



Figure 8 6th months Follow-up

3. DISCUSSION

Various etiological factors like calculus, abnormal tooth brushing, high frenal attachment, malalignment of the tooth, tooth movement by orthodontic forces, improperly designed partial dentures, smoking improper restorations and chemicals have been proposed to cause apical migration of the gingival tissues by various studies (Khoct et al., 1993; Trott & Love, 1996; Zachrisson et al., 1998). In this case, the main etiology was found to be the abnormal tooth brushing habit and therefore patients brushing habit was corrected to remove the etiology (Imber & Kasaj, 2021). The four basic methods for root coverage procedure includes displaced grafts, free gingival grafts, membrane barrier guided tissue regenerative techniques and grafts taken from under the epithelial bed in the donor site (Goldstein et al., 1996). Coronally advanced flap proposed by (Allen & Miller, 1989), involves coronal displacement of the gingival tissues over the exposed root surface (Goldstein et al., 1996). The positioning of flap coronally is frequently used to treat the exposure of root. This technique involves the relieving of flap tissue and shifting it to a level coronal to the area of exposed root.

The ideal requirements to choose the mentioned technique include wide range of keratinized gingival and deep vestibule (Allen & Miller, 1989). Systematic reviews have shown favourable out comes for coronally advanced flap (Chambrone et al., 2019). In this current case scenario coronally advanced flap was chosen to treat the indicated tooth 14 for treatment. It is a simple but effective technique which does not require a second surgical site to harvest donor tissue (Zucchelli et al., 2009). A Split-full-split thickness flap was reflected for its different properties, which includes good blood, better thickness over the exposed root surface and mobility of the reflected tissue (Bednarz et al., 2021). Even though there are various advantages associated with this technique, the stable maintenance of gingival margin coronally after the procedure remains a challenge.

In this case report, orthodontic button was placed over the treated tooth to facilitate anchorage to the coronally replaced flap by holding a sling suture as reported by (Khobragade et al., 2016) who showed significantly superior clinical results when coronally advanced flap was done as long with button placement when compared to Coronally advanced flap alone. At 10 days post operative review, there was mild gingival inflammation in relation to 14 with significant increase in gingival height. 6 months post operative review showed 1 mm increase in the gingival margin level and CAL when compared to preoperative clinical measurement. Wound healing was satisfactory and there was increase in gingival height in relation to 14 as shown in Figure 8.

4. CONCLUSION

Gingival recession affects the aesthetics and therefore hassle a suitable treatment to improve the aesthetics. This case report presents a root exposure condition which was successfully treated by coronally advanced flap with the support of orthodontic button. At the end of 6 months, there was 1 mm gain in Clinical attachment level.

Author's contribution

Tamil Selvan Kumar: Conception, case analysis, manuscript drafting, approval of the final version

Fairlin P: Case analysis, manuscript drafting, approval of the final version

Ramesh Raja S: Case analysis, manuscript drafting, approval of the final version

Maria Beulah J: Case analysis, manuscript drafting, approval of the final version

Gokulvathi Rajkumar: Case analysis, manuscript drafting and approval of the final version

Jeffy M: Case analysis, manuscript drafting, approval of the final version

Hari Prasat AS: Case analysis, manuscript drafting, approval of the final version

Ahamed Faizal M: Supervision, critical revision of manuscript, approval of the final version

Informed consent

Written and Oral Consent was obtained from the patient participated in this study.

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

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