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CASE REPORT

Orthodontic Button-assisted Coronally Advanced Flap for Treatment of Multiple Teeth Recession: A Case Report with Literature Review

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ABSTRACT

Aim: The present report aims in determining the efficacy of orthodontic button assisted coronally advanced flap in the treatment of multiple teeth gingival recession and to analyze the literature evidence for the same.

Background: Gingival recession is one of the commonest periodontal problems encountered in daily practice. Coronally advanced flap is the treatment of choice for a recession in multiple teeth. But stabilizing the flap in coronally advanced position is a challenge. In this case report, orthodontic buttons are used to stabilize the coronally advanced flap for root coverage in multiple teeth

Case description: A 36-year-old male patient with multiple gingival recession in maxillary teeth reported with a complaint of sensitivity in the same region. So the case was managed with orthodontic button-assisted coronally advanced flap. Clinical periodontal parameters were recorded at baseline and the patient was followed for 1, 3 and 6 months postoperatively.

Conclusion: Clinically there was a significant improvement in the parameters from baseline to 1 and 3 months, and the results were stable until 6 months. Literature evidence also showed that coronally advanced flap with orthodontic buttons was clinically better that coronally advanced flap alone.

Clinical significance: Stabilization of the coronally advanced flap by orthodontic buttons will prevent apical movement of the advanced margins and will result in better root coverage and stable results over a long period.

Keywords: Coronally advanced flap, Gingival recession, Literature review, Orthodontic button, Root coverage.

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AIM

This report describes a case of multiple gingival recession successfully treated with coronally advanced flap assisted by application of orthodontic buttons and literature review of the same.

BACKGROUND

Apical migration of the marginal gingiva resulting in exposure of the root surface is termed as a gingival recession. Gingival recession is one of the very common problems encountered in periodontal practice. Kassab et al., 2003 reported almost 50% of the population had 1 or more sites with gingival recession.[1] Gingival recession can pose an esthetic and functional impairment in patients, and if left untreated can result in dentinal hypersensitivity, root caries, etc.[2] When such problems are faced, the gingival recession mandates treatment.

Numerous treatment modalities have been proposed, tried and reported for treatment of gingival recession. Coronally advanced flap (CAF) is considered the treatment of choice when treating multiple gingival recessions. The success of the coronally advanced flap depends on the tensionless advancement of the flap and secure suturing that will prevent apical displacement of the flap during normal function. Prato et al. reported that placement and stable positioning of the margin of the flap 2 mm coronal to CEJ resulted in complete root coverage.[3] To achieve the stable, secure positioning of the coronally advanced flap in the same position, sling sutures secured against an orthodontic button placed on the middle of the tooth could be of great value.

CASE DESCRIPTION

A 36-year-old male patient reported to the department with the chief complaint of sensitivity in relation to the upper left back tooth region for the past 3 months. The patient was systemically healthy, with no habit of smoking. On clinical examination, Millers class I recession was evident in 24, 25 and 26 (Fig. 1). Sensitivity on probing the exposed root was found. Very minimal inflammation was evident in the site. Oral prophylaxis and oral hygiene instructions were given to the patient, and the patient was recalled after 3 weeks. The following clinical parameters were noted at baseline, 3 weeks after initial therapy and at 1, 3 and 6 months following root coverage procedure: Probing pocket depth (PPD), Clinical attachment level (CAL), the width of keratinized tissue (KTW).

Clinical Technique

Before the surgical procedure, orthodontic buttons were fixed on the facial aspect of the teeth with composite (Fig. 2). The surgery was performed under local anesthesia (Lignocaine, with 0.2% adrenaline). After local infiltration, horizontal incisions were given at the base of the papilla, and the papillae were de-epithelialized. (Fig. 3) A full thickness mucoperiosteal flap was raised to expose the root surface. Beyond this point, a split thickness flap was raised beyond the mucogingival junction. The root surface was curetted and planned (Fig. 4). The flap was then coronally advanced and sutured over the de-epithelialized papilla. The margins of the repositioned flap were coronal to the CEJ. The central portion of the flap was secured around the orthodontic button with suspended sutures to prevent apical migration during mastication and speech (Fig. 5). The surgical site was protected with periodontal dressing.

The patient was advised to abstain from brushing or flossing the surgical site for two weeks. Chemical plaque control with chlorhexidine was initiated and instructed to follow for 2 weeks. For pain control, plain acetaminophen was prescribed for two days. The patient was also advised to report at the earliest if the periodontal dressing was lost.

Two weeks after surgery, the patient was recalled. Pain, bleeding, swelling or discomfort due to orthodontic

Fig. 1: Preoperative presentation with Miller's class I recession in relation to 24,25 and 26

Fig. 2: Orthodontic buttons fixed on the facial aspect of the teeth with composite

Fig. 3: Horizontal incisions given at the base of the papilla and the papilla is deepithelialized

Fig. 4: Split thickness flap was raised till beyond the mucogingival junction

buttons at the site of surgery was not experienced by the patient. The periodontal dressing was removed gently, and the area was irrigated with sterile saline. Healing was satisfactory. Sutures and the orthodontic buttons were removed, and the patient was instructed to use a soft-bristled toothbrush with roll technique for plaque control. Use of chlorhexidine was stopped. The patient was then followed up for 1 month, 3 months and 6 months postoperatively. Complete root coverage was obtained at 1-month postoperatively, and the results remained stable over 3 and 6 months (Fig. 6).

At baseline, the mean PPD of the sites was 2.1 mm. the mean CAL was 4.3 mm. The width of the keratinized tissue was 3.1mm. At the end of 6 months, the mean PPD was 2.1 mm, CAL was 0.54 mm and KTW was 3.4 mm. The comparison of clinical parameters at baseline, 1 month, 3 months and 6 months post op are presented in Table 1.

DISCUSSION

Coronally advanced flap is the most commonly used technique to treat multiple gingival recessions.[4] Treatment of multiple gingival recessions by coronally advanced flap can be difficult as securing the flap in position coronal to CEJ and preventing apical migration is a challenge. This can be overcome by securing the flap by sling sutures around the orthodontic button. This technique was first reported by Ozcelick et al.[5] Aroca et al. advocated use of composite stops to secure the suspensory suture.[6] This report describes a case of multiple gingival recession treated with CAF along with orthodontic buttons.

In this case, almost complete root coverage was achieved by using this technique. There was a gain in CAL and KTW from baseline to 1 month postoperatively. The results were stable for 3 months and 6 months. Numerous case reports and comparative trials reported similar findings (Table 2).[7-18] The results might be attributed to the flap design and the orthodontic buttons.

The intact papilla ensured adequate blood supply to the pedicle flap. The full-split thickness flap, extended beyond mucogingival junction resulted in tensionless advancement of the flap over the root surfaces. The split thickness at the apical portion also provided the needed blood supply to the pedicle. The full thickness flap at the coronal portion guaranteed thicker biotype at the marginal gingiva thereby preventing further recession.[7]

The important aspect of using the orthodontic button is that it provides anchorage to the coronally advanced flap. The suspended sutures placed over the buttons ensured maximum coronal advancement and prevented apical movement.

This technique is considered as simple, cost-effective, and easy to perform and has more patient acceptance as compared to use of connective tissue grafts, emdogain or other regenerative materials. The technique has resulted in predictable, stable results with good root coverage and excellent esthetics.

CONCLUSION

Orthodontic button application to stabilize the coronally advanced flap resulted in better root coverage and stable results over 6 months postoperatively. Literature evidence

Fig. 5: Central portion of the flap secured around the orthodontic button with suspended suture

Fig. 6: 6 months postoperative presentation

Table 1: Comparison of clinical parameters at baseline and post-treatment

Clinical parameters	*Baseline*	*1 month*	*3 months*	*6 months*
PPD (mm)	2.1	2.1	2.1	2.1
CAL (mm)	4.3	1.3	1.2	1.2
KTW (mm)	3.1	3.3	3.4	3.4

PPD, Probing pocket depth; Cal, Clinical attachment level; KTW, Keratinized tissue width

Table 2: Literature review

Author	*Type of report*	*Result and conclusion*
Ozcelik et al., 2011[5]	Randomized Control Trial	Six months results showed that the CAF+B approach was effective for the treatment of multiple gingival recessions in patients with esthetic demands.
Khobragade et al.[8]	Randomized Control Trial	Both treatment modalities, i.e., CAF and CAF+B are effectual in the treatment of proximate Miller's Class I and Class II gingival recession defects, but CAF+B showed significantly superior clinical results.
Khanna et al.[9]	Randomized Control Trial	Six months postsurgical evaluation showed that minimally invasive coronally advanced tunnel technique with orthodontic buttons and suturing was effective and predictable for the treatment of multiple recession type defects.
Bandhari et al.[10]	Split mouth case control study	Combination of SCAF and button technique resulted in statistically significant improvements in clinical parameters as compared to SCAF alone.
Mahajan et al.[11]	Case series	Orthodontic button application resulted in better stabilization of the coronally advanced flap.
Maroo et al.[12]	Case report	CAF with orthodontic button application is very effective approach for root coverage in Millers class III recession.
Grover et al.[13]	Case report	Satisfactory results in terms of root coverage, esthetics, patient comfort, etc.
Fathima et al.[14]	Case report	The usage of the orthodontic buttons/brackets and suspended sutures with CAF technique is effective method in treating multiple adjacent type gingival recessions.
Kaushik et al.[15]	Case report	One-month postoperative results showed that the CAF combined with the orthodontic button for stabilization is a very effective approach even in the treatment of Miller's Class I recession defects.
Gulati et al.[16]	Case report	The current case report demonstrates good outcomes of the CAF + B technique without the use of any additional soft tissue grafts or vertical incisions, therefore, endorsing the promising potential of the CAF + B technique in multiple gingival recession cases.
Bharath et al.[17]	Case report	Coronal stabilization of flap with orthodontic button resulted in better root coverage outcomes.
Mohamed et al. [18]	Case report	Three months postoperative results showed that the coronally advanced flap combined with orthodontic buttons for stabilization is a very effective approach for treatment of Miller's Class I recession defects.

also points out that the orthodontic button assisted coronally advanced flap resulted in better clinical results as compared to coronally advanced flap alone.

CLINICAL SIGNIFICANCE

Stabilization of the coronally advanced flap by orthodontic buttons will prevent apical movement of the advanced margins and will result in better root coverage and stable results over a long period.

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