Case Report

Surgical Exposure of Canine for Orthodontic Bracket Placement: A Case Report

Priyanka Kumari[1], Swati Agarwal[2], Pransi Gupta[1], Shashwat Asthana[1]

Abstract

Gingivectomy is a minor surgical procedure done to excise a part of the gingiva or to reduce the soft tissue wall of the periodontal pocket. Orthodontically treated patients have often been shown to clinically present with gingival enlargement/hyperplasia The aim of this article is to attain for surgical management of enlarged gingival tissue for exposure of canine for bracket placement for orthodontic correction.A 26-year-old female was referred to the outpatient Department of Periodontology, Kothiwal Dental college and Research Centre, Moradabad, for surgical exposure of upper left canine for bracket placement for orthodontic correction. Surgical approach was carried out using internal bevel gingivectomy technique using no. 15 blade. A timely collaborative approach between the orthodontist and periodontist is crucial for minimizing visits and achieving optimal periodontal outcomes. Periodontal health is most effectively restored with minimal postsurgical complications in orthodontic cases when intervention occurs at the appropriate time.

KEYWORDS: Gingivectomy, Internal bevel incision, Biologic width

Introduction

Gingivectomy is a minor surgical procedure done to excise a part of the gingiva or to reduce the soft tissue wall of the periodontal pocket.[1]

Gingivoplasty is the reshaping of marginal and interproximal gingiva to recapture good physiologic form and maintain a shallow gingival sulcus.[2]

To enhance the clinical crown length without going against the biologic width, a surgical crown exposure is performed. Either gingivectomy alone or the removal of gingiva and alveolar bone can result in crown lengthening.[3]
Biologic width is defined as the physiologic dimension of the junctional epithelium and connective tissue attachment, according to Gargiulo et al.[4] On average in humans, it is 2.04 mm (Connective tissue attachment is 1.07 mm and junctional epithelium, below the base of the sulcus is 0.97 mm).

1.Post Graduate Student

2. Professor of Department of Periodontics

***Correspondence Address**:*

Dr. Priyanka Kumari

(priyankak511@gmail.com)

Department of Periodontics

Kothiwal Dental College & Research Centre

It has been demonstrated that patients receiving orthodontic treatment frequently exhibit clinically present gingival enlargement/hyperplasia[5] linked to a few etiological factors, such as poor oral hygiene with increased plaque/calculus deposition, an imbalance between the host's immune system and periopathogens, gingival irritation by bands mechanically or chemically, impaction of food, etc.[6]
Non surgical and surgical periodontal treatment options are available to eliminate or reduce these etiological factors. However, non-surgical periodontal treatment is not always effective in orthodontic patients and an additional treatment such as gingivectomy is needed in order to eliminate pockets, restore physiologic gingival contour and facilitate the placement of braces.[7]

Therefore, the aim of this study was to provide idea for surgical management of enlarged gingival tissue for orthodontic correction.

Case report

A 26 year old female was referred to the Department of Periodontology, Kothiwal Dental College from the Department of Orthodontics of the same institution. The patient presented with a good general health and maxillary left canine with short, rotated clinical crown (Figure 1). No periapical radiolucency was present. There was no mobility in this tooth upon clinical examination. The prime concern of this patient was spacing between teeth, for which the patient was undergoing orthodontic therapy. But during the treatment, clinical crown exposure was needed, after which the tooth would be orthodontically rotated to restore it to the normal arch form. As there was adequate amount of

attached gingiva, it was assessed that upto 3 mm of gingiva could be resected while retaining an adequate amount of attached gingiva. According to Ernesto classification (2004), this falls under Type I where sufficient soft tissue allows gingival excision without osseous recontouring. For this, the patient was referred to the Department of Periodontology, where meticulous scaling and root planing was first performed as the patient had fair oral hygiene.

Case management

Treatment procedure Sulcular method of tooth brushing was taught to the patient. Local anesthesia was given by infiltration using 1:80000 lignocaine hydrochloride. After achieving adequate anesthesia, bleeding points were marked at 3mm from the gingival margin (Figure 2) and then internal bevel incision was done using a 15 no blade, followed by crevicular incision (Figure 3). 3 mm of gingival tissue was removed buccally and 2 mm of tissue was removed palatally following the contour of the adjacent tooth (Figure 4 and Figure 5). The area was then cleaned and bone level were assessed by probing and it was concluded that biologic width was not violated, hence, the osteoplasty procedure was not required (Figure 4). Finally, coe pak was given (Figure 6).

Figure 1: Pre-operative labial (a) and palatal (b)

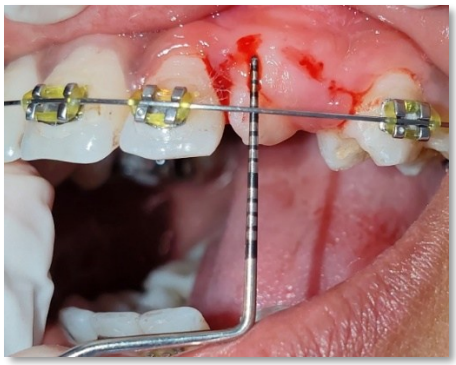

Figure 2: Bleeding points marked at 3mm from gingival margin for incision

Figure 3: Internal bevel incision

Figure 4: Post-operative homeosatis achieved labial (a) and palatal (b)

Figure 5: Excised tissue

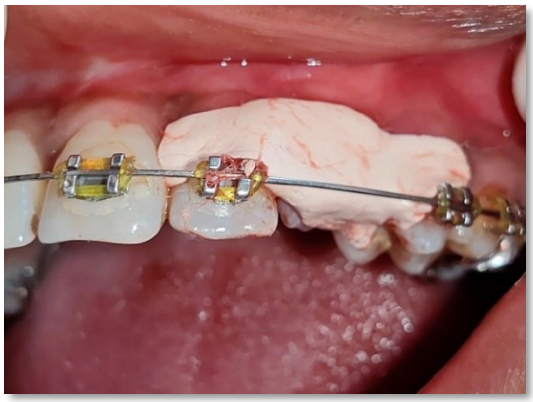

Figure 6: Coe Pak was given

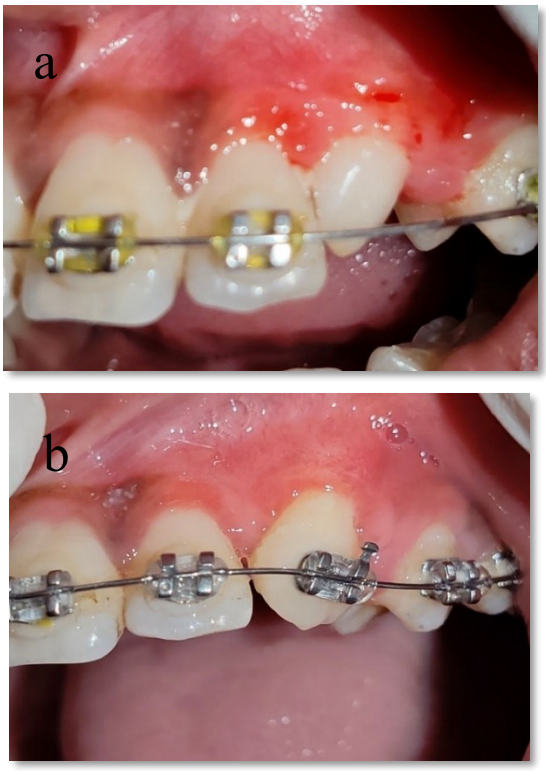

Figure 7: Post operative follow up:(a)1 month (b) 6 months

Post surgical care and follow up

Post operative instructions were given, and medications prescribed. Analgesics and antibiotics thrice daily for three days was advised to the patient. 0.12% chlorohexidine mouthwash twice daily was prescribed for the first 15 days. The periodontal dressing was removed 10 days after excision (Figure 7).

Clinical outcomes

10 days after the excision, there was complete healing with increase no visible sign of inflammation and gingiva at the site was apparently healthy (Figure 7). 6 months follow up of the patient showed that the tooth was bought to the occlusion by orthodontic treatment (Figure 7).

Discussion

Maxillary permanent canines are important for an attractive smile and are also essential for a functional occlusion. However, bringing an unerupted or impacted maxillary canine into the occlusion should not be the only goal in managing these teeth. The aim should be to attain proper occlusion, a healthy zone of attached gingiva, and ideal alveolar bone height.[8]

Various surgical techniques have been used to uncover the impacted canine such as, gingivectomy, double pedicle graft, apically positioned flap (APF), free gingival graft, and closed eruption technique. A decision tree to assist in choosing the appropriate technique to correct an impacted canine has been proposed. [9.10]

Various procedures have been utilized for the surgical exposure of the impacted canines. Gingivectomy could be the treatment of choice if simple excision of tissue would uncover one half or two thirds of the impacted tooth, leaving at least 3 mm gingival collar apically.[11]

Gingivectomy indications are elimination suprabony pockets, gingival enlargement and eliminate suprabony periodontal abscess. Its contraindication includes infrabony pockets treatment, pockets extending below the mucogingival junction, presence of minimal amounts of attached keratinized tissue and procedures requiring access to alveolar bone.[12,13]It improves visibility and accessibility to remove calculus, facilitate root planing, create an optimal environment for healing and restore the gingival physiologic contour.[12]

Various techniques are known to perform gingivectomy that may include conventional scalpels, electrosurgery, chemosurgery, and laser. The scalpel method is commonly considered because of its ease of use, accuracy, and minimal tissue damage.[14]

In a case report by **Deeksha D Pai et al**. Surgical approach was carried out using external bevel gingivectomy technique using no. 12 blade for surgical correction and orthodontic treatment exposure of his palatally placed upper left front tooth. Result showed that one week and 1 month

revaluation of the patient revealed satisfactory results and healing of the surgical site with complete exposure of the crown on buccal aspect.[15]

Goodsell recommends that any tooth that has been surgically exposed and through orthodontic force traction should be controlled periodically to check for excessive mobility or bleeding of the gingiva around the tooth. Care must be taken to ensure that the periodontal attachment follows the tooth as it is guided into the arch.[16]

Nezar Watted et al. in one of the 4 cases in which gingivectomy was used to expose the impacted canine was the most efficient and simple method for the partially exposed tooth. In this case, a portion of the cusp of canine was exposed with palpable canine prominence. There was no bone impedance, and there was an adequate amount of keratinized tissue. Hence, a minimally invasive approach of gingivectomy approach may reduce wound morbidity with direct bonding of brackets, which was done on the same day.[17]

Conclusion

A collaborative approach between orthodontist and periodontist at the appropriate time is an important key to successful treatment with minimal visit and optimal result. Early diagnosis and a well-planned treatment plan aids in better results and increased patient compliance in the long run.

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