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SURGICAL THERAPY FOR TREATMENT OF ORTHO-INDUCED GINGIVAL ENLARGEMENT IN AESTHETIC ZONE: A CASE REPORT

Dentistry

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ABSTRACT

Gingival enlargement's (GE) aetiology is multifactorial in nature. It may be the result of gingival irritation caused by dental plaque. Plaque production and retention are facilitated by inadequate orthodontic and restorative equipment, anatomical differences that cause discomfort, and poor tooth care. This enlargement may consequence into inadequate plaque control, difficulty in chewing and speaking, aesthetics problem and psychological issues. A 19-year-old female patient who was referred from the Department of Orthodontics to the Department of Periodontics had gingival growth associated to an orthodontic appliance in mandibular anterior region in present case. After phase I therapy gingivectomy and gingivoplasty surgical techniques were applied using a scalpel to remove enlarged gingival tissue under local anaesthesia. Marginal gingiva contouring was done to provide best aesthetics results and elimination of plaque retentive areas. The conventional scalpel technique and effective plaque control by patient at follow-up visits give desirable results. Gingivectomy and gingivoplasty surgical methods can remove supra-bony pockets to restore a physiologic gingival contour, improve aesthetics, and plaque retention areas.

KEYWORDS

Gingival enlargement; Gingivectomy; Oral hygiene

INTRODUCTION

In aesthetic zone of maxillary and mandibular region appearance of teeth along with gingiva is very important. The harmonious appearance of the natural or artificial teeth can be significantly influenced by the symmetry and form of the gingival tissues. Patients' choice of treatment may be influenced by their growing desire for more aesthetically pleasing results. Inflammation-free, healthy periodontal tissues give the anterior an ideal appearance.[1] Gingival enlargement(GE), or gingival overgrowth, is characterized by an increase in the size of the gingiva. For management to be effective the cause of the enlargement must be accurately determined.[2] Persistent periodontal infections and fixed orthodontic equipment might be related to each other. Gingival hypertrophy is caused by increased plaque accumulation and inadequate oral hygiene habits. This mechanism causes GE in patients receiving orthodontic therapy, albeit its precise nature is unknown. Kloehn and Pfeifer addressed a few causal causes for GE acclerated by orthodontic treatment, including as food buildup, poor oral hygiene, chemical irritation from cement, and mechanical irritation from bands.[4] Gingival enlargement may be caused by a variety of etiologic causes. Inflammation brought on by dental plaque may be the cause of gingival hypertrophy. Plaque development and retention are facilitated by inadequate orthodontic and restorative appliances, pain resulting from anatomical abnormalities, and poor tooth hygiene.[3,4] The orthodontic bracket placement increases the risk of carious and periodontal diseases by causing detrimental alterations in the quantitative and qualitative composition of the bacterial plaque. In fact, there has been a reported rise in spirochetes, periodontal pathogens like Prevotella intermedia, Aggregatibacter actinomycetemcomittans, Porphyromonas gingivalis, or Fusobacterium nucleatum[5] (as well as in Candida sp.[6]), and it is evident that wearing orthodontic brackets makes it more difficult to maintain good oral hygiene, especially in interproximal spaces.[7]

Nonsurgical periodontal therapy, such as scaling and oral hygiene practice is ineffective when GE is widespread. Treatment plans vary depending on the type of enlargement. Surgical and nonsurgical interventions are often combined, based on the individual needs of the patient. Both the functional and aesthetic needs must be taken into consideration. Because of the unsightly appearance of the swollen gingiva, treatment is necessary. For excision of the gingival overgrowth a surgical approach that is gingivectomy along with gingivoplasty should be considered for effective and desirable results. A gingivectomy removes the soft tissue wall of a periodontal pocket that is unhealthy.

Case Report

A 19-year-old systemically healthy female patient reported to department of periodontics with chief complaints of swollen gums in lower front teeth region from past 1 month. On intra-oral examination it was found that patient is undergoing fixed orthodontic treatment and have gingival enlargement with respect to mandibular anterior area extending from mesial line angle of right mandibular canine to mesial line angle of left mandibular canine teeth represented in figure 1A. After completion of phase I therapy patient was recalled and re-evaluated for surgical therapy procedure. Verbal and written consent was taken before the start of surgical procedure. After achieving local anaesthesia to prescribed surgical site, an internal bevel gingivectomy procedure using number-15 scalpel blade was conducted depicted in figure 1B. For recontouring of marginal and interdental gingiva gingivoplasty procedure was also carried out so that esthetically pleasant and functionally stable margins were obtained shown in figure 1C. A Coe-Pak periodontal dressing was placed at surgical site illustrated in figure 1D. Post-operative instructions and prescription of amoxicillin 500 mg thrice a day for 5 days[8] and Ibuprofen 400 mg thrice a day for 3 days were given to the patient.[8] Use of a 0.2% Chlorhexidine mouthwash twice daily for a period of 2 weeks was also prescribed. Patient was recalled after 10-12 days (figure1E) and after 1 month (figure1F) for follow up.

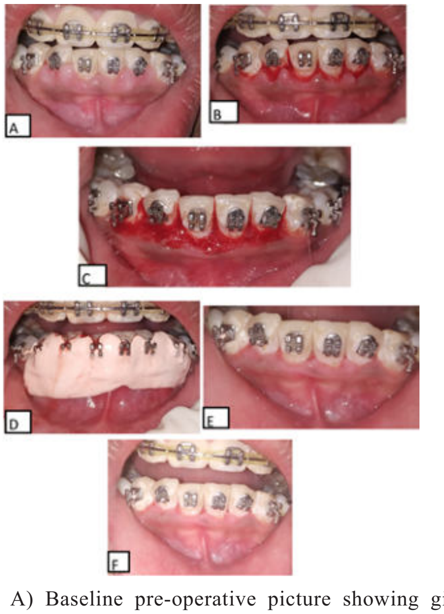

Figure:1 A) Baseline pre-operative picture showing gingival enlargement in mandibular anterior area; B) Intra-operative picture after gingivectomy procedure using scalpel technique; C) Intra-operative picture after gingivoplasty procedure; D) Coe-pak placement ; E) After 12 days follow-up; F) After 1 month follow-up period

RESULTS

At follow-up visits a complete healing of gingival tissue was observed. Patient was satisfied with the results. This case study illustrates how gingivectomy and gingivoplasty can remove suprabony pockets to restore a physiologic gingival contour, improve aesthetics, and plaque retention areas.

DISCUSSION

It is very difficult for patient to maintain good oral hygiene in case of enlargement of gingiva. Various treatment options are available to treat gingival overgrowth. It involves laser excision, overgrowth flap surgery, scalpel gingivectomy, and electrosurgery.[9] Poor periodontal health in orthodontic patients has generally been associated with conducive environments for plaque retention and challenges with following recommended oral hygiene practices. Plaque retention regions that are challenging to clean are inevitably created during the placement of a fixed orthodontic appliance.[10] But the persistent presence of bacterial plaque invariably brings with it a host of adverse consequences, including gingivitis, gingival hyperproliferation, demineralization of enamel (which can result in caries), and, in severe situations, possibly even attachment loss.[11,12]

The frequency of GE increases with the length of orthodontic therapy, according to Pinto et al.[13] According to Al-Abdaly et al., it is possible to monitor the degree of inflammatory gingival enlargement during orthodontic treatment by utilizing salivary flow, pH, gingival enlargement index, and predictive values for inflammatory gingival enlargement and its therapy.[14] Individuals undergoing orthodontic treatment are more likely to develop anterior gingival hypertrophy, according to Zanatta et al.[15] Gingival enlargement is often the result of the patient receiving orthodontic care because of the length of the treatment. A key component of the gingival overgrowth treatment plan is meticulous care of oral hygiene.[1] Gingival and periodontal health required to be evaluated prior to starting of the orthodontic treatment. It is imperative for clinicians to assess a patient's ability to maintain good oral hygiene both before and during orthodontic treatment.[13] Inflammatory gingival enlargement during orthodontic therapy is defined as a localized or widespread enlargement of gingival tissues that reaches the interdental papilla, and gingival margin. It is easy to observe acute or chronic inflammatory gingival enlargement in patients who have fixed orthodontic appliances and are persistent.

It is unknown exactly how GE develops, although it most likely involves increased fibroblast production of an amorphous ground substance with high glycosaminoglycan content. Up-regulation of keratinocyte growth factor receptors and elevations in type I collagen mRNA expression may have a major impact on excessive epithelial cell proliferation and the development of GE.[15]

CONCLUSION

The patient's main worry with gingival enlargement is that it affects both appearance and function. When there is excessive enlargement of gingiva, the patient will benefit most from a well-planned surgical therapy to reduce the tissue to a normal contour. This will lower the number of clinical visits required and enhance the patient's quality of life. This case report indicates that patients with fixed orthodontic appliances may benefit from surgical periodontal treatment, specifically the scalpel gingivectomy, to effectively control gingival health issues. This illustrates how gingivectomy and gingivoplasty, which remove the supra-bony pockets, result in a physiologic gingival contour, elimation of plaque retentive areas, and improve the patient's esthetics. Maintaining gingival health and preventing such outcomes would be possible with periodic periodontal maintenance care during orthodontic therapy.

Conflict Of Interest
Author deny any conflict of interest
Financial Disclosure
Nil

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