

# GINGIVAL ENLARGEMENT

## Authors:

Swaroop Chandy<sup>1</sup>

Kiran Joseph<sup>2</sup>

Annie V Issac<sup>3</sup>

Rino Roopak Soman<sup>4</sup>

<sup>1</sup>Senior Lecturer,  
Department of Periodontology.  
St Gregorios Dental College, Chelad, India.

<sup>2</sup>HOD & Prof.  
Department of Periodontics  
St Gregorios Dental College, Chelad, India.

<sup>3</sup>Senior Lecturer,  
Department of Periodontology  
St Gregorios Dental College, Chelad, India .

<sup>4</sup>Reader,  
Department of Periodontology  
Pushpagiri Dental College, Thiruvalla.

Address for Correspondence:

Dr Swaroop Chandy.  
Senior Lecturer,  
Department of Periodontology.  
St Gregorios Dental College. Chelad,  
Email: swarooprini@gmail.com

## ABSTRACT

Gingival enlargement is a common pathologic condition that can develop in response to various stimuli. It may be inflammatory, non inflammatory or a combination of both. It can be due to various factors such as poor OH, mouth breathing or food impaction. This case report discusses a case of gingival hyperplasia in an 18 year old male undergoing orthodontic treatment in relation to lower anteriors for the past 8 months. The oral hygiene of the patient was found to be poor. Based on the clinical and histopathological findings, a diagnosis of chronic inflammatory gingival enlargement was made. Along with oral prophylaxis, gingivectomy using scalpel was carried out and results were found to be satisfactory. A proper diagnosis and treatment plan along with proper patient compliance is very essential for successful management of this condition.

**Key words :** Gingival hyperplasia, epulides, orthodontic therapy, gingivectomy.

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## INTRODUCTION

Gingival enlargement otherwise known as hyperplasia or increase in the size of the gingiva, is a multifactorial condition that can develop as a result of interactions between the host and the environment. It may be mostly plaque-induced or associated with certain drugs, systemic diseases or hereditary conditions like hereditary gingival fibromatosis<sup>1</sup>. It also occurs as a manifestation associated with several blood dyscrasias, such as leukemia, thrombocytopenia or granulomatous diseases<sup>2</sup>.

Inflammatory enlargements usually occur as a result of either acute or chronic inflammatory changes involving the gingiva. It originates as a slight ballooning of interdental papilla & marginal gingiva and usually progresses slowly & painlessly. They can either be localized or generalized<sup>3</sup>. Localized gingival enlargements have been termed epulis<sup>4</sup>, describing pedunculated or sessile swellings of the gingiva. It is occasionally accompanied by painful ulceration and initially a life preserver shaped bulge can be seen around the gingiva of involved teeth. It may undergo spontaneous reduction in size, followed by exacerbation & continued enlargement<sup>5</sup>. It is caused by prolonged exposure to dental plaque including factors like poor OH, caries lesions, anatomic abnormalities like malalignment of teeth, improper restorative therapies like overhanging margins of restorations, improperly designed prosthesis & improper orthodontic treatment which can favour plaque accumulation<sup>2</sup>. Gingival enlargement may be influenced by certain hormonal conditions such as pregnancy & puberty and complicated by certain systemic medications such as antiepileptics & calcium channel blockers<sup>6</sup>. The exact mechanism for the development of gingival enlargement has not yet been completely understood, but various studies show that it might be due to increased production by fibroblasts of amorphous ground substance with a high level of glycosaminoglycans<sup>7</sup>.

Gingival enlargement may lead to functional disturbances like altered speech, phonetics, difficulty in mastication, esthetics as well as psychological problems<sup>2</sup>. Therefore a proper treatment plan should be formulated in order to treat these adverse effects associated with gingival hyperplasia. Timely professional oral prophylaxis, good patient compliance including proper oral hygiene procedures are essential for effective management of gingival hyperplasia.

This case report presents a case of chronic inflammatory gingival enlargement associated with orthodontic therapy.

## Case Report

An 18 year old male was referred to the Department of Periodontics from Department of Orthodontics, St. Gregorios Dental College, Kothamangalam, Kerala. The patient complained of swelling in lower gums in the front tooth region. The patient noticed this swelling 2 months back which was asymptomatic and there was no noticeable increase in size afterwards. The patient was under active orthodontic treatment for the past 8 months. The patient also experienced bleeding from the gums in relation to the lower anteriors while brushing his teeth.

The patient was not under any active medication and did not have any relevant medical history. Other than extraction of all first premolars for orthodontic treatment, the patient did not have any significant dental or family history.

Intraoral examination revealed orthodontic molar bands & brackets on all teeth except the mandibular right central incisor. Clinical examination revealed diffuse type of enlargement involving the marginal & interdental papilla extending from 33 to 43. The tissues were red in colour, had rolled out gingival margins & was soft in consistency. On probing, pseudopockets having a depth of 4-5mm were found in relation to 33 to 43 facially and generalized BOP was evident. Spacing of approximately 2mm was evident between 31 & 41 & no mobility was found. Calculus deposits were found in relation to lower anteriors facially and lingually. OHI was taken and was found to be poor.

At this stage, OPG was taken which revealed mild crestal bone loss. No periapical changes were seen in relation to lower anteriors. Complete blood count investigations were taken which was found to be within normal limits.

A treatment plan was formulated consisting of initial periodontal therapy followed by conventional gingivectomy procedure using scalpel. Initial periodontal therapy comprising of supragingival & subgingival scaling was done in order to improve the oral hygiene status. Oral hygiene instructions consisting of proper brushing techniques, use of orthodontic brushes & 0.2% chlorhexidine mouthwash was recommended for the patient.

Following Phase 1 therapy, gingivectomy procedure using scalpel was carried out after a week in order to improve the function & esthetics. All aseptic measures were taken for clinical preparation before surgical procedure in relation to lower anteriors, pockets were measured with Williams probe and bleeding points were marked on the outer gingiva on the labial aspect using the probe.

Under local infiltration of gingiva in relation to lower anterior region, a No:15 BP blade was used to give a discontinuous external bevel incision on labial aspect from distofacial line angle of 33 to distofacial line angle of 44 at approximately 45 degrees to the tooth surface. The incision was given approximately 1mm apical to the bleeding points and directed coronally to a point between the base of the pocket & crest of the bone. Excised tissue was sent for histopathological examination. The tissue tags were removed & surgical site was thoroughly irrigated with betadine-saline. The site was then covered with Coe-pack. Analgesics (Tab Combiflam tid for 3 days) & Antibiotic (Cap. Amoxycillin 500mg tid for 3 days) and Chlorhexidine gluconate mouthwash 0.2% was prescribed. Post operative instructions included not to brush over the surgical site and was advised not to have anything hot for the next 24 hours. Patient was recalled after a week for review and healing was found to be uneventful. The patient was then referred to Department of Orthodontics for further management.

### Histopathological examination

Histopathologically, an increase in number and thickening of mature collagen bundles was found in the connective tissue stroma. Edema, vascular engorgement & inflammatory cell infiltration was evident. Microscopic appearance of fibroblasts in the connective tissue stroma and increase in chronic inflammatory cell component was evident suggestive of non-specific gingival enlargement.

### DISCUSSION

Clinical examination of the above individual revealed generalized plaque and calculus deposits with poor oral hygiene status. He was also not using an orthodontic brush and did not brush during night. He had bleeding and discomfort during brushing for the past 2-3 months. During his initial visit, subgingival scaling was done and in subsequent visit, a reduction in inflammation was seen even though the enlargement persisted. Pubertal age

group of the patient may also be one of the factors which favoured gingival hyperplasia<sup>6</sup>.

Hypertrophy or enlargement of gingiva is found to be one of the adverse periodontal effects associated with orthodontic treatment. Orthodontically induced gingival enlargement has a specific fibrous & thickened appearance of the gingiva. Various studies have shown that proximal anterior bleeding and excess resin or cements around the brackets were associated with higher levels of anterior gingival enlargement. Presence of orthodontic brackets were found to increase the level of difficulty associated with brushing which contributed to poor oral hygiene. Surface roughness of cements used is another factor which enhances bacterial adhesion and thereby favour plaque accumulation<sup>7</sup>.

Contact with certain dental metals were also found to induce gingival hyperplasia. Eliadas et al stated that gingival enlargement associated with orthodontic appliance usually occurs as a result of inflammatory response to metals like nickel. According to Holmstrup, this type of gingival enlargement is usually manifested as nickel allergic contact dermatitis<sup>8</sup>.

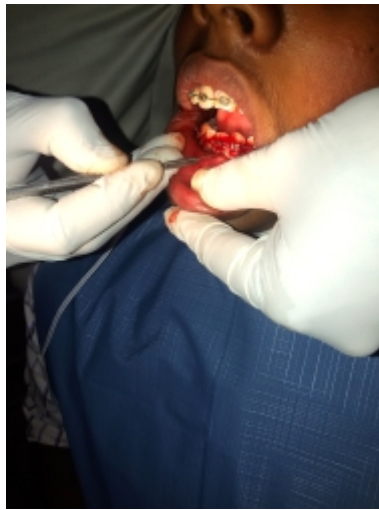
Fixed orthodontic appliances causes an increase in all bacterial counts around the bracket and band's ecosystem. A decrease in concentration of facultative microorganisms & an increase in proportion of anaerobic rods & spirochetes including *Prevotella melaninogenica*, *Prevotella intermedia* & *Actinomyces odontolyticus* were found in gingival sulcus in subjects wearing orthodontic appliances<sup>9</sup>. A study by Sallum et al showed a marked influence of orthodontic appliance removal & professional oral prophylaxis on periodontal health<sup>2</sup>.

An increase in bulk of the tissue can lead to displacement of tooth in the arch resulting in spacing as well as tooth migration which is most commonly associated with drug induced gingival hyperplasia. A thickening of the parakeratinized epithelium can result in nodular enlargement of gingiva<sup>3</sup>. In case the hyperplastic gingival tissue is edematous, removal of the local factors by scaling & root planning will result in resolution of the condition. If the tissues are fibrotic, which persists even after SRP with involvement of either esthetic or functional component, it might need surgical intervention<sup>2</sup>.

Various methods have been employed for gingivectomy including gingivectomy using scalpel



Pic-1- Inflammatory enlargement extending from 33 to 43 facially.



Pic -2- External bevel incision given facially extending from 33 to 43.



Pic- 3-Interdental incision given facially extending from 33 to 43.



Pic-4- Removal of excised tissue done



Pic-5- Periodontal pack placed.



Pic-6- Healing after 1 month.



and by means of electrosurgery, laser and chemosurgery. Studies have shown that sustained ability of diode laser gingivectomy to maintain adequate gingival health is advantageous in orthodontic patients since treatment can go in for longer periods especially in older patients<sup>10</sup>. Eventhough each of these techniques has it own advantages and disadvantages, factors such as conservation of keratinized tissue, minimal gingival tissue loss & minimal post surgical discomfort should be taken into consideration when opting for different techniques<sup>9</sup>.

Recurrence of the lesion after treatment is one of the most commonly encountered complication in the management of gingival enlargement. Chronic inflammatory enlargement occurs mainly due to incomplete removal of local irritation factors mainly plaque & calculus or as a result of repeated food impaction or iatrogenic factors like overhanging margins of restorations<sup>6</sup>. This is usually manifested by a red bead like granulomatous tissue that will bleed on slight provocation<sup>9</sup>. Chronic inflammatory enlargement caused by local factors is self perpetuating since it is often impossible to properly clean the "pseudopockets" which are formed by hyperplastic tissue. This condition can be corrected by removing granulation tissue along with scaling & root planning & by instituting proper oral hygiene methods.

## CONCLUSION

In the above case report, anterior gingival enlargement has been found to be associated with plaque induced gingival inflammation and lack of proper oral hygiene methods. Patient motivation & patient compliance are important aspects of treatment planning during management of chronic inflammatory enlargements. Therefore successful management of this condition requires combined effort of both patient and dentist. A proper follow up should be carried out to detect any early recurrence as well as to maintain the gingival contour in its normal functional & physiologic state. Further studies are needed inorder to obtain more data and information regarding the etiology and management of chronic inflammatory gingival enlargement.

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