

Low Dose Amlodipine Induced Gingival Overgrowth - A Case Report

Rishi Bhimani*

**Dr. Rishi's Dental Clinic, Navi Mumbai, Maharashtra, India.*

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ABSTRACT

Gingival enlargement is a common manifestation of gingival and periodontal disease having a multifactorial etiology. Anticonvulsants, immunosuppressants and calcium channel blockers have been associated with gingival enlargement in susceptible patients. Amlodipine is a new generation calcium channel blocker used to manage hypertension and angina. Reports of amlodipine associated gingival enlargement are uncommon.

The current case reports gingival enlargement in a 45 years old female, associated with the use of a small dosage (5 mg) of Amlodipine for hypertension. The treatment protocol included non-surgical periodontal therapy, drug substitution, surgical excision of minor fibrotic enlargement as well as extraction and rehabilitation of the offending teeth to improve esthetics and function resulting in an excellent clinical outcome.

Keywords: Amlodipine, Gingival enlargement, Amlodipine-induced gingival overgrowth, Gingival inflammation

INTRODUCTION

One of the major concerns of the human population is oral Gingival enlargement is a common clinical feature of gingival and periodontal disease. It has a multifactorial etiology and has been frequently associated with inflammatory changes in the gingiva. Other factors related to this condition are hereditary (familial), malignancies and those resulting from adverse effects associated with systemic administration of certain drugs [1].

Drug-induced gingival enlargement could be an unwanted side-effect of certain group of drugs given for non-dental conditions. Currently, more than 20 prescription medications are associated with gingival enlargement [2]. Drugs associated with gingival overgrowth are broadly categorized into three major groups according to their therapeutic actions, namely, anticonvulsants, immunosuppressants and calcium channel blockers [3,4]. Patients medicated with these drugs may be implicated in this unwanted side effect, which may interfere with esthetics, mastication or speech as well as decrease access for oral hygiene resulting in an increased susceptibility to oral infection, caries and periodontal disease.

Amlodipine is a newer dihydropyridine calcium channel blocker that used in the management of both hypertension and angina. Ellis et al. [5] first reported gingival sequestration of amlodipine and amlodipine-induced gingival overgrowth. Since then, very few isolated cases of AIGO have appeared in the dental literature, although there are numerous reports of nifedipine (another member of calcium channel blocker-induced gingival overgrowth till

date). There is less data on reports of overgrowth with amlodipine at a dose of 5 mg, even after taking it for more than 6 months.

But, in the present case, the gingival overgrowth occurred at a dose of 5 mg within 6 months of use. AIGO was treated in the following phases: (1) thorough Phase-1 therapy, (2) substitution of the drug, (3) surgical excision of the residual gingival overgrowth and (4) Restoration and replacement of teeth.

CASE REPORT

A 45 year old female patient from a poor socio-economic background, reported to Dr. Rishi's Dental Clinic, Navi Mumbai with a chief complaint of swollen and bleeding gums for 6-8 months along with bad breath. Patient was not aware of such a type of gum growth previously until she saw diffused, nodular bright-red gum growth in the lower front region and upper and lower right side of the jaws. Her past medical history revealed that she was hypertensive since the

Corresponding author: Dr. Rishi Bhimani, Private Practitioner and Proprietor, Freelance Consultant Periodontist, Dr. Rishi's Dental Clinic, Shop 9 & 10, Sai Palace, Plot 36, sector 14, Vashi, Navi Mumbai-400703, Maharashtra, India, E-mail: rishibhimani@gmail.com

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past 1.5 years and she was on a combination medication-Telmisartan 40 mg with Amlodipine 5 mg, since then.

Her personal history revealed that she used to brush her teeth once daily with brush and paste, but she avoided brushing the teeth which had enlarged gums, as they bled on brushing. Her general physical examination revealed a moderate built with vital signs within the normal range.

Intraoral examination revealed enlarged marginal and interdental gingiva starting from maxillary right canine (13) up to 2nd molar (17) and from mandibular left lateral incisor (32) up to right 2nd molar (47) (**Figure 1**).



Figure 1. Pre-treatment showing enlarged gingiva.

The enlarged gingiva was nodular in certain areas with bright red color. The contour was rolled-out with soft and edematous consistency. There were visible bands of supra and sub-gingival calculus. Pus exudation presented with mandibular right 2nd premolar (45). Spacing was present between lower incisors along with labial version (**Figure 2**).



Figure 2. Pre-treatment showing local factors and labial version of incisors.

Patient was subjected to complete hemogram and all the parameters were found to be within normal range. Radiographic evaluation of the affected sites revealed extensive bone loss with mandibular left (31) and right central incisor (41) along with pathologic migration. The

mandibular lateral incisors (32,42) had greater than 50% alveolar bone support remaining. Her treatment started with non-surgical approach. Scaling and root planing were performed in 2-3 sessions along with 5% Povidone-iodine irrigation for periodontal pockets (**Figure 3**).



Figure 3. After scaling and root planning.

Simultaneously, the patient's physician was consulted regarding drug substitution or withdrawal of the drug. The physician changed the drug from the previous combination of Telmisartan 40 mg + Amlodipine 5 mg to plain Telmisartan 40 mg, eliminating Amlodipine. The patient was prescribed Folic acid supplements, once daily for 15 days. Patient was instructed to maintain good oral hygiene with the use of chlorhexidine oral rinses. A dramatic response was noticed after four weeks of drug substitution and maintenance of regular oral hygiene. There was regression in the size of gingival enlargement with minimal fibrotic component left (**Figure 4**).



Figure 4. After 31, 41 extraction, minor fibrotic gingival nodules persistent.

In the meanwhile, during the 4 weeks healing period, endodontic therapy was performed for mandibular lateral incisors and canines (32,42,33,43) as they were severely

attrited. 31, 41 were extracted due to poor prognosis. Once the extraction site was healed, the minor nodular enlargement was excised along with minor frenotomy was done with RF electrocautery (**Figure 5**).

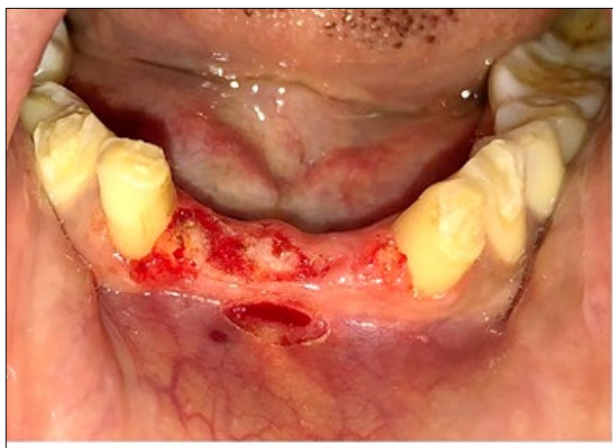


Figure 5. Surgical excision of nodular enlargement.

After about 2 weeks of healing, the lateral incisors and canines were prepared to receive fixed partial denture prosthesis, replacing the extracted teeth as well as restoring function and esthetics (**Figure 6**).



Figure 6. Final post-treatment results.

The patient has been kept on a recall every 6 months.

DISCUSSION

Medication associated gingival enlargement has been known for a long time. The widespread use of calcium channel blockers began in 1980. The prevalence of Amlodipine associated gingival enlargement has been reported to be 3.3%, which is significantly lower as compared to Nifedipine [6]. Nifedipine is a second generation dihydropyridine whereas amlodipine is a third generation dihydropyridine. Amlodipine has a pharmacological action comparable to nifedipine, but it is preferred over nifedipine due to its higher bio-availability, slow hepatic degradation, near complete absorption and slow elimination making its

duration of action longer, thus it needs to be administered once daily, improving patient compliance with minimal side effects as compared to Nifedipine [6-8].

Although the exact role of dental plaque in the pathogenesis of drug associated gingival enlargement is unclear, there is evidence that elimination of local factors and maintenance of good oral hygiene, decreases the severity of gingival enlargement and improves gingival health. In the present case, there were abundant deposits of calculus and plaque retentive factors, at the sites with gingival enlargement. Scaling and root planing removed the local factors along with substitution of Amlodipine by the Physician was done.

Various possible mechanisms have been proposed to explain drug associated gingival enlargement in the past. CCBs affect calcium metabolism by reducing the Ca^{2+} cell influx, leading to a reduction in the uptake of folic acid, thus limiting the production of active collagenase [9]. As a result of the reduction in collagen degradation, increased collagen accumulation occurs.

Proinflammatory cytokines, such as interleukin-1b and interleukin-6 seem to have a synergistic effect in the enhancement of collagen synthesis by human gingival fibroblasts [10]. Interleukin-6 has been shown to target connective tissue cells, such as fibroblasts, both by enhancing their proliferation and by increasing collagen production and glycosaminoglycan synthesis [11]. This mechanism explains the role of the bacterial biofilm in inducing gingival inflammation, production of cytokines and gingival enlargement. In the present case, immediately after drug substitution, folic acid supplements were prescribed to the patient to replenish the folic acid depletion.

The treatment options for drug-induced gingival enlargement should be based on the medication being used and the clinical presentation of the individual case. The presence of local factors adds to the inflammatory component of the drug induced gingival enlargement. Timely removal of local factors by non-surgical periodontal therapy partially resolves the gingival enlargement. The need for, and timing of, any surgical intervention must be carefully assessed. Surgery is normally performed for cosmetic/aesthetic needs, most commonly being external bevel gingivectomy. In the present case, the persistent fibrotic enlargement was excised by electrocautery as it was minor and nodular in nature.

Prosthetic rehabilitation was carried out to replace the extracted mandibular central incisors, obtaining support from and using the adjacent incisors and canines as abutments. The prosthesis completely changed the smile as well as entailed immense confidence into the patient.

In this case, drug substitution had an additional advantage for the patient. Amlodipine frequently resulted in pedal as well as facial edema. This side effect of Amlodipine was also resolved post drug substitution. The post-treatment

results were found to be extremely satisfactory, esthetically as well as functionally. The patient was also extremely delighted with the results and has been maintaining her oral hygiene satisfactorily.

CONCLUSION

In this case, a combination of drug substitution and periodontal therapy, resolved the gingival overgrowth.

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