AMLODIPINE INDUCED GINGIVAL ENLARGEMENT: A CASE REPORT

A Case Report

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ABSTRACT

Gingival enlargement is a side effect associated with certain drugs. Amlodipine, a calcium channel blocker, used as an antihypertensive drug has been found to be associated with gingival hyperplasia. This case report presents diagnosis and management of amlodipine-induced gingival hyperplasia. Amlodipine-induced gingival enlargement was diagnosed and managed through scaling and root planning. Drug substitution and surgical intervention was performed in first two cases. The pathogenesis of gingival enlargement is uncertain and treatment is still largely limited to the maintenance of an improved level of oral hygiene and surgical removal of the overgrown tissue. Several factors may influence the relationship between the drugs and gingival tissues. Meticulous oral hygiene maintenance, switchover to an alternative drug, professional scaling and root planning and surgical excision of enlarged gingival tissue may help overcome the effect of these drugs.

Key words: Calcium channel blocker, drug-induced gingival overgrowth, gingivectomy

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INTRODUCTION:

Gingival enlargement or Gingival overgrowth (GO) is one of the most important clinical features of gingival pathology. Its etiology is multifactorial and is associated with inflammatory changes in the gingiva.[1] Other factors related to this condition are hereditary malignancies and those resulting from adverse effects associated with systemic administration of certain drugs. Currently, more than 20 drugs are associated with gingival enlargement. These drugs are broadly divided into three categories: *Anticonvulsants, Calcium Channel Blockers* and *Immunosuppressants*. Many *Calcium Channel Blockers* which are used as antihypertentive drugs have been implicated in causing gingival enlargement.[2]

Amlodipine is dihydropyridine derivative used as antihypertensive drug having longer action and comparatively lesser side effect than Nifedipine (*Calcium Channel Blocker*). Amlodipine, a dihydropyridine derivative is a third generation *Calcium Channel Blocker*, was first reported for

causing gingival overgrowth by Seymour *et al* in 1994.[3,4] Lafzi *et al* had reported rapid development of gingival hyperplasia in patients who received 10 mg per day of

amlodipine within two months of onset.[5] It has shown to have longer action and a weaker side effect compared to first generation such as nifedipine.[6] The prevalence of GO in patients taking amlodipine was reported to be 3.3%, which is lower than the rate in patients taking nifedipine 47.8%. The clinical features of GO usually present as enlarged interdental papillae resulting in a lobulated or nodular morphology.[7] The effects are normally limited to the attached and marginal gingivae and is more frequently observed anteriorly.[8]

In this case report, we treated severe GO in patient taking amlodipine for treatment of hypertension. The management consisted of oral hygiene procedures and alteration in medication.

CASE REPORT:

A 47-year-old female was referred to the Department of Periodontics of Ahmedabad Dental College and Hospital, Ahmedabad with complaints of gingival enlargement and foul odor, bleeding, fetid discharge from gums since 1 year. General examination revealed normal built of the patient. Patient was hypertensive with a history of taking amlodipine 5 mg once daily last 7 years. Intraoral examination revealed poor oral hygiene, generalized nodular enlargement of gingiva mainly on the facial aspect of teeth. Gingiva was inflammed and soft in consistency [Figure 1].

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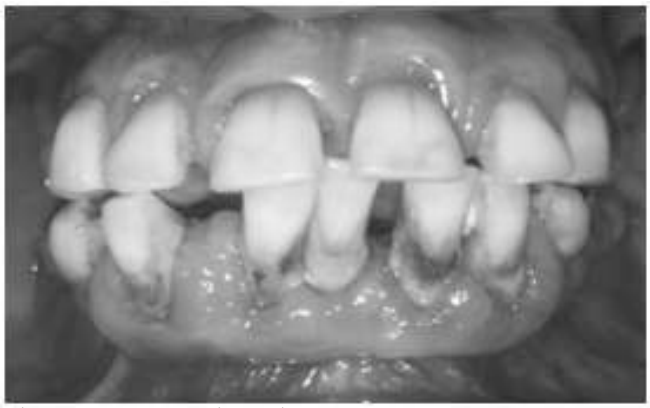
Fig. 1: Preoperative view

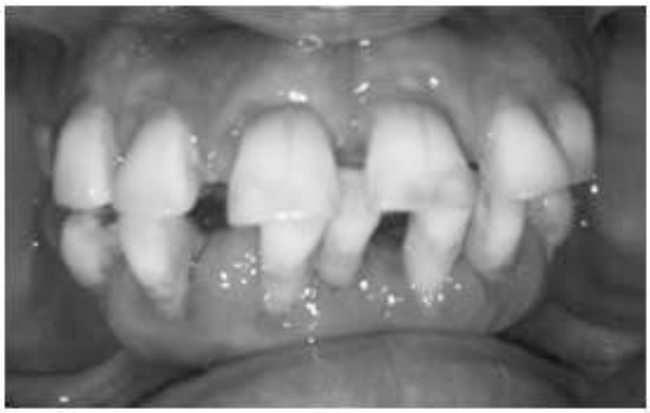
Fig 2: Post operative view after phase-1

Investigation

Routine blood and orthopantomographical examination were within normal limit. [Figure. 3]

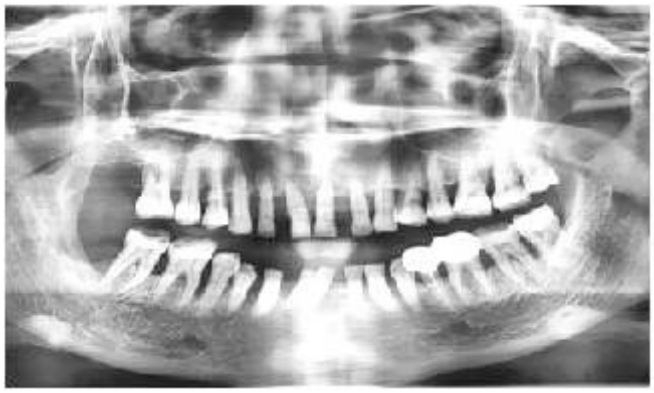
Fig. 3: Orthopantomograph

Treatment

Amlodipine was omitted after a consult with the physician, switching over to monotherapy of losartan 50 mg once in a day. Patient was educated and motivated for maintenance of proper oral hygiene. Professional scaling and root planning was performed. After 3 months of phase-1 therapy, remaining excess gingival tissue was planned to correct by surgical intervention through an internal bevel gingivectomy and periodontal flap procedure.[Figure 4] After 3 months of follow-up inflammation was markedly reduced with some reduction in gingival enlargement [Figure 5].

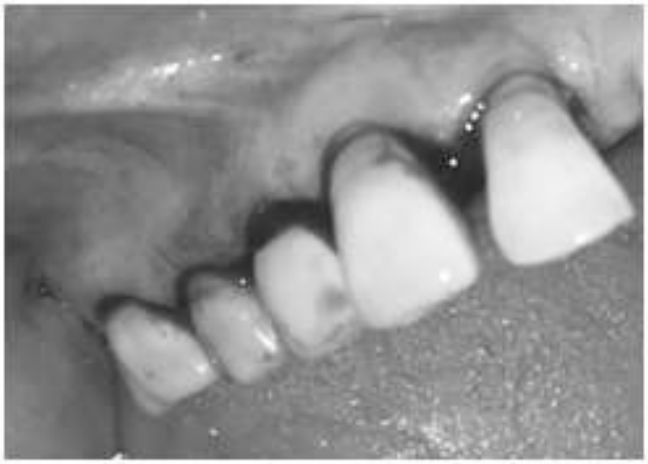
Fig. 4a: Incision 12-16

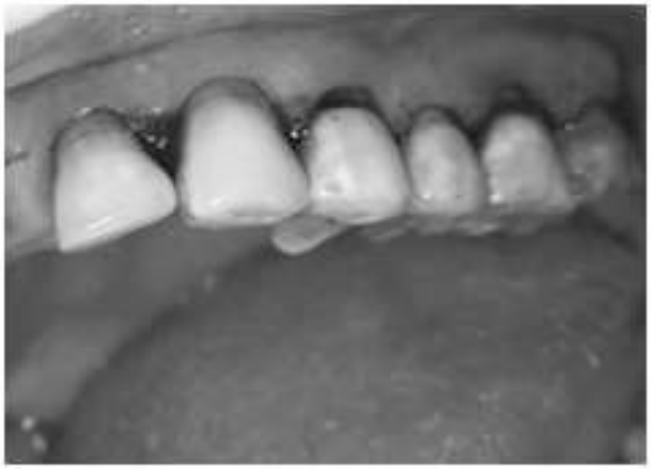
Fig 4b: Incision 22-27

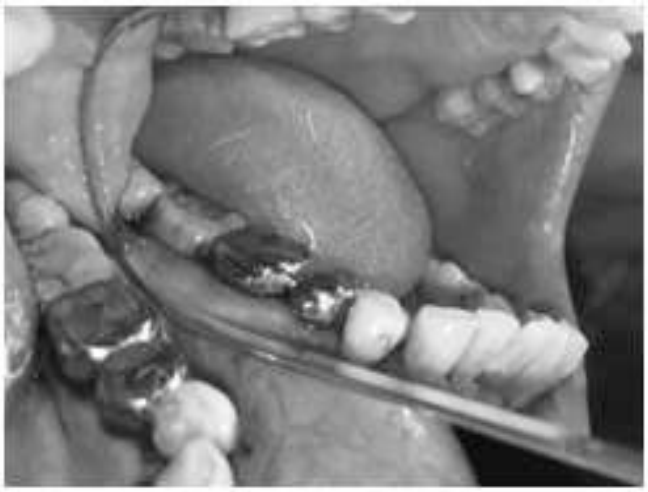
Fig 4c: Incision 32-38

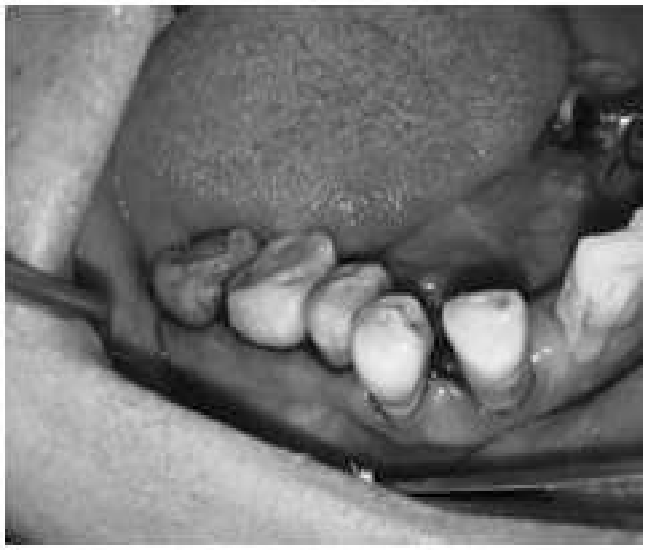

Fig 4d: Incision 43-48

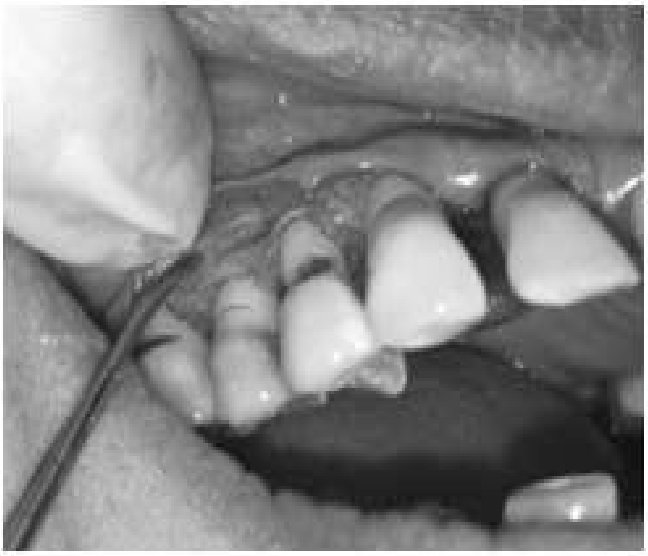

Fig 4e: After debridment 12-16

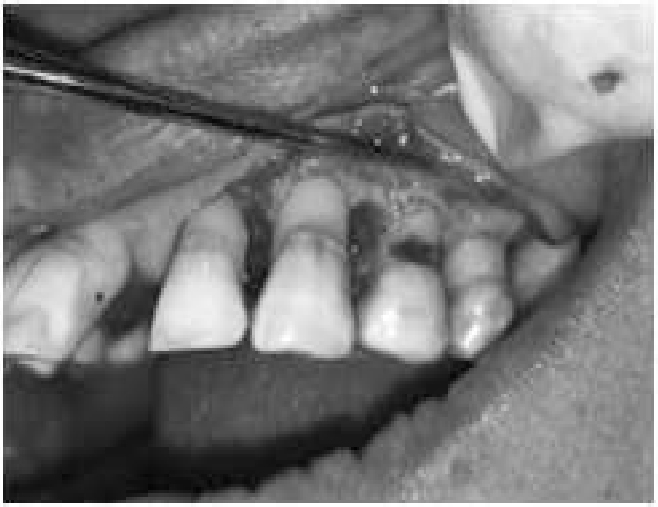

Fig 4f: After debridemnt 22-27

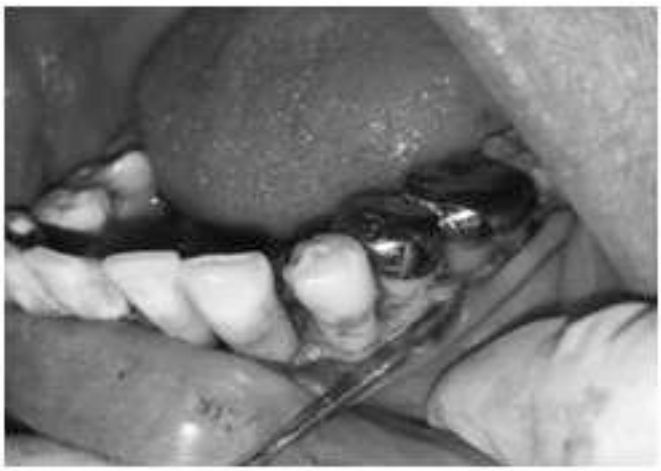

Fig 4g: After debridment 32-38

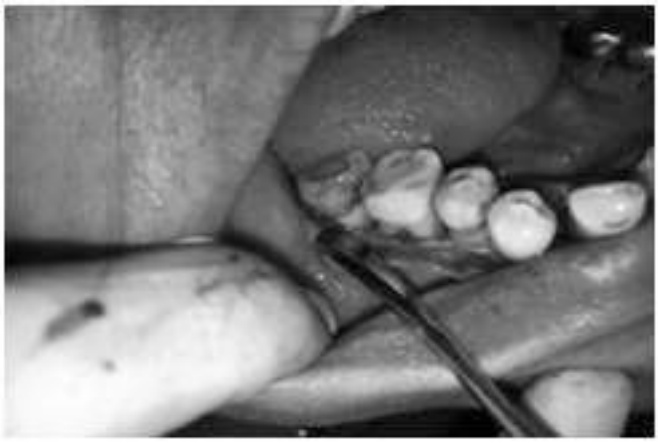

Fig 4h: After debridment 43-48

Figure 4: periodontal flap procedure

Histopathological examination

Excised tissue was sent for histopathological examination. Section stained with H and E revealed the presence of hyperplastic squamous epithelium without any dysplastic features. There was mild chronic inflammatory cells infiltrate in the connective tissue.

Follow up visit

On seventh day of follow-up visit, healing procedure was uneventful. Clinical outcome on 3 months of follow-up visit is shown in [Figure 5]

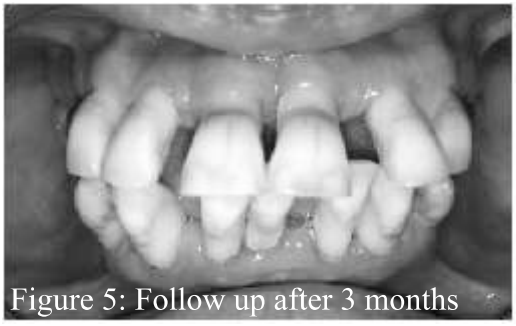

Figure 5: Follow up after 3 months

DISCUSSION:

Gingival hyperplasia, with its potential cosmetic implication and tendency to provide niche for further growth of microorganism, possess a serious concern to patients and clinicians. *Calcium channel blockers* are considered as potential etiological agent for inducing gingival enlargement. Lafzi *et al.* (2006) had reported rapidly developing gingival hyperplasia in patient receiving 10 mg/day of amlodipine within 2 month of onset.[9]

The prevalence of amlodipine-induced gingival overgrowth was reported to be 3.3% (Jogersen, 1997). The underlying mechanism of gingival enlargement still remains to be fully understood. However, two main inflammatory and non-inflammatory pathways have already been suggested.

The proposed non-inflammatory mechanisms include defective collagenase activity due to decreased uptake of folic acid,[10] blockage of aldosterone synthesis in adrenal cortex and consequent feedback increase in ACTH level[11] and upregulation of keratinocyte growth factor.[12] Alternatively, inflammation may develop as a result of direct toxic effects of concentrated drug in crevicular gingival fluid and/or bacterial plaques.[13] This inflammation could lead to the upregulation of several cytokine factors such as TGF-β1.[14] Marked reduction in inflammation and gingival overgrowth was observed in all three cases after phase-1 therapy and substitution of amlodipine to other drug. Meticulous oral hygiene maintenance by patient may also be responsible for reduction in gingival overgrowth.

Marvogiannis *et al.*, 2006 suggested that there may be recurrence of gingival hyperplasia if medication is continued and also persistence of other risk factors.[15]

In this case we reported clinical results achieved by the periodontal flap in the treatment of amilodipine induced gingival enlargement. It has been the traditional technique utilized to treat such cases. Due to its healing by primary intention, the periodontal flap appeared to be an attractive treatment alternative for drug-induced gingival enlargement.

The role of bacterial plaque in drug induced gingival enlargement is not clear. Although many believe that plaque plays a significant role in the development of drug induced gingival enlargement cases, others argue that plaque accumulation is a consequence of oral hygiene impairment posed by the enlarged gingival tissues.

CONCLUSION

Adverse aesthetics and impaired function are associated with the presence of drug-induced gingival enlargement. Comprehensive treatment of these cases is multidisciplinary in nature, and dentists and physicians should first consider the nonsurgical approach, including the removal of local factors and discontinuation of the offending drug. If the nonsurgical approach is not effective, periodontal surgery in form of the gingivectomy or periodontal flap procedures can effectively reduce the enlarged gingival tissues.

Gingivectomy is a simpler and faster technique, and its best indications are gingival enlargement areas where there is no need to access the alveolar bone during surgery. Also, an abundant area of keratinized tissue should be present for gingivectomy to be the technique of choice. The periodontal flap should be used in areas in which the alveolar bone needs to be accessed for osseous recontouring purposes and in areas with limited keratinized tissue.

Despite being technically more demanding, healing following the periodontal flap less uncomfortable for the patient and there is less chance of postoperative hemorrhage. It is also possible for the patient to resume mechanical oral hygiene earlier with the periodontal flap due to primary closure of the surgical wound. The maintenance of treated cases should included meticulous home care and professional recalls. Surgical re-treatment of recurrence areas needs to be periodically reconsidered.

Stringent maintenance of oral hygiene, switchover to alternative drugs and surgical therapy if required, remains the main stay of available treatment modalities. Better results were obtained where drug substitution along with oral prophylaxis were followed.

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