

Management of amlodipine-induced gingival overgrowth and 1-year follow-up results: case report

 Gülnur Sağlam¹,  Ahmet Dağ²

¹Department of Periodontology, Diyarbakır Oral and Dental Health Hospital, Diyarbakır, Türkiye

²Department of Periodontology, Faculty of Dentistry, Dicle University, Diyarbakır, Türkiye

Cite this article as: Sağlam G, Dağ A. Management of amlodipine-induced gingival overgrowth and 1-year follow-up results: case report. *J Dent Sci Educ.* 2025;3(3):85-88.

Received: 23.04.2025

Accepted: 07.08.2025

Published: 31.08.2025

ABSTRACT

Gingival overgrowths are very common in clinical practice and are often described as reactive hyperplasia caused by plaque-induced gingival disease. Accurate diagnosis of the cause of gingival overgrowth is very important in determining the treatment to be applied to the patient. The cause of drug-induced gingival overgrowth is not fully understood and is thought to be a complex process affected by different inflammatory and non-inflammatory mechanisms. This case report aims to emphasize the rare occurrence of amlodipine-induced gingival hyperplasia and the lack of oral hygiene that exacerbates this condition. A 40-year-old woman presented to our clinic with gingival bleeding, pain and gingival enlargement. It was learned from her anamnesis that she had hypertension and used 10 mg amlodipine daily. The patient was found to have lack of oral hygiene, gingival bleeding, edema, hyperplasia, and radiographic bone loss. Along with the initial periodontal treatment (scaling, root planning, oral hygiene education), cardiology consultation was requested and medication was changed. Afterwards, the patient underwent gingivectomy and gingivoplasty procedures. In the long-term follow-up of the patient, the results were seen to be permanent and satisfactory.

Keywords: Amlodipine, gingival overgrowth, calcium channel blocker, gingivectomy, gingivoplasty

INTRODUCTION

This condition, which is characterized by abnormal overgrowth of gingival tissues, can be caused by different etiologies, including inflammatory, drug-induced, systemic and hereditary.¹ Drug-induced gingival overgrowth tends to occur in the anterior regions, starting at the interdental papilla and may eventually cover the entire surface of the teeth.^{2,3} It can occur in the periodontium with or without alveolar bone loss and is not associated with attachment loss. There is a tight and fibrotic gingival appearance. The tissue may become bleeding and red with a secondary infection that will occur with increased plaque accumulation.⁴

As a result of severe gingival overgrowth, plaque retention increases and the patient cannot maintain oral hygiene.⁵ Progression of this condition brings about inflammatory periodontal diseases. Patients may experience pain and chewing problems as well as aesthetically undesirable images.¹

Anticonvulsant drugs used in the treatment of epilepsy (phenytoin), calcium channel blocker antihypertensive drugs with different chemical structures such as dihydropyridines (nifedipine, amlodipine), benzodiazepine derivatives (diltiazem), phenylalkylamine derivatives (verapamil), and immunosuppressant such as cyclosporine A are drugs that cause gingival enlargement. The clinical lesions and histopathologic conditions that all of these drugs cause in the gingiva are very similar and very difficult to distinguish.^{6,7}

It is known that growth occurs within 3 months following the use of these drugs.⁸ The mechanism underlying this growth has not yet been fully elucidated, but a multifactorial etiology is thought to be involved, with some predisposing factors such as age, genetic predisposition and plaque control.⁹

Calcium channel blockers, which are among the frequently preferred options in the treatment of cardiovascular diseases (hypertension, cardiac arrhythmia, angina pectoris and coronary artery spasm, etc.), are among the drugs that affect gingival growth.^{5,10} This drug, which acts on voltage-gated Ca^{+2} channels in the plasma membrane, is frequently prescribed and has antihypertensive, antianginal and antiarrhythmic effects.¹⁰ The effects of these drugs on gingival growth vary depending on the type and dose of the active substance. Among calcium channel blockers, nifedipine is the drug most commonly associated with gingival enlargement. Amlodipine is a dihydropyridine derivative with fewer side effects than nifedipine, and the gingival overgrowth associated with this drug is less than with other calcium channel blockers (1.7%-3.3%).^{11,12}

Two treatment approaches, surgical and non-surgical, have been described for the treatment of gingival enlargement.¹³ For an effective treatment, first of all, the patient's cardiologist should be contacted and, if possible, discontinuation of the medication or change to another group of medications should

Corresponding Author: Gülnur Sağlam, gulnuradosaglam@gmail.com



This work is licensed under a Creative Commons Attribution 4.0 International License.



be requested. The calculus and dental plaque present in the mouth should be professionally removed, scaling, subgingival curettage and root planning should be performed.¹⁴ Oral hygiene education should be given to patients and doctor controls should be increased. Before treatment, faulty restoration edges that are likely to increase the effect of gingival growth should be corrected, and any orthodontic brackets or bands should be removed.⁷ Anti-inflammatory mouthwash may be prescribed in addition to the initial treatment to reduce inflammation. Patients with gingival overgrowth can generally recover without surgery, but there may be cases where surgery is required.¹¹

This case presentation discusses the clinical characteristics, etiology, initial treatment, and surgical approach to drug-induced gingival hyperplasia in a patient who had been taking amlodipine for more than three years due to hypertension. Changes that have occurred over a period of more than one year have been observed and reported in detail.

CASE

The patient was admitted to Dicle University, Faculty of Dentistry, and Department of Periodontology with the complaints of gingival enlargement, bleeding and pain. As a result of the anamnesis, it was learned that the patient was a non-smoker, hypertensive and used the 10 mg amlodipine-containing drug once a day. Clinical and radiologic examination revealed bleeding on probing and fibrotic growths on the gingiva especially in the anterior regions. Inflammation due to calculus and plaque accumulation was observed with the severity of the growth. Increased pocket depth and radiologic bone loss were detected (Figure 1).



Figure 1. Intraoral image of patient before the initial treatment

The patient was given oral hygiene training along with scaling and subgingival curettage procedures. A consultation was requested from the patient's cardiologist to change the hypertension medication. As a result of the consultation, the patient's medication was changed to a different drug. The patient was recalled one week later and the subgingival curettage and root planing procedures were repeated. An anti-inflammatory mouthwash was prescribed and a follow-up appointment was scheduled for six weeks later.

When the patient returned six weeks later, bleeding in the gums had decreased, oral hygiene had improved to an acceptable level and the tissues had a more fibrotic appearance (Figure 2). Curettage of the unhealed areas was repeated and the patient was called for check-ups at different times (Figure 3).

Although the patient's complaints such as inflammation findings, pain and bleeding disappeared, gingivectomy and gingivoplasty were planned due to the presence of fibrotic tissues and irregular shape of the gums (Figure 4).



Figure 2. Intraoral image of the patient after six weeks



Figure 3. Intraoral images of the patient after six months



Figure 4. Intraoral image of the patient after gingivectomy and gingivoplasty

Long-term follow-up of the patient showed that the treatment results were permanent and satisfactory (Figure 5, 6).



Figure 5. Intraoral image of the patient one month after surgery



Figure 6. Intraoral image of the patient one year later



DISCUSSION

Gingival overgrowth caused by medications is a side effect of the drug outside the target tissue.¹⁵ Recent studies have shown that gingival overgrowth is common, especially in patients who have been taking antihypertensive drugs for more than 5 years, with a rate of 77%.¹⁶ Calcium channel blockers, which have been found to stimulate gingival fibroblasts by inhibiting intracellular calcium uptake, also cause gingival enlargement as a side effect.¹⁷ However, not all patients develop gingival overgrowth at the same rate. The presence of periodontal inflammation due to lack of oral hygiene and the presence of fibroblasts that are highly sensitive to drugs cause gingival overgrowth to develop at different rates among patients.^{5,18}

The dose of the drug used, the duration of treatment, the concentrations of the drug in saliva and gingival groove fluid directly affect the severity of drug-induced gingival overgrowth. Amlodipine, a third generation dihydropyridine calcium antagonist, is a drug of choice in the treatment of cardiovascular diseases.^{11,19}

Many studies have shown that amlodipine does not cause gingival hyperplasia when administered at a dose of 5 mg once daily for more than 6 months, and that gingival hyperplasia only occurs when a dose of 10 mg of amlodipine is administered daily.¹⁸ Jorgensen et al.⁵ reported in their study of 150 patients who used 5 mg of amlodipine daily for at least 6 months that the use of 5 mg of amlodipine did not cause gingival hyperplasia.

Contrary to these studies, other studies have reported that a daily dose of 5 mg causes gum growth.⁵ There are publications stating that gingival overgrowth develops faster, more severely and more frequently in patients taking 10 mg daily than in those taking lower doses.¹⁷ In patients taking 10 mg amlodipine daily, interdental papillae are affected and begin to grow within 3 months after starting the drug.⁵

Amlodipine, a calcium channel blocker, causes less enlargement compared to nifedipine.²⁰ However, none of the other group of anti-hypertensive drugs that are not calcium channel blockers are known to cause gingival enlargement. Therefore, the first step in treatment should be to change the patient's medication to another non-growing drug if possible. With this treatment approach, resolution of gingival lesions may take 1-8 weeks.¹⁹

Our patient has been taking amlodipine 10 mg daily for about 3 years and brushes her teeth 3 times a week. With gingival overgrowth, she has difficulty performing oral hygiene procedures. The patient's medication was changed to a different drug by the cardiologist. Gingival overgrowths can have a variety of causes and it is very important to determine their etiology.²¹

An important risk factor for the development of drug-induced gingival overgrowth is poor oral hygiene.^{17,22} The resulting gingival overgrowth not only causes aesthetic problems but also causes speech and chewing difficulties, impairs oral hygiene and leads to malnutrition.^{11,23}

Professional debridement treatment with supragingival and subgingival scaling is recommended to alleviate the severity of gingival overgrowth.^{22,24} Non-surgical periodontal treatment aims to restore health, function and aesthetic appearance to the periodontium as well as controlling inflammation due to

dental plaque. Therefore, teaching an effective oral hygiene technique, subgingival debridement and root planning play an important role in the treatment. The addition of a 0.12% chlorhexidine mouthwash to the treatment can contribute positively to the outcome.²⁵

If gingival enlargement persists despite medication changes and good plaque control, periodontal surgery is necessary in these cases. Necessary consultations and precautions are taken for the surgical procedure and interventions such as gingivectomy, periodontal flap surgery, laser excision can be considered depending on the physician's decision.¹¹ The size of the area to be operated on, the presence of bony defects and periodontitis should be considered. If the patient has mental health problems, is a pediatric patient or has a bleeding problem, electrosurgery and laser surgery can offer significant advantages.²⁶

Although an effective result was obtained as a result of meticulous application of oral hygiene procedures, control of dental biofilm and non-surgical periodontal treatment after the medication change, classical gingivectomy and gingivoplasty were performed with a scalpel in a small area due to ongoing irregularities and deformities in the gingiva.

CONCLUSION

In this case report, it was demonstrated that long-term use of 10 mg of amlodipine is associated with gingival overgrowth. However, lack of oral hygiene and periodontal inflammation increased the severity of the growth. In hypertensive patients at risk of gingival overgrowth, medication changes should be made, if possible, effective oral hygiene education and non-surgical periodontal treatment should be applied to the patient. If these methods are inadequate, surgical intervention is recommended.

ETHICAL DECLARATIONS

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Priyadarshini GAG, Edsors E, Sajesh S, Neha K, Gangadhar R. Calcium channel blockers- induced iatrogenic gingival hyperplasia: case series. *J Pharm Bioallied Sci.* 2023;15(Suppl 1):S821-S824. doi:10.4103/jpbs.jpbs_634_22
2. Nakib N, Ashrafi SS. Drug-induced gingival overgrowth. *Dis Mon.* 2011; 57(4):225-230. doi:10.1016/j.disamonth.2011.03.010
3. Ceran Deveci K, Çalışır M, Tanık A, Birgealp Erdem M. Antihypertensive drug-induced gingival hyperplasia: a case report. *Aydin Dent J.* 2021; 7(1):77-84. doi:10.17932/IAU.DENTAL.2015.009/dental_v07i1006



4. Bhatnagar S. Treatment of Gingival Enlargement. Gingival Disease-A Professional Approach for Treatment and Prevention. IntechOpen, 2019.
5. Okumuş ÖF. Treatment of gingival growth due to amlodipine use with a 445-nm diode laser: a case report. *Cureus*. 2022;14(12):e32592. doi:10.7759/cureus.32592
6. Hallmon WW, Rossmann JA. The role of drugs in the pathogenesis of gingival overgrowth. A collective review of current concepts. *Periodontol* 2000. 1999;21:176-96. doi:10.1111/j.1600-0757.1999.tb00175.x
7. Murakami S, Mealey BL, Mariotti A, Chapple ILC. Dental plaque-induced gingival conditions. *J Periodontol*. 2018;89(Suppl 1):S17-S27. doi:10.1002/JPER.17-0095
8. De Falco D, Della Vella F, Scivetti M, Suriano C, De Benedittis M, Petruzzi M. Non-plaque induced diffuse gingival overgrowth: an overview. *Appl Sci*. 2022;12(8):3731. doi:10.3390/app12083731
9. Beaumont J, Chesterman J, Kellett M, Durey K. Gingival overgrowth: part 1: aetiology and clinical diagnosis. *Br Dent J*. 2017;222(2):85-91. doi:10.1038/sj.bdj.2017.71
10. Lang NP, Lindhe J. Clinical periodontology and implant dentistry. *Clin Periodontol Implant Dent*. 2015:366-367.
11. Aldemir NM, Begenik H, Emre H, Erdur FM, Soyoral Y. Amlodipine-induced gingival hyperplasia in chronic renal failure: a case report. *Afr Health Sci*. 2012;12(4):576-578. doi:10.4314/ahs.v12i4.30
12. Seymour RA, Ellis JS, Thomason JM, Monkman S, Idle JR. Amlodipine-induced gingival overgrowth. *J Clin Periodontol*. 1994;21(4):281-283. doi:10.1111/j.1600-051x.1994.tb00318.x
13. Livada R, Shiloah J. Calcium channel blocker-induced gingival enlargement. *J Hum Hypertens*. 2014;28(1):10-14. doi:10.1038/jhh.2013.47
14. Savage NW, Daly CG. Gingival enlargements and localized gingival overgrowths. *Aust Dent J*. 2010;55(Suppl 1):55-60. doi:10.1111/j.1834-7819.2010.01199.x
15. John K, Mishra AK, Gunasekaran K, Iyyadurai R. Amlodipine-induced gingival hyperplasia in a young male with stage 5 chronic kidney disease. *Case Rep Nephrol*. 2020;2020:7801546. doi:10.1155/2020/7801546
16. Sabarudin MA, Taib H, Wan Mohamad WM. Refining the mechanism of drug- influenced gingival enlargement and its management. *Cureus*. 2022;14(5):e25009. doi:10.7759/cureus.25009
17. Bakshi SS, Choudhary M, Agrawal A, Chakole S. Drug-induced gingival hyperplasia in a hypertensive patient: a case report. *Cureus*. 2023;15(2):e34558. doi:10.7759/cureus.34558
18. Seymour RA, Ellis JS, Thomason JM. Risk factors for drug-induced gingival overgrowth. *J Clin Periodontol*. 2000;27(4):217-223. doi:10.1034/j.1600-051x.2000.027004217.x
19. Kurgan Ş, Önder C, Tayman A, Koçi A, Bostancı H. Drug-induced gingival overgrowth associated with the use of a calcium channel blocker (amlodipine): 5 years follow-up case report. *J Dent Fac Atatürk Uni*. 2016;26(2):307-311.
20. López-Pintor RM, Hernández G, de Arriba L, Morales JM, Jiménez C, de Andrés A. Amlodipine and nifedipine used with cyclosporine induce different effects on gingival enlargement. *Transplant Proc*. 2009;41(6):2351-2353. doi:10.1016/j.transproceed.2009.06.052
21. Quenel L, Keribin P, Giran G, Tessier MH, Lesclous P. Amlodipine-induced gingival enlargement: a case report. *J Stomatol Oral Maxillofac Surg*. 2020;121(3):308-311. doi:10.1016/j.jormas.2019.04.014
22. Sucu M, Yuce M, Davutoglu V. Amlodipine-induced massive gingival hypertrophy. *Can Fam Physician*. 2011;57(4):436-437.
23. Bharti V, Bansal C. Drug-induced gingival overgrowth: the nemesis of gingiva unravelled. *J Indian Soc Periodontol*. 2013;17(2):182-187. doi:10.4103/0972-124X.113066
24. Mavrogiannis M, Ellis JS, Thomason JM, Seymour RA. The management of drug- induced gingival overgrowth. *J Clin Periodontol*. 2006;33(6):434-439. doi:10.1111/j.1600-051X.2006.00930.x
25. Bontemps L, Gaultier F, Anagnostou F, Ejeil A, Dridi SM. Drug-Induced Gingival Overgrowth. In *Drug-Induced Oral Complications*; Cousty, S., Laurencin- Dalicieux, S., Eds.; Springer International Publishing: Cham, Switzerland, 2021; pp. 7- 24.
26. Archana K, Dhanraj M, Ashish NT, Nirosa T. Drug-induced gingival enlargement. *Drug Invent Today*. 2019;10(7):1292-1295.