Effective Flap Surgery for Drug-Induced Gingival Enlargement: A Clinical Case Report

Case Report

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ABSTRACT

Drug-induced gingival hyperplasia (DIGH) is a well-documented side effect of certain medications, particularly calcium channel blockers like amlodipine. It is characterized by excessive growth of gingival tissues, which can compromise oral hygiene, aesthetics, speech, and overall quality of life. This case report details the clinical presentation and surgical management of a 55-year-old female patient who developed DIGH after use of amlodipine and atenolol for hypertension . Clinical examination revealed gingival swelling with rolled-out margins, grade one mobility of the lower anterior teeth and persistent periodontal pockets[1].The patient presented with generalized gingival enlargement in both maxillary and mandibular arches, bleeding gums, halitosis, and grade one mobility of lower anterior teeth. Initial management involved full-mouth ultrasonic scaling, Amoxicillin (500 mg) with Potassium Clavulanate (125 mg), Metronidazole (400 mg), 2% Chlorhexidine mouthwash, and Vantej toothpaste to reduce inflammation and bacterial burden. Definitive treatment required flap surgery, performed under aseptic conditions using internal bevel, crevicular, and interdental incisions to excise excess tissue, remove granulation, and reposition the gingival flaps. Postoperative care included strict oral hygiene and follow-ups.At 15 days, bleeding and halitosis resolved, and tooth mobility stabilized. Complete recovery was observed at 30 days, underscoring the effectiveness of multidisciplinary care and patient compliance in managing drug-induced gingival hyperplasia.

Key Words : Periodontal surgery, Gingival enlargement treatment , Hypertension medication side effects ,Oral health management

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INTRODUCTION

Periodontitis is a chronic inflammatory condition caused by plaque accumulation, leading to the destruction of periodontal tissues. This case report highlights the clinical approach to managing drug induced gingival hyperplasia in a 55-year-old female patient, emphasizing the efficacy of flap surgery.

Materials and Methods

A 55-year-old female patient reported to the Department of Dentistry, Calcutta National MedicalCollege and Hospital, with complaints of bleeding gums, halitosis, swelling of the gingiva with rolled- out margins, and grade one mobility of the lower anterior teethas shown in figure1 and figure 2. History revealed that both the maxillary and mandibular gingiva gradually and progressively grew in size but were painless but associated with bleeding. The patient was hypertensive and was on amlodipine 5 mg and atenolol 50 mg once per day dose. Intraoral examination revealed generalised gingival enlargement involving marginal gingiva, attached gingiva and interdental papilla with extension of enlargement in palatal and lingual aspect of maxillary and mandibular arch respectively, bulbous contour, and mulberry appearance in mandibular anterior teeth region[2] with loss of scalloping (figure). On palpation the gingiva was firm, non-tender and leathery in consistency. Labially, there was a lobulated ovoid out- growth from the enlarged gingiva which had a mulberry like appearance in the maxillary canine region, firm and non-tender, interfering with speech and mastication [fig1& 2]. Maxillary occlusal and panoramic radiographs showed no abnormality. The haemogram was also normal. Clinical and radiographic examinations confirmed the diagnosis of chronic periodontitis [3].

Treatment Plan

The treatment was planned in two stages:
(I)Full-mouth ultrasonic scaling to control active inflammation and reduce bacterial load.
(II) Flap surgery to address deep periodontal pockets and facilitate root debridement.

Phase I therapy : Scaling and root planning (Initial Phase Treatment)

Medications Prescribed:

•Amoxicillin 500 mg + Potassium Clavulanate 125 mg, thrice daily for 7 days.
•Metronidazole 400 mg, twice daily for 7 days.
•Chlorhexidine mouthwash (2%), used twice daily.
•Vantej toothpaste for daily brushing.

Procedure:

i Supragingival scaling:Full-mouth ultrasonic scaling [fig 3] was performed under aseptic conditions to remove supragingival deposits[2].

ii Subgingival Scaling: The patient was recalled after 7 days for performing subgingival scaling and root planning.

Patient was recalled after 7 days for evaluation and further treatment. Follow up evaluation: Patient reported cessation of bleeding from the gingiva will gradual absence of bad odour from mouth [fig 4].

Phase II Therapy: Flap Surgery with Incision Design and Reverse Bevel Gingivectomy

1. Preoperative Preparations

i.Medical History and Consent:
The patient's medical history was reviewed to identify any contraindications to surgery. An informed consent was obtained, explaining the procedure, potential risks, and benefits.

ii.Oral Preparation:
The oral cavity was cleaned through pre-surgical scaling and an antiseptic mouthwash (0.2% chlorhexidine) was used to attain optimum aseptic operating field.

iii.Anesthesia:
Administration of local anesthesia (2% lignocaine with adrenaline)was done to ensure patient comfort and to achieve hemostasis.

Incision Design and Flap Reflection

The surgical procedure began with careful planning of incision design [fig 5] to allow optimal access to periodontal pockets[4], facilitate debridement, and ensure precise tissue repositioning. In this case, three types of incisions were employed:
1.Internal Bevel Incision:

- An internal bevel incision was made approximately 1–2 mm away from the gingival margin[fig 6].

- This incision was directed apically toward the crest of the bone and was designed to remove the diseased pocket lining while preserving as much of the healthy tissue as possible.
- It also facilitated smooth reattachment of the gingiva post-surgery and helped in reducing pocket depth.

2.Crevicular Incision:

- A crevicular (sulcular) incision was made within the gingival sulcus, extending along the margins of the affected teeth.
- This incision allowed access to the underlying root surfaces and bone while preserving the gingival collar for repositioning[2,3].

3.Interdental Incision:

- An interdental incision was placed in the interproximal spaces to separate the gingival tissue, enabling complete removal of inflamed granulation tissue and the diseased pocket epithelium [fig 5 & fig 6].
- This incision ensured proper debridement of hard-to-reach areas, such as interproximal sites[5].

Gingivectomy

Following the incisions, a reverse bevel gingivectomy was performed to excise and eliminate the overgrown or diseased gingival tissues as shown in figure 7. The procedure involved:

- Removing the soft tissue overlying the periodontal pockets to create a more favorable contour for oral hygiene maintenance.
- Ensuring the remaining gingival tissues were reshaped for optimal healing and functional esthetics [6,7].

A periosteal elevator was then used to carefully reflect a full-thickness (mucoperiosteal) flap, exposing the underlying bone and root surfaces. Care was taken to preserve as much healthy tissue as possible while ensuring access to the diseased areas.

Debridement and Root Planing

1. Removal of Granulation Tissue:
   - Granulation tissue from the periodontal pockets and underlying bone was carefully removed using periodontal curettes as shown in figure 8.
   - The procedure aimed to eliinate inflamed and infected tissue,providing a clean environment for healing.

2. Scaling and Root Planing:

- Thorough debridement of root surfaces was carried out to remove plaque, calculus, and bacterial endotoxins.
- Manual instruments, including Gracey curettes, and ultrasonic scalers wereemployed to ensure smooth, clean root surfaces that facilitate reattachment of the gingiva[7] as shown in figure 8.

Inspection and Management of Bone Defects

1.Bone Contouring:

- The exposed alveolar bone was inspected for irregularities or defects.
- Osteoplasty (reshaping of the bone) with bone file was performed where necessary as shown in figure 9 to ensure a smooth contour and eliminate areas of bacterial harboring.

Flap Repositioning, Suturing, and Dressing

1.Flap Repositioning:
- After debridement and gingivectomy, the reflected flap was carefully repositioned to its original anatomical position[8,7].
- In some areas, the flap was placed slightly coronally to reduce residual pocket depth and enhance healing.

2.Suturing:
- Interrupted and sling sutures were placed using non-resorbable silk sutures to stabilize the flap securely as depicted in figure 10.
- Proper flap adaptation ensured minimal microbial invasion and supported optimal healing.

3.Periodontal Dressing:
- A periodontal dressing was applied over the surgical site to protect the exposed tissues, minimize postoperative discomfort [9,10], and support wound healing by preventing mechanical

irritation duringthe initial healing phase. Postoperative Care and Follow-Up

- The patient was prescribed antibiotics (Amoxicillin 500 mg + Potassium Clavulanate 125 mg) and Metronidazole 400 mg to control infection and inflammation.
- Chlorhexidine mouthwash (0.2%) was recommended for oral disinfection twice daily, and a soft diet was advised to prevent trauma to the surgical site.
- At the five-day follow-up, the surgical area was evaluated for healing, and any residual inflammation was addressed. Sutures were removed 7–10 days postoperatively, and the patient was recalled for periodic evaluations to monitor healing and ensure long-term periodontal stability as shown in figure 11.

This Phase II therapy effectively addressed deep periodontal pockets, eliminated diseased tissues, and restored the functional and esthetic health of the gingiva.

Oral Hygiene Instructions:
The patient was advised to rinse gently with Chlorhexidine mouthwash (0.2%) twice daily and avoid brushing at the surgical site for the first week.

Dietary Advice:
A soft diet was recommended to avoid trauma to the surgical area. Postoperative Follow-Up and Suture Removal Follow-Up after 30 Days: The patient was evaluated for signs of healing and any complications such as infection or excessive bleeding. Full-mouth scaling and polishing were performed if needed to maintain oral hygiene.

Suture Removal:
Sutures were removed 3 weeks post-surgery, depending on the healing progress.

Monitoring:
The patient was monitored for the resolution of inflammation and improvement in clinical parameters, such as pocket depth, mobility, and gingival health. Healing and Long-Term Maintenance

Results

The patient reported significant improvement in symptoms, including the cessation of bleeding and halitosis within 5 days. By 30 days postoperatively, the gingiva had healed completely, and the periodontal health was restored and the patient was educated about proper oral hygiene practices and placed on a maintenance program with regular follow-ups every 3–6 months to ensure long-term stability.

Discussion

Drug-induced gingival hyperplasia (DIGH) is a significant clinical concern, often associated with systemic medications like calcium channel blockers, immunosuppressants, and anticonvulsants, such as amlodipine, cyclosporine, and phenytoin, respectively. Amlodipine-induced gingival overgrowth, as observed in this case, is a well-documented but underreported adverse effect. The pathogenesis of DIGH involves complex interactions between the drug, patient susceptibility, and local inflammatory factors[11,12]. Amlodipine, a dihydropyridine calcium channel blocker, interferes with calcium influx in fibroblasts, resulting in altered collagen homeostasis and excessive extracellular matrix deposition. Chronic inflammation due to plaque accumulation exacerbates this condition by providing a conducive environment for fibroblast proliferation and cytokine release. In this patient, the clinical presentation of generalized gingival enlargement with rolled-out margins and a mulberry- like appearance was consistent with classic DIGH. Notably, the mandibular anterior region showed a pronounced loss of gingival scalloping and firm, leathery consistency, which interfered with mastication, speech, and esthetics, significantly impacting the patient's quality of life[10,11]. The treatment protocol for DIGH involves both non-surgical and surgical approaches. Initial management, as undertaken in this case, aims to reduce the inflammatory burden through rigorous plaque control with ultrasonic scaling, subgingival debridement, and adjunctive use of antimicrobials like amoxicillin with clavulanate and metronidazole. This approach is pivotal for resolving acute inflammation and establishing a healthy surgical field. However, definitive treatment necessitates surgical intervention, particularly in cases of persistent enlargement with deep periodontal pockets. The flap surgery performed in this patient employed internal bevel, crevicular, and interdental incisions to ensure precise removal of hyperplastic tissue while

preserving healthy gingiva for optimal flap repositioning. The inclusion of a gingivectomy allowed for the excision of excessive tissue and the restoration of natural gingival contours, thereby facilitating improved oral hygiene practices and esthetic outcomes. Post-surgical debridement with thorough scaling and root planing was critical in removing residual plaque and bacterial endotoxins, providing a biologically compatible root surface for reattachment. Additionally, bone contouring through osteoplasty or osteotomy, although not indicated in this case, is an integral component in managing osseous irregularities to prevent plaque retention and recurrent pocket formation[13]. The postoperative outcomes in this patient were favorable, with significant improvements noted in gingival health, pocket depth, and tooth mobility within the first 15 days. Complete resolution of symptoms, including bleeding and halitosis, further underscored the efficacy of a multidisciplinary treatment approach and the patient's adherence to oral hygiene instructions. The role of patient education in maintaining long-term periodontal stability cannot be overstated, as recurrence of DIGH is likely if plaque control is inadequate or the offending medication is continued without physician consultation. Long-term management strategies should include regular maintenance therapy, emphasizing professional scaling, patient compliance, and, when feasible, consideration of alternative antihypertensive agents to minimize recurrence[14]. This case exemplifies the critical role of Phase I and Phase II periodontal therapy in the successful management of drug-induced gingival hyperplasia and highlights the necessity of interdisciplinary coordination between dental and medical professionals to achieve optimal patient outcomes.

CONCLUSION

This case report underscores the critical importance of a multidisciplinary approach in the diagnosis and management of drug-induced gingival hyperplasia (DIGH), particularly in patients on long-term calcium channel blocker therapy. The successful resolution of gingival overgrowth through a combination of non-surgical and surgical periodontal therapies highlights the effectiveness of tailored treatment strategies that address both local and systemic contributing factors. Phase I therapy, focusing on scaling, root planing, and adjunctive antimicrobial use, was pivotal in controlling inflammation and establishing a healthy surgical field. Definitive Phase II therapy, involving precise incision designs, gingivectomy, and meticulous debridement, not only eliminated diseased tissues but also restored the functional and esthetic integrity of the gingiva. Postoperative care, patient education, and regular follow-ups were instrumental in achieving long-term periodontal stability and preventing recurrence. This case illustrates the necessity for healthcare providers to recognize and address the oral side effects of systemic medications promptly. It also emphasizes the value of interdisciplinary collaboration in managing complex conditions like DIGH, ensuring both optimal oral health and systemic well-being for the patient.

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