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Amlodipine Induced Gingival Overgrowth Surgically Treated With A Novel Technique Of Adjunctive Use Of Laser, I –PRF, Micro Needling –A Case Report

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Abstract:
Gingival overgrowth impedes dental hygiene ,cosmetic damage & painful mastication. This case report highlights a novel technique of adjunctive use of LASER , injectable –PRF(i-PRF) & micro needling for treating amlodipine induced gingival overgrowth .A 43-year-old female patient reported with gingival overgrowth and pain on mastication since 3 months. Patient was hypertensive and on amlodipine 10 mg once daily since 6 months. Intraoral examination revealed generalized fibrotic gingival enlargement and a diagnosis of Drug Induced Gingival Overgrowth was made .Physician was consulted for alternate regimen with losartan. Periodontist performed plaque control by scaling & root planing and patient motivation .After 15 days there was reduction in size of gingival overgrowth but required further surgical therapy .The purpose of this unique case report aimed to carry out gingivectomy and gingivoplasty with LASER, along with i-PRF and micro needling for treatment of drug induced gingival overgrowth.
Conclusion: *Approach of I-PRF and micro needling after surgical LASER therapy is an advantageous approach for treating amlodipine induced gingival overgrowth as it leads to rapid healing of secondary intention wound, reduced postoperative discomfort, improved esthetics with an equivalent keratinized tissue width of gingival tissue and healing without scar formation.*
Key Word*: Drug induced gingival overgrowth ,platelet rich fibrin ,i-PRF,micro needling, amlodipine, calcium channel blockers*

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I. Introduction

The calcium channel blockers lead to unwanted effects on gingiva leading to gingival overgrowth[1].Patients consuming nifedipine seem to show gingival overgrowth in more than 10% cases [2,3] .It has been observed that gingival overgrowth occurred as early as 3 months after consumption of ampodipine[3] .When assessed calcium channel blockers ,20% drug induced gingival overgrowth is caused by nifedipine and incidence of drug induced gingival overgrowth by amlodipine is very limited .[4]Medications such as calcium channel blockers , immune suppressant and anticonvulsants have different pharmacological properties , but they influence the sodium /calcium flux[5,6].The prevention and treatment of drug-induced gingival overgrowth differs with patients, some may need a replacement of drug or some may need surgical intervention or both [7] .When comparing surgical techniques for treatment of gingival overgrowth , scalpel method lead to more post operative pain , LASER gingivectomy lead to less significant post operative pain . Recurrence of gingival overgrowth was less for LASER than scalpel. Using scalpel or LASER may lead to slow healing , post operative recurrence , scarring of tissue and imbalance in keratinized tissue thickness.[8]

Blood is an autogenous source for healing of hard and soft tissue[9].Platelet Rich Fibrin is produced by deriving venous blood and centrifugating it in glass tubes without the use of any anticoagulant [10].Injectable platelet-rich fibrin (i-PRF), is produced when the blood is centrifugated at 700 rpm for 3 min in plastic tubes , thus forming a gel form after 10-15 minutes. I-PRF preserves the essential contents and is useful for sustained release in tissues [11].Advantage of using i-PRF is that it contains growth factors , leukocyte, rich in platelets thus leading to increased vascularization and wound healing [12] .Important aspects of i-PRF use is that it leads to sustained release of growth factors, for a longer period of time ,increasing expression of collagen-1 and transforming growth factor beta thus leading to migration of fibroblast and collagen synthesis [11,13.]

Micro needling (MN) is a process where microinjuries induce superficial bleeding to create a localized wound healing cascade leading to release of growth factors such as fibroblast growth factors, transforming

growth factors ,platelet derived growth factor directly at the site of injury . Other name for micro needling is "percutaneous collagen induction therapy" .The trauma occurred due to micro needling leads to production of localized collagen production to preserve the skins integrity[14,15] .The fibroblast induce production of elastin and collagen fibers at the wound site. The fibers thicken and lead to neocollagenesis,neoangiogenesis and tissue remodeling [16].Using micro needling with i-PRF RF increase gingival tissue width in periodontal surgical wound[17] Thus, the aim of this case report was to evaluate the efficacy of i-PRF and micro needling after performing gingivectomy and gingivoplasty with LASER on a patient with drug induced gingival overgrowth for post operative healing , pain , scar formation and keratinized tissue width .

II. Case Report

A 43-year-old female patient reported to the Department of Periodontology in Y.M.T Dental college ,Navi Mumbai ,with a chief complaint of gingival overgrowth and discomfort while mastication since 3 months . Medical history revealed patient was hypertensive and on Amlodipine 10 mg once daily since 6 months. Patient gave history of upper anterior teeth been migrated buccally during the course of occurrence of enlargement. Patient's personal oral hygiene habits revealed that she used a medium bristle toothbrush and a fluoridated tooth paste to clean her teeth once daily ,which she discontinued due to her enlarged gums covering her teeth.

Intraoral examination (Fig.1)revealed generalized fibrotic gingival enlargement covering more than one third of crown .Local irritating factors revealed plaque and calculus, halitosis and poor oral hygiene which contributed to the gingival inflammatory component Gingival examination revealed bright red lobulated gingival enlargement ,soft and edematous in consistency ,along with bleeding on probing and exudation .Periodontal examination revealed generalized mobility , generalized pockets in the range of 7mm- 15 mm , pathologic tooth migration with upper anterior . Patient was subjected to a complete hemogram where all parameters were found to be within the normal range. On radiographic examination, the orthopantomogram revealed generalized bone loss.

Figure 1a – Pre operative photograph of frontal view

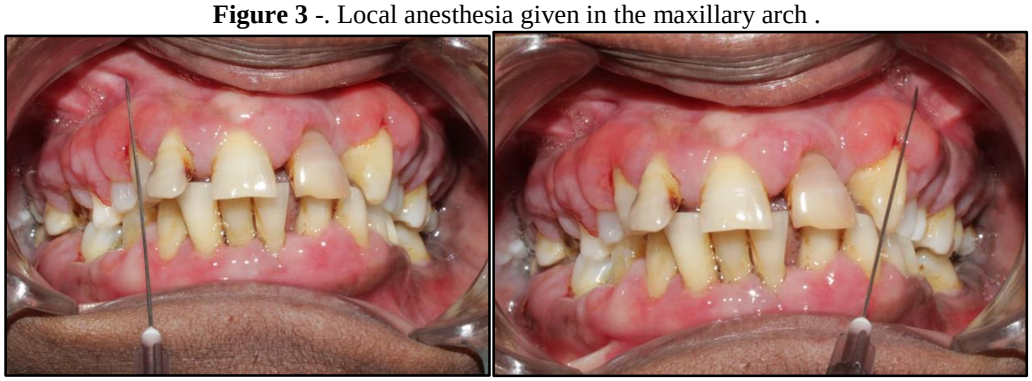
Figure 1b – Pre operative photograph of occlusal view **Figure 1b –** Pre operative photograph of lingual view

A diagnosis of Drug Induced Gingival Overgrowth was made . Patient's physician was consulted for alternate drug regimen and Amlodipine was replaced with Losartan 12.5 mg once daily. Periodontist performed plaque control by scaling & root planing for 3 months with 15 days interval .Patient education and motivation to perform oral hygiene was conducted .After 3 months no further overgrowth was present , there was a regression from previous condition but surgical intervention was required (Fig. 2).

Figure 2 – Frontal view of regression of gingival overgrowth after drug replacement, scaling and root planing and periodontal maintenance for 3 months.

Therapeutic intervention was planned for treatment of gingival overgrowth with gingivectomy and gingivoplasty with LASER followed with i-PRF and micro needling . Patient was explained about the therapy and consent was taken . On the day of procedure ,patient preparation with mouth rinse and peri oral scrubbing was performed . Treatment was performed arch wise . Local anesthesia was given in the maxillary arch was using 2% lidocaine with adrenaline (1 : 100000) (Fig.3).

Figure 3 -. Local anesthesia given in the maxillary arch .



Diode laser was used in continuous mode and gingivectomy (Fig.4a)was performed to remove the bulk of gingival overgrowth along with gingivoplasty to achieve esthetic contouring(Fig.4b) . Brush strokes were given for laser ablation . Gauze soaked in saline was used to clear visualization and remove epithelium . Minimum bleeding was observed .

Figure 4a- Outline made with diode LASER for gingivectomy

Figure 4a- Appearance of gingiva after gingivoplasty

Patients venous blood was taken and transferred into 2 sterile tubes without presence of any anticoagulant agent(Fig.5a) . Preparation of I PRF was done by Choukron's method which is at 700 rpm for 3 minutes (Fig.5b, 5 c). Resultant i-PRF obtained was taken in 0.25 X 6 mm , 1 ml syringe and injected in operated maxillary arch followed by micro needling(Fig.6).

Figure 5a -Venous blood taken for preparation of i-PRF

Figure 5b – Tubes centrifuged at 700 rpm for 3 minutes

Figure 5c - i-PRF prepared

Figure 6 – Micro needling with i-PRF

Patient was recalled after 1 week for follow up and same treatment was followed for mandibular arch . Postoperatively patient was prescribed analgesics twice daily for 3 days . Postoperatively patient was advised to avoid any physical activity and hot meal for 24 hours ,application of ice intermittently for a period of 5-10 minutes extra orally was advised for 24 hours. Patient was evaluated at 1 week for pain , healing and scar tissue formation and a follow up was made after 3 months .

On follow up after 14 days pain was evaluated on VAS scale , which was reported to be zero that is no pain and complete regression of drug induced gingival overgrowth was seen. Keratinization was seen without scar tissue formation. On 3 month follow up esthetics was maintained and adequate keratinized tissue width was present (Fig.7).

Figure 7 –3 Month follow up , healing without scar tissue formation and maintained keratinized tissue width .

III. Discussion

Drug induced gingival overgrowth, leads to aesthetic concerns as well as symptoms which include bleeding ,tenderness ,pain, occlusal changes ,abnormal tooth movement and speech disturbances. More than a20 drugs are identified to be causative agents for drug gingival overgrowth [18]. There is 1.7%-3.3% prevalence of amlodipine-induced gingival overgrowth to occur . A periodontal maintenance program with 3-months interval is suggested for patients associated with drug induced gingival overgrowth [4].

In this case the patient was on 10mg amlodipine since 6 months who experienced discomfort due to gingival overgrowth. A surgical therapy of gingivectomy and gingivoplasty with LASER followed by i-PRF micro needling was planned after replacement of drug and scaling and root planing .The post operative results were suture less, no discomfort with respect to pain , healing occurred without scar tissue formation .On 3 month follow up there was adequate keratinized tissue width , leading to an esthetic outcome and no recurrence of overgrowth was observed.

IV. Conclusion

Approach of I-PRF and micro needling after surgical LASER therapy is an advantageous approach for treating amlodipine induced gingival overgrowth as it leads to rapid healing of secondary intention wound,reduced postoperative discomfort ,improved esthetics with an equivalent keratinized tissue width of gingival tissue and healing without scar formation. Along with dental treatment drug alteration for such cases is an important aspect to prevent further progression of enlargement in gingival component .

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