

CASE REPORT

Phenytoin Induced Gingival Enlargement

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ABSTRACT

Certain anticonvulsants, cyclosporine, and calcium channel blockers like amlodipine have been shown to produce clinically and histologically similar gingival enlargements in certain susceptible patients in response to local factors. These drugs appear to be similar with respect to their pharmacologic mechanism of action at the cellular level. Therefore, it is tempting to speculate that these agents may act similarly on gingival connective tissue and cause a hyperplastic response. This tissue reaction may involve a disturbance of calcium ion influx into specific cell populations with a resulting alteration in collagen metabolism and other host cell response mechanisms. A connection between ion exchange, folate uptake, collagenase activation, and bacterial inflammation may exist. The management involves Phase I therapy followed by surgical intervention. The purpose of these case reports is to highlight certain modifications in existing surgical techniques like gingivectomy, to have better aesthetic and functional outcome.

Keywords: Phenytoin, Gingivectomy, Gingival Hyperplasia, Anticonvulsants, Root Planning.

Introduction

Drug Induced Gingival Overgrowth occur as a side effect following administration of drugs used mainly for non-dental treatment. Many terms were used to describe the phenomenon of gingival overgrowth like “Gingival Hyperplasia and Gingival Hypertrophy” (McCullough, 1982) which can only be histologically confirmed. However, Overgrowth is a more general term that better describes the lack of understanding of the pathogenesis of these conditions.¹

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Submission	07.05.2022	Revision	18.05.2022	Accepted	05.06.2022	Printing	29.06.2022
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Prior Publication: Nil; Source of Funding: Nil; Conflicts of Interest: None , Article # 411 / 858

Drug Induced Gingival Overgrowth was first reported in 1939 by Kimball with chronic use of the anti-epileptic drug phenytoin.² Presently, more than 20 prescription medications are found to be associated with Gingival Overgrowth.³ It can be broadly categorized into three major groups according to their therapeutic actions, namely, anticonvulsants, immuno-suppressants, and calcium channel blockers.^{4,5} Clinical manifestation of gingival enlargement frequently appears within 1 to 3 months after initiation of treatment with the associated medications.⁶

Phenytoin (PHT, 5,5- diphenylhydantoin) was first introduced as an antiepileptic drug in 1938 (Merritt and Putman, 1938)⁷. It is slowly absorbed from gastrointestinal tract and metabolized in the liver by microscopic enzymes. The major metabolite is 5-(p-hydroxyphenyl)-5-phenylhydantoin (p-HPPH).

Clinically, the phenytoin induced gingival overgrowth begins as a diffuse swelling of the interdental papillae, which enlarge and coalesce (Angelopoulos, 1975a)⁸ leaving a nodular appearance (Seymour, 1994)⁹. In the present case, the gingival overgrowth affected the interdental papilla and occurred after 18 months of usage at a dose of 100mg.

CASE REPORT:

02 cases were selected between age groups of 30-60 years from Department of Periodontics, GNIDSR with the chief complaint of swelling and bleeding of gums. Patients first noted massive inflammation of gums of upper and lower jaw and a bead like nodular growth over the gums which progressively enlarged to the present size, interfering with further cleaning of teeth. The patients were on phenytoin for treatment of epilepsy.

Intraoral examination revealed:

- Assymetric enlargement of upper and lower anterior as well as posterior teeth region affecting attached gingiva extending up to marginal and interdental gingiva.
- Surface of the gingiva appears lobulated with loss of scalloping.
- Poor oral hygiene status of patient was assessed by the presence of local irritating factors which surrounded the teeth.
- Complete hemogram of the patient was done, but all the parameters were within the normal range.
- Orthopantomogram was taken which revealed generalized bone loss.

Drug induced gingival overgrowth was suspected and the patient was referred to the General Physician for the possible drug substitution. The physician tapered the doses and advice the patient to stop after 20 days. The patient was advised for regular follow ups.

After this, incisional biopsy was done and a highly vascular connective tissue is observed histologically with focal accumulation of inflammatory cells, primarily plasma cells. At the subsequent followups after weeks for two visits, patients were examined and interviewed.

Correlating history, clinical examination, and investigations, final diagnosis of combined gingival enlargement (phenytoin induced and inflammatory) was made.

In the preliminary phase, extraction of teeth with hopeless prognosis was recommended. Planned sessions of scaling and root planning with reduction in drug doses with the patient's physician consent were performed. There was drastic change in the clinical picture of gingiva with complete loss of inflammatory component.

Gingival enlargement still persisted even after the loss of inflammatory component. So surgical phase with gingivectomy planned. Taking into consideration the severity of enlargement, gingivectomy to the base of pocket would result in recession. So, naturally this would result in plaque retention in inter proximal areas, sensitivity due to exposed root surfaces. Further aesthetic problems would be there. So, modification of gingivectomy was done with root planing.

Initially, gross removal of coronally enlarged tissue was done till 2 mm coronal to CEJ by Gingivectomy. Then, gingivoplasty was done to excise the bulk of the gingival tissues to have a normal biotype. Further, Root planning was done to make the root surfaces smooth which secondarily resulted in removal of pocket lining. After this, periodontal pack was placed and the patient reported between 10-14 days (Fig: 1). Further the patient was reviewed after 6 months.(Fig: 2 & 3).

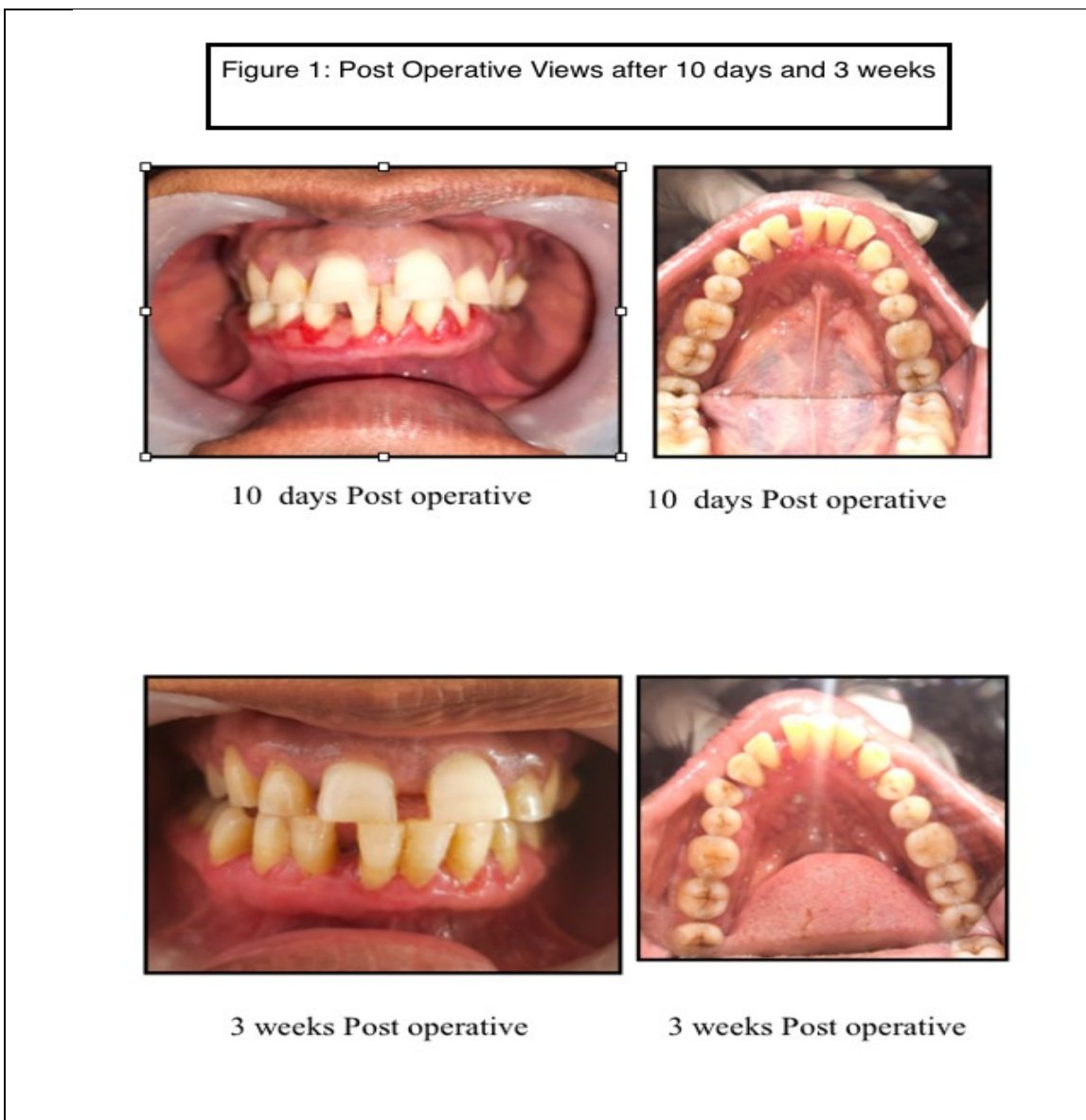


Figure 2: Case I: Pre-, Per-, & Post Operative View After 6 months



Pre operative



Pre operative



Per operative



Per operative



Per operative



Per operative



Excised Tissue



Periodontal dressing given

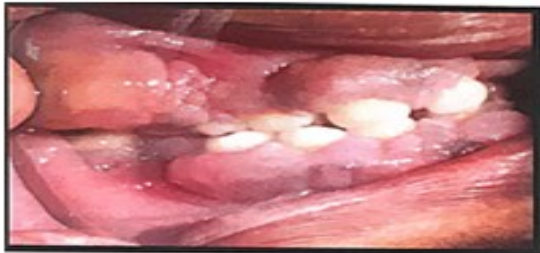


6 months Post operative



6 months Post operative

Figure 3: Case II: Pre-, Per-, & Post Operative View After 6 months



Pre operative



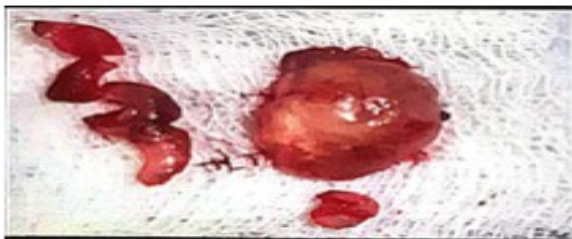
Pre operative



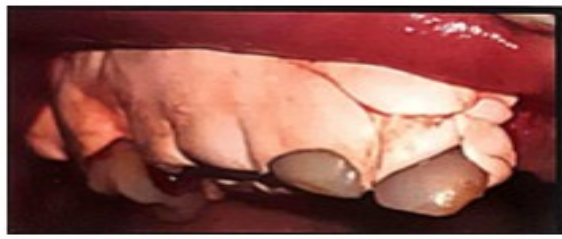
Per operative



Per operative



Excised Tissue



Periodontal dressing given



6 months Post operative



6 months Post operative

Discussion

Normally, Gingivectomy is done to the base of the pocket but it results in unaesthetic areas in anterior region due to exposure of root surfaces in supra bony pockets. We know root planing by non surgical therapy becomes difficult beyond 4 mm periodontal pocket. So, taking both the situation into consideration, a combination of both Gingivectomy & Scaling & Root Planing, was done in single sitting. Gingivectomy done 2 mm coronal to Cemento-enamel junction would

result in removal of bulk of gingival tissues. Further, Gingivoplasty would result in reduction in thickness of gingival tissues to normal biotype. Now the pocket lining from 2 mm coronal to Cemento-enamel junction to the base of the pocket still remains. So, Root planing was done to smoothen the root surface which also secondarily remove the pocket lining. Thus, the objective of removing the local factor i.e. the biofilm along with aesthetic were both maintained. The drawback of the procedure lie in the fact that proper clinical judgement of the tissues is required to have minimal tissue shrinkage post operative. In cases, where there is bone loss, post operatively recession can be seen there. Further, patient compliance is very important to have regular follow ups.

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Citation: Verma Apoorva Verma, Choudhuri SR, Choudhuri K Roy, BS Ravi Prakash , Chakraborty A, Parihar Sarita. Phenytoin Induced Gingival Enlargement: Case Reports. **Indian J Prev Soc Med, 2022; 53 [2]: 149-154.**