

## **MINIMALLY INVASIVE MANAGEMENT OF GINGIVAL ENLARGEMENT: A CASE REPORT**

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### **ABSTRACT:**

Gingival enlargement is commonly caused by local factors, certain medications and systemic factors. Patient under anticonvulsant therapy mainly phenytoin for treatment of epilepsy often produce gingival enlargement. It is a well-known and frequently reported gingival condition affecting among younger age groups than adults. Meticulous oral hygiene performance can modify phenytoin-induced gingival enlargement, hence it plays a very important role in controlling this condition. In this case report an 18 year old female patient with phenytoin induced gingival enlargement was successfully treated by non-surgical therapy and change of drug under physician's concern. In 1 month follow up significant reduction of the gingival overgrowth and inflammation was evident.

**Key Words:** Drug induced, Anti convulsant, Epilepsy, Phenytoin



### **INTRODUCTION**

Gingival enlargement is defined as an overgrowth or increase in the size of the gingiva (GPT). Drug-induced gingival enlargement is mainly caused by 3 classes of drugs - Anticonvulsants, Antihypertensives and Immunosuppressants.<sup>[1]</sup> The first drug-induced gingival enlargement was reported after chronic use of Phenytoin (Kimbal in 1939).<sup>[2]</sup> Phenytoin is one of the most commonly prescribed medication to treat epilepsy and in cases of neuralgias and cardiac arrhythmias.<sup>[3]</sup> Phenytoin-induced gingival overgrowth is the earliest known drug-induced gingival overgrowth. Studies reported that about 70% of patients under phenytoin therapy developed notable gingival changes.

### **CASE DETAIL:**

An 18-year-old female patient reported to the Department of Periodontics, Tamil Nadu Government Dental College and Hospital - Chennai with the chief complaint of overgrowth of gums for past two years. The patient gave a history of the gradual increase in gum growth along with bleeding gums on brushing. The patient was a known epileptic and under medication (phenytoin 100mg tds) for the past 4 years.

On intraoral soft tissue examination, gingiva was pink in colour with generalized pigmentation, grade 1 gingival enlargement involving marginal gingiva and interdental papilla, irregular gingival margins and blunt interdental papilla, fibrotic in consistency with bleeding on

probing. On hard tissue examination, there was spacing present between upper anterior teeth with angle's class 1 malocclusion, mild debris and calculus. Generalised stains were present.[Figure 1a,1b,1c] Correlating the chief complaint, history of presenting illness, past medical history and intraoral examination, the case was provisionally diagnosed as phenytoin-induced gingival enlargement. Blood investigations were done and found to be within normal limits. No bony changes were seen in OPG.

The patient was referred to her physician regarding the opinion for the change of anti-epileptic drug following which her medication was changed from phenytoin 100mg TDS to carbamazepine 200mg bid. Fitness was obtained from the physician for management of gingival enlargement under local anaesthesia.

In phase 1 therapy oral hygiene instructions, diet counselling was given and scaling and polishing was done. The patient was kept under maintenance phase for three weeks after that root surface debridement was done. One month follow up revealed a good result which was evident by reduced enlargement of marginal gingiva and interdental papilla with the healthy periodontal condition. During 3<sup>rd</sup> and 6<sup>th</sup> month follow up, gingival and periodontal status of the patient was found to be stable with good oral hygiene maintenance. [Figure 2a,2b,2c]

## DISCUSSION:

Phenytoin is a 5,5-diphenylhydantoin, which terminate post-tetanic

hyperpolarisation and taper post-tetanic potentiation of synaptic transmission.<sup>[4]</sup> Phenytoin affects the metabolism of certain fibroblast subpopulations, intracellular calcium metabolism, reduces folic acid uptake and metabolism leading to the production of inactive collagenase resulting in gingival overgrowth.<sup>[5]</sup> Children and adults less than 30 years of age are more susceptible to drug-induced gingival enlargement.<sup>[6]</sup> Roughly 50% of the patients on phenytoin therapy instigate adverse drug reactions within 1 year of drug therapy.<sup>[7]</sup> The adverse effect of phenytoin depends on dosage and duration of exposure to the drug. Plasma concentration of phenytoin and gingival enlargement are not correlated. The pathogenesis of drug-induced gingival enlargement is still not clear. Possible pathogenesis of drug induced gingival enlargement is listed in the flowchart. Local risk factors of drug-induced enlargement are mal-positioned teeth, gingivitis, and mouth breathing. Other risk factors include poor oral hygiene, poor socio-economic status, and poor educational status. Dental plaque acts as a reservoir for accumulation of the drug and is commonly associated with this condition.<sup>[8]</sup> Hassell et al has hypothesized that in non-inflamed gingiva, fibroblasts are less active or even quiescent and do not respond to circulating phenytoin, whereas fibroblasts within inflamed tissue are in an active state as a result of inflammatory mediators and endogenous growth factors present. The occurrence and severity are not necessarily related to

dosage once the threshold level has been exceeded.

The clinical characteristics common to all drug-induced gingival enlargement is the formation of pseudo pocket with no associated attachment loss or tooth mortality and commonly occur in the anterior gingiva with enlargement of the interdental papilla extending to marginal gingiva. It may also progress and lead to union of papillary growth and may also further develop into a massive tissue fold covering coronal portions of teeth which may interfere with occlusion. When there are no inflammatory changes the growth is pale pink and mulberry shaped, firm and resilient with a minutely lobulated surface which characteristically projects beneath the gingival margin, from which it is separated by a linear groove leading to difficulty in plaque control measures resulting in a secondary inflammatory change. The enlargement is usually generalized throughout the mouth.<sup>[9,10]</sup> Our present case has similar clinical manifestations limited to interdental papilla and marginal gingiva.

The most effective treatment is the substitution of medication under physician's concern in conjugation with meticulous oral hygiene maintenance, a conservative non-surgical approach followed by surgical approach which includes gingivectomy and gingivoplasty with surgical blades or knives, electrosurgery, laser excision and periodontal flap surgery when bony alterations are seen.<sup>[11]</sup> Our case

improved well with drug substitution and non-surgical therapy alone.

## CONCLUSION:

Gingival enlargement is the most common adverse drug reaction in patients under phenytoin therapy. With the backdrop of the present case report, each and every case of epilepsy under phenytoin therapy should be advised on meticulous maintenance of oral hygiene. However drug induced gingival enlargement should be treated in a stepwise manner with a proper medical history with physician's concern of substitution of drug and meticulous maintenance of oral hygiene followed by periodontal management by non-surgical therapy and surgical therapy if needed. Further research on pathogenesis of gingival enlargement at molecular level is needed to create new measures in drug designing and preventive / therapeutic modalities.

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**FIGURES:**

Figure 1a:



Figure 1b:



Figure 1c:



**3 Months Postoperative Photographs:**

Figure 2a:



Figure 2b:



Figure 2c:



FLOWCHART:

