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Gingival Enlargement

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Abstract

Gingival enlargement, characterized by an abnormal increase in gum tissue, poses significant challenges in oral health management. This review investigates the multifaceted etiology, clinical implications, and diverse management strategies associated with this condition.

Various factors contribute to gingival enlargement, including poor oral hygiene, medication-induced effects, genetic predispositions, hormonal fluctuations, and systemic diseases. Understanding these causative factors is crucial for accurate diagnosis and tailored treatment.

Keywords: Predispositions, Hormonal, Fluctuations, Systemic Diseases.

Introduction

Gingival enlargement, also referred to as gingival overgrowth or hypertrophy, is a dental condition characterized by an abnormal increase in the size of the gum tissues surrounding the teeth. This condition can manifest as swelling, thickening, or bulging of the gums, leading to a variety of oral health concerns. The enlargement of the gingiva can arise from multiple factors, including poor oral hygiene practices, certain medications, genetic predisposition, hormonal changes, and systemic diseases. Identifying the underlying cause is crucial in determining the appropriate treatment approach. A comprehensive understanding of gingival enlargement is vital for both dental professionals and individuals to effectively diagnose, treat, and manage this condition, promoting optimal oral health and well-being.

Classification of gingival enlargement

Inflammatory enlargement

A. Chronic

B. Acute

Drug induced gingival enlargement

Enlargements associated with systemic disease

A. Conditioned enlargement

- pregnancy
- Puberty
- Vitamic C deficiency
- Plasma cell gingivitis
- Non specified condition

B. Systemic diseases causing gingival enlargement

- leukemia

4. Neoplastic enlargement (gingival tumors)

A. Beningn tumor

B. Malignant tumor

5. False Enlargement [1]

4. Etiology

Factors	Mechanism
Age	Children and adolescents unique fibroblast phenotype increased androgen metabolism Functional heterogeneity of fibroblasts
Genetic predisposition Pharmacokinetic variables	Threshold concentration of the drug Concentration of the drug in serum, saliva, gingival crevicular fluid and plaque
Drug induced alteration in gingival connective tissue homeostasis	Increased collagen production Increase in non-sulfated glycosaminoglycans of the non-collagenous matrix
Histopathology, ultrastructural factors and inflammatory change	Decreased collagenase activity Increased synthesis of TIMPs Active protein synthesis
Drug induced action on growth factors	Reduced degenerative changes Mononuclear and poly morphonuclear cell infiltrate Increased prostaglandin E2 Increased expression of EGF and PDGF

There are several etiological factors associated with this condition: [3]

Poor Oral Hygiene: The most common cause is inadequate oral hygiene. Plaque and tartar buildup can lead to inflammation and enlargement of the gums.

Medications: Some medications, particularly anticonvulsants (e.g., phenytoin), immunosuppressants (e.g., cyclosporine), and certain calcium channel blockers (e.g., nifedipine), can cause gingival enlargement as a side effect.[4]

Hormonal Changes: Hormonal changes, such as those occurring during puberty, pregnancy, or due to hormonal imbalances, can contribute to gingival enlargement.

Genetics: In some cases, a genetic predisposition can make an individual more prone to developing gingival enlargement.

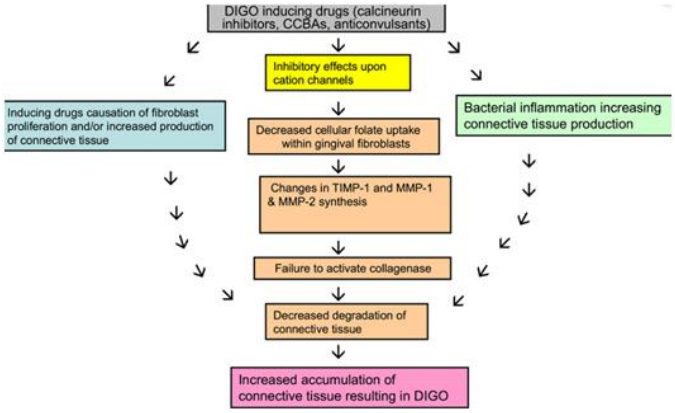
Systemic Diseases: Certain systemic conditions, like leukemia or conditions associated with metabolic disorders, can lead to changes in the gum tissue.

Chronic Inflammation: Chronic inflammatory conditions, such as chronic periodontitis, can cause gum tissue to enlarge.

Poorly Fitted Dental Restorations: Ill-fitting dental restorations or appliances can irritate the gums and cause them to swell or enlarge.[5]

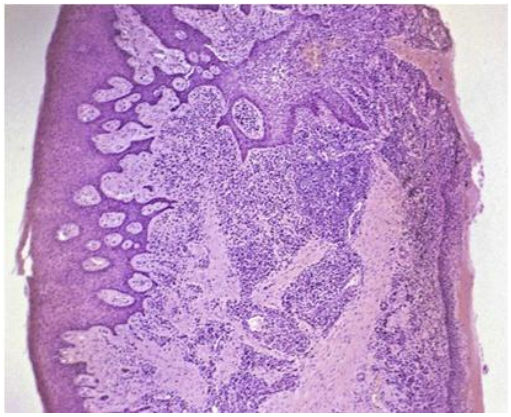
5. Mechanism of gingival enlargement

An example for the mechanism for drug induced gingival enlargement /overgrowth [6]



Histopathology of gingival enlargement

Histopathological examination of gingival/periodontal/ pericoronal abscess may present purulent focus in the connective tissue, surrounded by diffuse infiltration of polymorph nuclear leukocytes, edematous tissue and vascular engorgement.[7]



Gingival overgrowth is an umbrella term which encompasses gingival enlargement due to inflammation, drug influence, and hereditary factors. Studies have

Comparison of histopathological parameters between the groups [8]			
Histopathological parameters	IGO	DIGO	HGO
Epithelium	Hyperplastic	Hyperplastic	Hyperplastic
Rete ridges	Irregular	Irregular	Irregular
Type of connective tissue	Fibrous	Fibrous	Fibrous
Inflammation	Moderate–severe	Mild	Mild
Predominant inflammatory cells	Lymphocytes and plasma cells	Lymphocytes and plasma cells	Lymphocytes and plasma cells
Vascularity	Moderate–extensive	Mild	Mild
Fibrosis	Mild	Moderate	Extensive
Hyalinization	Absent	Present	Present

demonstrated morphological and histopathological diversities between the GO caused by various etiologies. Histopathologically, the cases in the study showed hyperplastic epithelium with irregular rete ridges with predominant cases having a fibrous stroma.

IGO showed moderate-to-severe inflammation, whereas DIGO and HGO showed mild inflammation with the predominant inflammatory cells being lymphocytes and plasma cells.

Connective tissue of HGO was extensively fibrotic as compared to IGO and DIGO. All the cases of DIGO and HGO showed hyalinization while it was absent in most of the IGO

Clinical features of gingival enlargement

Sn.	Gingival Disease	Clinical feature	Image
1.	Fibrous epulis	• Firm, pink, un-inflammed mass • Grows from below the free gingival margin/interdental papilla [9]	
2.	Pyogenicgranuloma	• Smooth surfaced ulcerated mass • Highly vascular • Compressible • Commonly appears during pregnancy[10]	

3.	Drug induced gingival enlargement	• Beadlike enlargement of the interdental papilla • Mulberry shape, firm, pink and resilient with minute lobulations • Absent in edentulous areas and will disappear in areas where teeth are extracted.[11]	 
	Vitamin C deficiency	• Bluish red, soft and friable with a smooth, shiny surface. • Bleeding may occur spontaneously or on slight irritation. • Surface necrosis with pseudo membrane formation [12]	
	Leukemia	• Gingival bleeding, petechiae, mucosal pallor, herpetic infections and candidiasis. [13]	

	Wegener's Granulomatosis	• Purple exophytic gingival swelling • Petechiae haemorrhages [14]	
	False enlargement	• During tooth eruption[15]	

Grading of gingival enlargement

Scoring of gingival enlargement:[16]

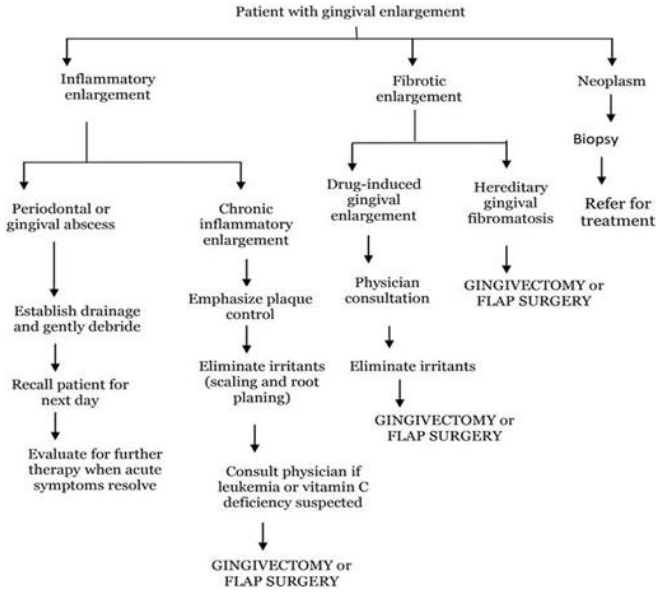
- Grade 0: no signs of gingival enlargement.
- Grade I: enlargement confined to interdental papilla.

Grade II: enlargement involves papilla and marginal gingiva.

Grade III: enlargement covers three quarters or more of the crown

Diagnosis

Diagnosing gingival enlargement involves a meticulous assessment encompassing clinical examination, patient history, and potential contributing factors. A thorough visual inspection of the oral cavity reveals the extent and characteristics of the enlargement, assessing factors such as color, texture, and symmetry. Patient history plays a crucial role, highlighting medication usage, systemic conditions, or genetic predispositions that could contribute to the condition. Additionally, biopsy and imaging techniques might be employed for precise identification of the underlying cause, aiding in the formulation of a targeted treatment plan. The diagnostic process underscores the necessity of a comprehensive approach to accurately determine the cause and appropriately manage gingival enlargement.



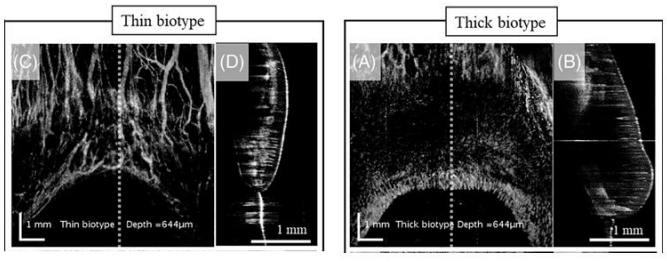
Diagnosing gingival enlargement involves several methods to identify its cause and severity. Here are some key diagnostic methods:

Clinical Examination: Visual inspection and physical examination of the gums to assess the size, color, texture, and extent of enlargement.

Patient History: Reviewing the patient's medical history to identify potential causes such as medications, systemic diseases, or genetic factors that could contribute to the condition.

Biopsy: Taking a sample of the enlarged gum tissue for microscopic examination to determine the specific nature of the enlargement, whether it's due to inflammation, overgrowth of tissue, or other causes.

Laboratory Tests: Blood tests to check for underlying systemic conditions or abnormalities that might contribute to gingival enlargement, such as hormonal imbalances or specific diseases.



Imaging Techniques: X-rays or other imaging studies may be used to assess the underlying bone structure and to rule out any bony pathology contributing to the gingival enlargement.

Combining these methods helps in accurately diagnosing the cause of gingival enlargement, which is crucial for determining the most effective treatment plan.

Treatment plan and management

Good dental hygiene can often help manage mild cases. Regular brushing, flossing, and using an antiseptic mouthwash. Deep cleaning techniques like scaling and root planing by a dentist or periodontist

Gingivectomy:[18]

Gingivectomy implies to the excision of gingival. The pocket wall (or enlarged tissue) is removed for accessibility.

Indications [19]: (1) elimination of suprabony pockets if the pocket wall is fibrous and firm, (2) elimination of gingival enlargements and (3) elimination of suprabony periodontal abscesses.

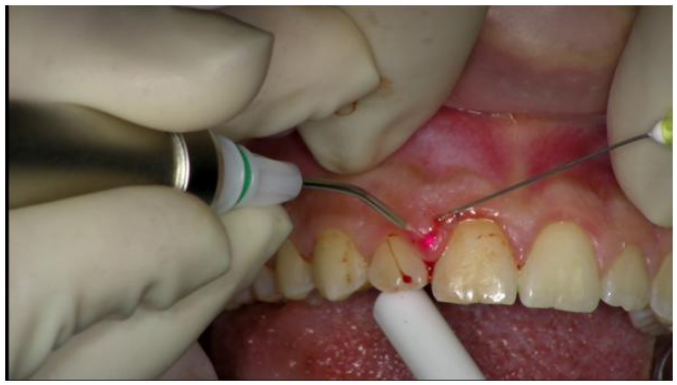
Mild gingival enlargement

It only require local management as improvement in oral hygiene, together with professional cleaning of the teeth, can lead to resolution of inflammation and reduction in gingival enlargement.

Drug induced hyperplasia

Includes substitution with another drug. Sodium valproate has been used as alternative to dilantin sodium in management of epilepsy. Anti -hypertensives other than calcium channel blockers may be considered for replacement of Nifedipine.

Tacrolimus has been used successfully as calcium channel blocker. Most of the gingival enlargement during pregnancy can be prevented by removal of local irritants and institution of fastidious oral hygiene. Hyperplasia at puberty can be managed by removal of lesions along with elimination of irritating factors [8].



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