

# Gingival Enlargement- Systemic Causes

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## **Abstract**

*Gingival enlargement is a common disease of gingiva and also a common clinical problem associated with specific conditions. The etiological factors and treatment may vary for various types of gingival enlargement. This review article gives the systemic cause of gingival enlargement along with their clinical features, histology, and treatment.*

## **Keywords**

*Gingival enlargement, gingival overgrowth, gingival hyperplasia, gingival inflammation.*

## **Introduction**

Gingival enlargement is not only associated with an improper oral hygiene problem. Some of the systemic conditions may cause gingival enlargement. The systemic condition like pregnancy, puberty, plasma cell gingivitis, vitamin c deficiency, and systemic diseases like leukemia, granulomatous disease, benign and malignant tumors also cause gingival enlargement. This article gives an outline of the systemic cause of gingival enlargement.

## **Classification of gingival enlargement<sup>12</sup>**

Based on the etiology and pathological changes

### **Inflammatory enlargements:**

- Chronic
- Acute

### **Drug-induced enlargements:**

- Anticonvulsants
- Antihypertensive calcium antagonists
- Immunosuppressant
- Idiopathic enlargement

### **Enlargements associated with systemic diseases:**

### **Conditioned enlargements**

- Pregnancy
- Puberty
- Vitamin C deficiency
- Plasma cell gingivitis
- Non-specific conditioned enlargement (pyogenic granuloma)

**Systemic diseases causing gingival enlargement:**

- Leukemia
- Granulomatous diseases (Wegener's granulomatosis, sarcoidosis, etc.)

**Neoplastic enlargements: (gingival tumors)**

- Benign tumors
- Malignant tumors

**False enlargements**

Underlying bony or dental tissue lesion

**Pregnancy gingival enlargement**

Gingival enlargement in pregnancy could also be marginal and generalized, or it's going to occur as one or multiple tumor-like masses. During pregnancy, there is an increase in hormone levels of both progesterone and estrogen. These hormonal changes make changes in vascular permeability and cause an increased inflammatory response to plaque and lead to gingival edema. The subgingival microbiota may also change, including an increase in *Prevotella intermedia*.<sup>1</sup>

**Marginal Enlargement**

**Clinical features**

- Gingival enlargement is generalized and is a more prominent interproximal area.
- The color of the gingiva is bright red or magenta, soft, and friable, and it has a smooth, shiny surface.
- Bleeding occurs spontaneously on slight provocation. (pregnancy rhinitis)<sup>2</sup>

**Tumor like Gingival Enlargement. (pregnancy tumor)**

It usually appears after the third month of pregnancy and is also called a Pregnancy tumor.

**Clinical features**

- The lesion is a discrete, mushroom-like, flat spherical mass in the gingival margin or the interproximal space.
- a sessile or Pedunculated.
- It is generally dusky red or magenta in color and smooth, glistening surface

- This is a superficial lesion that does not invade the underneath bone.
- painful ulceration may occur when interferes with occlusion.

### Histopathology

- Pregnancy Gingival enlargement is called Angio granuloma.

A central mass of connective tissue, with engorged capillaries which is lined by cuboidal endothelial cells and moderately fibrous stroma with edema and chronic inflammatory infiltrate is seen

- The stratified squamous epithelium with both intracellular and extracellular edema along with prominent rete pegs with leukocytic infiltration.

### Treatment

- It can be prevented by the removal of plaque and calculus.
- Surgical excision is indicated in a tumor-like gingival enlargement.
- Spontaneous reduction till the end of pregnancy.



Fig 1: Gingival enlargement in pregnancy



Fig 2: Gingival enlargement in puberty

### Enlargement in Puberty

#### Clinical features

- The gingival enlargement is associated with marginal and interdental with prominent bulbous interproximal papillae.
- enlargement seen in the facial gingiva, and the lingual surfaces are unaltered;
- clinical features are the same as chronic inflammatory gingival disease.<sup>3</sup>

#### Histopathology

chronic inflammation along with prominent edema and some degenerative changes are present in the histopathological examination.

#### Treatment

After puberty, the enlargement undergoes spontaneous reduction and Scaling is necessary for plaque and calculus are removed.

### Systemic Diseases that Cause Gingival Enlargement

#### Leukemia

##### Clinical features

- Gingival enlargement may be diffuse or marginal, localized or generalized tumor-like mass in the interproximal area.<sup>4</sup>
- The firm, friable, red, and hemorrhagic
- Painful necrotizing ulcerative inflammation

### **Histopathology**

Epithelium shows leukocytic infiltration and edema. The pseudomembranous meshwork of fibrins, bacteria, PMNS, and necrotic epithelial cells are seen.

The connective tissue is infiltrated with immature and proliferating leukocytes.

Engorged capillaries with edematous and also the presence of degenerated connective tissue.

### **Treatment**

- Refer the case to general physician
- A complete periodontal treatment protocol should be prepared
- Antibiotics should be given before the periodontal therapy
- Periodontal debridement and oral hygiene instruction should be given to the patient



Fig 3: Gingival enlargement in Leukemia

### **Granulomatous Diseases**

#### **WEGENER'S GRANULOMATOSIS:**

Etiology is unknown but it is considered as an immunologically mediated tissue injury.

#### **Clinical features**

- oral mucosal ulceration
- gingival enlargement
- abnormal tooth mobility
- exfoliation of teeth
- delayed healing response.
- The granulomatous enlargement is reddish-purple and bleeds easily.

#### **Histopathology**

scattered giant cells were seen in chronic inflammation and foci of acute inflammation, micro abscesses which are covered by a thin acanthotic epithelium.

#### **SARCOIDOSIS**

Sarcoidosis is a granulomatous disease and the etiology is not known

#### **Clinical features**

sarcoidosis involves any organ, including the gingiva which is smooth, red, and a painless enlargement may present.<sup>5</sup>

#### **Histopathology**

Sarcoid granulomas have discrete, noncaseating epithelioid cells with multinucleated and foreign body-type giant cells and peripheral mononuclear cells.

### Treatment

Mild symptoms do not require any treatment

In the severe stage, systemic corticosteroids should be given



Fig 4: Gingival enlargement in Wegener's granulomatosis



Fig 5: Gingival enlargement in Sarcoidosis

## Benign Tumors of the Gingiva

### Fibroma

#### Clinical features

- Fibromas arise from the gingival connective tissue or the periodontal ligament. It is a slow-growing lesion and spherical tumor that is firm and nodular but may be soft and vascular.
- Fibromas are usually pedunculated.
- Also known as giant cell fibroma which contains multinucleated fibroblasts.
- In another variant of fibroma, mineralized tissue (bone, cementum like material, dystrophic calcification) may be found and is called peripheral ossifying fibroma.<sup>6</sup>

#### Histopathology

Bundles of Well-formed collagen fibers with a scattering of fibrocytes and variable vascularity.

#### Treatment

Conservative surgical excision is indicated

### Papilloma

Benign proliferation of surface epithelium is associated with the human papillomavirus (HPV).

#### Clinical features

Appear as Solitary, wartlike, or "cauliflower"-like protuberances which are small hard elevations with irregular surfaces.<sup>7</sup>

### **Histopathology**

Finger-like projections of stratified squamous epithelium which is hyperkeratotic, with a fibrovascular tissue.

### **Treatment**

Surgical excision

### **Peripheral Giant Cell Granuloma**

#### **Clinical features**

- Giant cell lesions interdentially or from the gingival margin, occur on the labial surface, and which is sessile or pedunculated.
- appear as smooth, irregularly shaped with multilobulated protuberances and surface indentations.
- Ulceration of the margin is seen occasionally.
- The lesions are painless and may cover several teeth.
- the color varies from pink or deep red or purplish-blue
- Local irritation or trauma present in the lesion

### **Histopathology**

Numerous multinucleated giant cells with hemosiderin particles present in the Connective tissue stroma. Areas of chronic inflammation are present throughout the lesion, with acute involvement seen at the surface. The epithelium is hyperplastic, with ulceration at the base. Bone formation occasionally occurs within the lesion

### **Treatment**

Surgical excision and curettage along with the elimination of irritating factor is indicated.<sup>8</sup>

### **Leukoplakia**

leukoplakia is a white plaque lesion is usually associated with the use of tobacco, smoke, and alcohol intake

#### **Clinical features**

Leukoplakia of the gingiva appears as grayish-white, flattened, and irregularly shaped with keratinous plaque.<sup>9</sup>

### **Histopathology**

- Leukoplakia exhibits hyperkeratosis and acanthosis.
- Premalignant and malignant shows various degrees of atypical epithelial changes that may be mild, moderate, or severe mainly depending on the involvement of the epithelial layers.
- Inflammatory involvement of the underneath connective tissue is a common finding.

### **Gingival Cyst**

• Gingival cysts usually develop from odontogenic epithelium or sulcular epithelium traumatically implanted in the area.<sup>10,11</sup>

#### **Clinical features**

- localized enlargements usually involve the marginal & attached gingiva.
- occur mainly in mandibular canine and premolar areas were seen on the lingual surface.
- They are painless and may cause erosion of the underlying alveolar bone.

### **Histopathology**

A gingival cyst cavity is lined by a flattened or thin epithelium with or without localized thickening. Less frequently, the following types of epithelium can be found: nonkeratinized stratified squamous epithelium, keratinized stratified squamous epithelium, and parakeratinized epithelium with palisading basal cells

### **Treatment**

Local surgical excision and removal of the lesion is indicated

Other benign tumors show infrequent findings in the gingiva include: hemangioma, Neurilemoma, Nevus, Myoblastoma, ameloblastoma neurofibroma, and mucoceles.



Fig 6 Gingival enlargement in fibroma



Fig 7 Gingival enlargement in papilloma

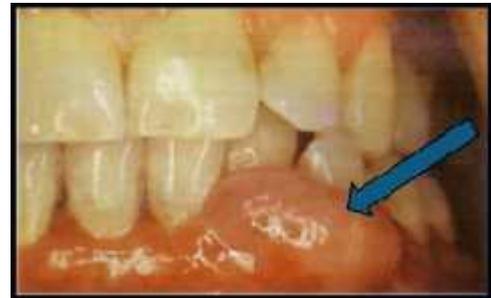


Fig 8 Gingival enlargement in peripheral giant cell granuloma



Fig 9 Gingival enlargement in leukoplakia



Fig 10 Gingival cyst

## Malignant Tumors of the Gingiva

### Squamous cell carcinoma

It is the most common malignant tumor seen in the gingiva. It may be exophytic with irregular outgrowth, or ulcerative, which usually appear as flat and erosive lesions. It is often symptomless usually unnoticed until complicated by inflammatory changes but causes pain; sometimes it becomes seen after tooth extraction

### Treatment

Radiation and surgical removal of the lesion is indicated  
Poor prognosis

### Malignant Melanoma

#### Clinical features

- Rare oral tumors occur in the hard palate and maxillary gingiva of older persons.
- Usually darkly pigmented with localized pigmentation.
- May be flat or nodular lesions which is characterized by rapid growth or early metastasis.
- Arises from melanoblasts in the gingiva, palate, or cheek.
- Infiltration into the underlying bone and metastasis to cervical and axillary lymph nodes are common.<sup>11,12</sup>

### Treatment

Surgical excision, chemotherapy, and radiation therapy is indicated

### Sarcoma

- Fibrosarcoma, reticulum cell sarcoma, and lymphosarcoma of the gingiva are rare
- Kaposi's sarcoma often occurs in the mouth of patients with acquired immunodeficiency syndrome (AIDS), mainly in the palate and the gingiva.<sup>11,12</sup>

### Treatment

Antiretroviral drug or intralesional injection with Vinblastine 0.1 mg is indicated, Laser excision and Interferon alpha.

### Metastasis

- Tumor metastasis to the gingiva occurs infrequently. Such metastasis is seen in various tumors, including adenocarcinoma of the colon, melanoma, renal cell carcinoma, hypernephroma, lung carcinoma, chondrosarcoma, and testicular tumor.



Fig 11 Gingiva in squamous cell carcinoma



Fig 12 Gingiva in Malignant melanoma



Fig 13 Gingiva in Kaposi's sarcoma

### Conclusion

Marginal and interdental gingival inflammation should be treated at an appropriate time with simple scaling and root planning. Gingival enlargement associated with any systemic cause should be properly diagnosed and treated with therapeutic and surgical procedure according to the type of etiology of the disease.

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