

# Chronic Gingivitis

---

Comes slowly, is of long duration & painless

Gingivitis is an inflammation of the gums (gingiva) surrounding the teeth. Gingivitis affects a significant portion of the population and is the most common form of periodontal diseases (diseases of the tissues surrounding the teeth). Chronic gingivitis may lead to receding gums and can be a precursor of periodontitis.

It is a simple and long-standing inflammation of the gingiva.

(Gingivitis may exist for years without change to periodontitis)

Gingivitis is a common and mild form of gum disease (periodontal disease) that causes irritation, redness and swelling (inflammation) of gingiva, the part of gum around the teeth.<sup>1</sup> It's important to take gingivitis seriously and treat it promptly. Gingivitis can lead to much more serious gum disease called periodontitis and tooth loss.

The most common cause of gingivitis is poor oral hygiene. Good oral health habits, such as brushing at least twice a day, flossing daily and getting regular dental checkups, can help prevent and reverse gingivitis.

## Clinical Criteria of Healthy Gingiva

---

- **Colour:** Coral pink (alveolar mucosa is red ) Variation in colour  
[Degree of keratinization, vascularity, pigmentation and thickness of epi).
- **Contour:**

---

<sup>1</sup> The American Academy of Periodontology. Proceedings of the World Workshop in Clinical Periodontics. Chicago: The American Academy of Periodontology;

**Free gingival:** Thin and end in a knife like edge

**Attached gingiva:** scalloped, elevations related to roots and depression in the inter radicular areas- inter radicular groove.

**Interdental papillae:** Pointed and fill the inter proximal space under contact area.

**Surface Texture:** Stippling in attach and base of interdental papilla Orange pill appearance.

**Consistency:** Firm and Resilient (firmly attached to the teeth and underlying alveolar bone except free gingival)



**Depth of Gingival Sulcus:** 0.5-2mm, not exceeding 3 mm.

**Type of Gingival Fluid:** Transudate

## Types

---

1. Localised
2. Generalised

### Distribution of inflammation:

1. Papillary (localised or generalised)
2. Marginal (localised or generalised)
3. Diffuse (localised or generalised)



Figure Chronic localized marginal gingivitis

## Etiology

---

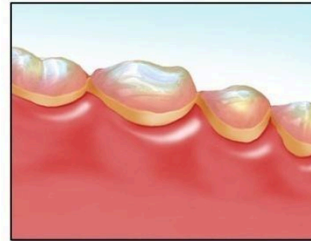
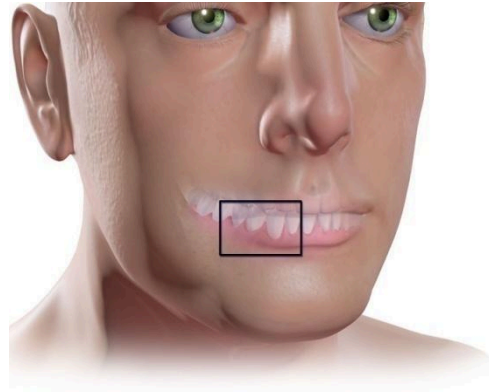
- i. Local initiating factor (Dental Plaque).
- ii. Local predisposing factors.
- iii. Systemic factors
  - Puberty
  - Pregnancy
  - Diabetes
  - Vitamin-C deficiency



## Bacteria Associated with Gingivitis

- *S. intermedius*
- *S. Oralis*
- *A. Viscosus*
- *A. Naeslundii*
- *Peptostreptococcus*
- **Gram -ve Bacteria**
  - *F. Nucleatum*
  - *P. Intermedius*
  - *Haemophilus*
  - *Capnocytophaga*

## Signs and symptoms



*Plaque build up  
and inflamed gums*

The symptoms of gingivitis are somewhat non-specific and manifest in the gum tissue as the classic signs of inflammation:

- Swollen gums
- Bright red or purple gums
- Gums that are tender or painful to the touch
- Bleeding gums or bleeding after brushing and/or flossing
- Bad breath (halitosis)

Additionally, the stippling that normally exists in the gum tissue of some individuals will often disappear and the gums may appear shiny when the gum tissue becomes swollen and stretched over the inflamed underlying connective tissue. The accumulation may also emit an unpleasant odor. When the gingiva are swollen, the epithelial lining of the gingival crevice becomes ulcerated and the gums will bleed more easily with even gentle brushing, and especially when flossing.



## Cause

Because plaque-induced gingivitis is by far the most common form of gingival diseases, the following sections will deal primarily with this condition.

The cause of plaque-induced gingivitis is bacterial plaque, which acts to initiate the body's [host response](#). This, in turn, can lead to destruction of the gingival tissues, which may progress to destruction of the periodontal attachment apparatus.

The [plaque](#) accumulates in the small gaps between teeth, in the [gingival grooves](#) and in areas known as *plaque traps*: locations that serve to accumulate and maintain plaque. Examples of plaque traps include bulky and overhanging restorative margins, clasp of [removable partial dentures](#) and [calculus](#) (tartar) that forms on teeth.

Although these accumulations may be tiny, the bacteria in them produce chemicals, such as degradative enzymes, and toxins, such as [lipopolysaccharide](#) (LPS, otherwise known as [endotoxin](#)) or [lipoteichoic acid](#) (LTA), that promote an inflammatory response in the gum tissue. This inflammation can cause an enlargement of the gingiva and subsequent formation. Early plaque in health consists of a relatively simple bacterial community dominated by [Gram-positive cocci](#) and [rods](#).

As plaque matures and gingivitis develops, the communities become increasingly complex with higher proportions of [Gram-negative](#) rods, fusiforms, filaments, [spirilla](#) and spirochetes. Later experimental gingivitis studies, using culture, provided more information regarding the specific bacterial species present in plaque.

Taxa associated with gingivitis included *Fusobacterium nucleatum* subspecies *polymorphum*, *Lachnospiraceae* [G-2] species HOT100, *Lautropia* species HOTA94, and *Prevotella oulorum* (a species of *Prevotella* bacteria), whilst *Rothia dentocariosa* was associated with periodontal health.<sup>2</sup> Further study of these taxa is warranted and may lead to new therapeutic approaches to prevent periodontal disease.

## **Risk factors**

Risk factors associated with gingivitis include the following:

- age

- Osteoporosis
- Low dental care utilisation (fear, financial stresses, etc.)
- poor oral hygiene
- overly aggressive oral hygiene such as brushing with stiff bristles
- mouth-breathing during sleep
- medications that dry the mouth
- cigarette smoking
- genetic factors
- pre-existing conditions

Chronic gingivitis is asymptomatic, low-grade inflammation of the gingival. The latter become red and slightly swollen with oedema. Plaque deposited along the gingival margins is readily detectable. In most patients, chronic gingivitis is due to local factors and, in particular, ineffective toothbrushing. It should be curable by effective oral hygiene.

Chronic hyperplastic gingivitis is term sometimes given to chronic gingivitis in which inflammatory oedema is prominent. However, there is no soft tissue hyperplasia. Maintenance of strict oral hygiene brings resolution.

Systemic disorders can exacerbate chronic gingivitis but rarely play a significant role.

## **Pathology**

Gingivitis is an inflammatory response to plaque bacteria. By definition, inflammation is restricted to the gingival margins and does not affect the periodontal ligament or bone.

The development of gingivitis has been arbitrarily divided into three histological stages, while the fourth stage refers to chronic periodontitis. It must be appreciated that these stages are artificially distinguished, being largely based on animal studies.

## **Variations in plaque bacteria with stage of disease**

Healthy (uninflamed) gingivae. The plaque is supragingival and thin (10 to 20 cells thick). Gram-positive bacteria predominate and include actinomyces species, Rothia, viridans

streptococci and *S. epidermidis*. In elderly patients in periodontal health, Gram-positive bacteria, particularly streptococci, form the largest single group (50% of the predominant cultivable flora), while Gram-negative bacteria only account for 30%. The latter include porphyromonas and fusobacterium species.

Early (and experimental) gingivitis. If toothbrushing is neglected for several days, plaque grows in thickness and is typically 100 to 300 cells thick. In the earliest stages, bacteria and *Actinomyces* species become predominant.

Chronic Gingivitis with the passage of time, persistence of plaque leads to chronic inflammation and Gram-negative organisms become increasingly prominent. *Veillonella*, *Fusobacterium* and *Campylobacter* species become conspicuous.

Calculus: Calculus is calcified plaque. The calcification is less significant than the bacterial content which induces inflammation and, later, tissue destruction. However, calculus distorts the gingival crevice and, by extending the stagnation area, probably promotes even greater bacterial proliferation. Supragingival calculus mainly forms opposite the orifices or the major salivary glands in the lower incisor and upper first molar areas. It cannot be removed by the patient and provides a rough, plaque-retentive surface.

Several compounds, such as pyrophosphates, added to dentifrices have been shown to reduce calculus formation to variable degrees. However, any clinical benefit has not been unequivocally established.

## **Management**

Chronic gingivitis is readily recognizable from the clinical features already described. Gentle probing shows absence of pocketing and radiographs show intact crestal alveolar bone. The diagnosis is confirmed resolution of gingivitis when effective oral hygiene measures (including calculus removal, effective toothbrushing and interdental cleaning habits) become established. Any exacerbating factors must be dealt with if possible.

## Prevention

Gingivitis can be prevented through regular [oral hygiene](#) that includes daily [brushing](#) and [flossing](#).<sup>3</sup> [Hydrogen peroxide](#), [saline](#), [alcohol](#) or [chlorhexidine mouthwashes](#) may also be employed. In a 2004 clinical study, the beneficial effect of hydrogen peroxide on gingivitis has been highlighted.<sup>4</sup>

Rigorous plaque control programs along with periodontal scaling and curettage also have proved to be helpful, although according to the [American Dental Association](#), [periodontal scaling](#) and [root planing](#) are considered as a treatment for periodontal disease, not as a preventive treatment for periodontal disease. In a 1997 review of effectiveness data, the U.S. [Food and Drug Administration](#) (FDA) found clear evidence showing that toothpaste containing [triclosan](#) was effective in preventing gingivitis.



## Treatment

Gingivitis before (top) and after (bottom) a thorough [mechanical debridement](#) of the teeth.

Analgesic and antiseptic gum paint with applicator buds used in treatment of gingivitis

The focus of treatment is to remove [plaque](#). Therapy is aimed at the reduction of oral bacteria and may take the form of regular periodic visits to a dental professional together with adequate oral hygiene home care. Thus, several of the methods used in the prevention of gingivitis can also be used for the treatment of manifest gingivitis, such as scaling, root planing, [curettage](#), [mouthwashes](#) containing [chlorhexidine](#) or [hydrogen peroxide](#), and flossing. Interdental brushes also help remove any causative agents.

Powered toothbrushes work better than manual toothbrushes in reducing the disease.<sup>[12]</sup>



The active ingredients approved by the American Dental Association that "reduce plaque and demonstrate effective reduction of gingival inflammation over a period of time" are triclosan, chlorhexidine digluconate, and a combination of [thymol](#), [menthol](#), [eucalyptol](#), and [methyl salicylate](#). These ingredients are found in toothpaste and mouthwash. Hydrogen peroxide was long considered a suitable over-the-counter agent to treat gingivitis. There has been evidence to show the positive effect on controlling gingivitis in short-term use. A study indicates the fluoridated hydrogen peroxide-based mouth rinse can remove teeth stain and reduce gingivitis.

Mouthwashes with essential oils are also useful.<sup>[13]</sup> For example, American Dental Association approved plaque reducers and anti-inflammatory agents such as thymol, menthol, eucalyptol, and methyl salicylate are originally derived from [thyme](#), [mint](#), [eucalyptus](#), and [willow](#), respectively.

The bacteria that causes gingivitis can be controlled by using an [oral irrigator](#) daily with a mouthwash containing an antibiotic. Either [amoxicillin](#), [cephalexin](#), or [minocycline](#) in 16 ounces of a non-alcoholic fluoride mouthwash is an effective mixture.



Overall, intensive oral hygiene care has been shown to improve gingival health in individuals with well-controlled type 2 diabetes. Periodontal destruction is also slowed down due to the extensive oral care. Intensive oral hygiene care (oral health education plus supra-gingival scaling) without any periodontal therapy improves gingival health, and may prevent progression of gingivitis in well-controlled [diabetes](#).

## Complications

- Recurrence of gingivitis
- Periodontitis
- Infection or [abscess](#) of the gingiva or the jaw bones
- [Trench mouth](#) (bacterial infection and [ulceration](#) of the gums)
- [Swollen lymph nodes](#)
- Associated with premature birth and low birth weight