

5 Clinical Features of the Gingiva

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Clinical Application. A dental hygienist's ability to recognize the clinical features of both healthy and diseased gingiva plays a part in nearly every patient care visit. Knowledge of these clinical features continuously will be expanded throughout the hygienist's career. The outline of these features presented in this chapter provides a fundamental framework for recognition of clinical features and will allow a new clinician to enter a clinical setting with confidence.

Learning Objectives

- Describe characteristics of the gingiva in health.
- List clinical signs of gingival inflammation.
- Compare and contrast clinical features of healthy and inflamed gingival tissue.
- Explain the difference in color between acute and chronic inflammation.
- Differentiate between bulbous, blunted, and cratered papilla.
- Write a description of gingival inflammation that includes descriptors of duration, extent, and distribution of inflammation.

Key Terms

Stippling

Inflammation

Gingivitis

Bulbous papilla

Blunted papilla

Cratered papilla

Extent of inflammation

Distribution of inflammation

Section 1

Clinical Features of Healthy Gingiva

It is important for clinicians to recognize the appearance of healthy gingiva and to recognize all of its variations in health. In addition, clinicians must be able to describe gingiva accurately when documenting the findings from a periodontal assessment. Careful choice of verbal descriptors documents the state of gingival health, or lack of it, and allows the clinician to focus on areas that may need additional treatment.

1. Tissue Color and Contour in Health

A. Tissue Color

1. Healthy gingival tissue has a uniform, pink color. The precise color depends on the number and size of blood vessels in the connective tissue and the thickness of the gingival epithelium. The shade of pink usually is lighter in persons with fair complexions and darker in individuals with dark complexions (Fig. 5-1).
2. The coral pink of the gingiva is easily distinguished from the darker alveolar mucosa.
3. Healthy tissue also can be pigmented. The pigmented areas of the attached gingiva may range from light brown to black.

B. Tissue Contour (Size and Shape)

1. In health, the gingival tissue lies snugly around the tooth and firmly against the alveolar bone (Fig. 5-2).
2. The gingival margin is smoothly scalloped in an arched form as it flows across the tooth surface from papilla to papilla.
3. The gingival margin meets the tooth with a tapered (knife edge), flat, or slightly rounded edge.
4. Papillae come to a point and fill the space between teeth (Fig. 5-2).
5. Teeth with a diastema—no contact between adjacent teeth—or large spaces between teeth will have flat papillae.



A



B

Figure 5-1. Tissue Color in Health. **A.** Periodontal health showing coral pink gingiva. Note the distinct difference in appearance between the keratinized gingiva and the nonkeratinized alveolar mucosa.

B. Pigmentation of the gingiva showing how the gingiva can vary in color among patients.

2. Tissue Consistency and Texture in Health

A. Tissue Consistency

1. The attached gingiva is firmly connected to the underlying cementum and bone.
2. Healthy tissue is resilient (elastic). If gentle pressure is applied to the gingiva with the side of a probe, the tissue resists compression and springs back quickly. The attached gingiva will not pull away from the tooth when air is blown into the sulcus.

B. Surface Texture of the Tissue

1. In health, the surface of the attached gingiva is firm and may have a dimpled appearance similar to the skin of an orange peel (Fig. 5-3).
 2. This dimpled appearance is known as **stippling**, appearing as minute elevations and depressions of the surface of the gingiva due to connective tissue projections within the epithelial tissue (connective tissue papillae). The presence of stippling is best viewed by drying the tissue with compressed air.
 3. Healthy tissue may or may not exhibit a stippled appearance as the presence of stippling varies greatly from individual to individual.
3. **Position of Gingival Margin in Health.** Ideally, the gingival margin is slightly coronal to the cementoenamel junction (CEJ) (Figs. 5-4 and 5-5). Patients with a previous history of bone loss, but healthy gingival tissue, may have a gingival margin that is apical to the CEJ (Fig. 5-6).
4. **Absence of Bleeding in Health.** Healthy tissue does not bleed when disturbed by clinical procedures such as gentle probing of the sulcus.



Figure 5-2. Contours of Healthy Gingiva. This tissue on the facial aspect of the maxillary anteriors exhibits all the characteristics of health, including a smoothly scalloped gingival margin, a tapered margin slightly coronal to the CEJ, and pointed papillae that completely fill the space between the teeth. (Courtesy of Dr. Don Rolfs, Wenatchee, WA.)



Figure 5-3. Stippling of Gingival Tissue. Healthy gingival tissue showing a stippled appearance. Stippling varies greatly from individual to individual. In some patients, healthy tissue may not exhibit a stippled appearance.



Figure 5-4. Position of the Margin in Health. In health, the gingival margin is slightly coronal to the cemento-enamel junction. In anterior sextants, the margin is characterized by pronounced scalloping of the margin and pointed interdental papillae.



Figure 5-5. Gingiva in Posterior Sextants in Health. In posterior sextants, the tissue is characterized by a gently scalloped margin and papillae that fill the interdental embrasure spaces. (Used with permission from Langlais RP. *Color Atlas of Common Oral Diseases*. Philadelphia, PA: Wolters Kluwer; 2003.)



Figure 5-6. Health or Disease? This individual received periodontal treatment for periodontitis several years ago. The assessment at today's appointment reveals no inflammation and no additional attachment loss since beginning periodontal maintenance several years ago. Therefore, this tissue is considered healthy. The attachment loss is simply an indicator of previous disease activity. (Courtesy of Dr. Ralph Arnold.)

Section 2

Clinical Features of Gingival Inflammation

Gingival **inflammation** is the body's reaction to the bacterial infection of the gingival tissues by periodontal pathogens. The inflammatory response to this bacterial infection results in clinical changes in the gingival tissue involving the free and attached gingiva, as well as the papillae. Inflammation that is confined to gingival tissue with no effect on attachment level is called **gingivitis**, and is the mildest form of periodontal disease. Most patients are unaware they have a gingival infection because there usually is no discomfort.

A clinician with a trained eye can discern subtle differences in color, contour, and consistency even in gingival tissues that appear relatively healthy at first glance. The phrase “tissue talks” is a good phrase to remember when assessing the gingival tissue. Indications that the tissue is not healthy include such clinical observations as red, swollen tissue or papillae that do not fill the interdental space. Table 5-1 contrasts the characteristics of healthy versus inflamed gingival tissue.

TABLE 5-1 CHARACTERISTICS OF HEALTHY VERSUS INFLAMED GINGIVAL TISSUE

| | Healthy Tissue | Gingivitis |
|--------------------|--|---|
| Color | Uniform pink color Pigmentation may be present | Acute: bright red Chronic: bluish red to purplish red |
| Contour | Marginal gingiva: Meets the tooth in a tapered or slightly rounded edge Interdental papillae: Pointed papilla fills the space between the teeth | Marginal gingiva: Meets the tooth in a rolled, thickened edge Interdental papillae: Bulbous, blunted, cratered |
| Consistency | Firm Resilient under compression | Spongy, flaccid Indents easily when pressed lightly Compressed air deflects the tissue |
| Texture | Smooth and/or stippled | Tissue appears “shiny” Stretched appearance |
| Margin | Slightly coronal to the CEJ | Coronal to the CEJ (due to swelling) |
| Bleeding | No bleeding upon probing | Bleeding upon probing |

1. Characteristics of Gingivitis

A. Tissue Color in Gingivitis.

1. **Gingivitis** is an inflammation of the gingiva often causing the tissue to become red and swollen, to bleed easily, and sometimes to become slightly tender.
2. Inflammation results in increased blood flow to the gingiva causing the tissue to appear bright red. Figures 5-7 and 5-8 show examples of common clinical presentations of gingivitis.



A



B

Figure 5-7. Color Changes in Gingivitis. **A.** Slight marginal redness is a clinical sign of early gingivitis. **B.** This gingival tissue shows more inflammation than seen in photograph **A**. The marginal and papillary gingival tissues are bright red in color. Note, also, the swelling of the marginal gingiva and papillae in this example. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)



A



B

Figure 5-8. Color Changes in Gingivitis. **A.** This example shows subtle color changes in the marginal and papillary gingival tissues. **B.** In this example, the color changes are pronounced with fiery red marginal gingiva and papillae. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)

B. Tissue Contour (Size and Shape) in Gingivitis

1. An increase of fluid within the tissue spaces—edema—causes enlargement of the gingival tissues. The normal scalloped appearance of the gingiva is lost if the gingival papillae are swollen.
2. Examples of types of changes in the appearance of the papillae are listed below.
 - a. **Bulbous papilla**—a papilla that is enlarged and appears to bulge out of the interproximal space (Fig. 5-9).
 - b. **Blunted papilla**—a papilla is flat and does not fill the interproximal space (Fig. 5-10).
 - c. **Cratered papilla**—a papilla appears to have been “scooped out” leaving a concave depression in the midproximal area. Cratered papillae are associated with necrotizing gingivitis (Fig. 5-11).



Figure 5-9. Bulbous Papillae. In gingivitis, the papillae may be enlarged and appear to bulge out of the interproximal space as seen in the papilla between the central and lateral incisors in this clinical photograph. (Courtesy of Dr. Ralph Arnold, San Antonio, TX.)



Figure 5-10. Blunted Papillae. In gingivitis, the papillae may be blunted and missing as seen in the papillae between the central and lateral incisors. (Courtesy of Dr. Don Rolfs, Wenatchee, WA.)



Figure 5-11. Cratered Papillae. The papillae may have a concave appearance in the midproximal area as seen in the papillae between second premolar and molar in this clinical photo. (Courtesy of Dr. Don Rolfs, Wenatchee, WA.)



Figure 5-12. Soft, Spongy Tissue. Inflamed gingival tissue may be soft and spongy. The inflammatory fluids can cause the gingival tissues to feel somewhat like a moist sponge. (Courtesy of Dr. Ralph Arnold, San Antonio, TX.)



Figure 5-13. Smooth, Shiny Tissue. In gingivitis, fluid in the tissue can cause the tissue to appear smooth and shiny with a stretched appearance. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)

2. Tissue Consistency and Texture in Gingivitis

A. Tissue Consistency in Gingivitis

1. Increased fluid in the inflamed tissue also causes the gingiva to be soft, spongy, and nonelastic (Fig. 5-12).
2. When pressure is applied to the inflamed gingiva with the side of a probe, the tissue is easily compressed and can retain an imprint of the probe for several seconds.
3. Inflamed gingival tissue loses its firm consistency becoming flaccid (soft, movable). When compressed air is directed into the sulcus, it readily deflects the gingival margin and papillae away from the neck of the tooth.

B. Surface Texture in Gingivitis

1. The increase in fluid due to the inflammatory response can cause the gingival tissues to appear smooth and very shiny (Fig. 5-13).
2. The tissue almost has a “stretched” appearance that resembles plastic wrap that has been pulled tightly.

3. Position of Margin in Gingivitis

- A. In gingivitis, the position of the gingival margin may move more coronally (further above the CEJ).
- B. This change in the position of the gingival margin is due to tissue swelling and enlargement (Fig. 5-14).

4. Presence of Bleeding in Gingivitis

- A. Bleeding upon gentle probing is seen clinically before changes in color are clinically detectable (Fig. 5-15).
- B. In gingivitis, the sulcus lining becomes ulcerated and the blood vessels become engorged. The tissues bleed easily during probing or instrumentation.
- C. There is a direct relationship between inflammation and bleeding; the more severe the inflammation, the heavier the bleeding.

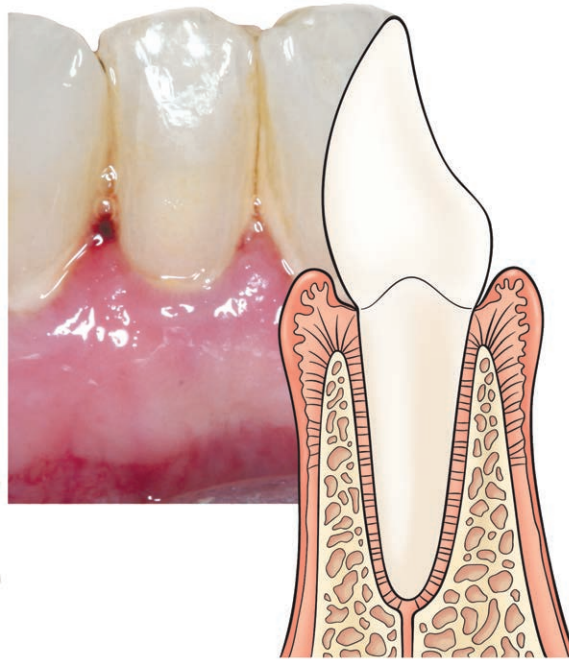


Figure 5-14. Tissue Margin in Gingivitis. The tissue swelling in gingivitis may cause the position of the gingival margin to move coronally—further above the CEJ—than in health. There is no destruction of periodontal ligament fibers or alveolar bone in gingivitis.



Figure 5-15. Bleeding on Probing. Bleeding is an important clinical indicator of inflammation. Inflammation results in ulceration of the sulcus/pocket wall causing the gingival tissues to bleed easily during gentle probing.

Section 3

Extent and Distribution of Inflammation

In documenting inflammation of the gingival tissues it is useful to note both the extent and distribution of the inflammation. Just documenting the presence of gingival inflammation is too vague, and does not identify severity of inflammation accurately enough to help establish a treatment plan.

1. Gingival Inflammation

- A. Extent of Inflammation.** The **extent of inflammation** is the area of tissue that is affected by inflammation. The extent of inflammation is described as localized or generalized in the mouth.
1. Localized inflammation is confined to the gingival tissue of a single tooth—such as the maxillary right first molar—or to a group of teeth—such as the mandibular anterior sextant.
 2. Generalized inflammation involves all or most of the tissue in the mouth.
- B. Distribution of Inflammation.** The **distribution of inflammation** describes the area where the gingival tissue is inflamed.
1. The inflammation may affect only the interdental papilla, the gingival margin and the papilla, or the gingival margin, papilla, and the attached gingiva.
 2. Table 5-2 summarizes how to describe the extent and distribution of inflammation of the gingival tissue. Figures 5-16 to 5-20 illustrate the use of this descriptive terminology.

TABLE 5-2 GINGIVAL INFLAMMATION

| | |
|---------------------|---|
| Extent | <ul style="list-style-type: none"> • Localized—inflammation confined to the tissue of a single tooth or a group of teeth • Generalized—inflammation of the gingival tissue of all or most of the mouth |
| Distribution | <ul style="list-style-type: none"> • Papillary—inflammation of the interdental papilla only • Marginal—inflammation of the gingival margin and papilla • Diffuse—inflammation of the gingival margin, papilla, and attached gingiva |
| Descriptions | <p>Descriptive terms may be combined to create a verbal picture of the inflammation, such as:</p> <ul style="list-style-type: none"> • “Localized marginal inflammation in the mandibular anterior sextant” • “Localized papillary inflammation on the maxillary right canine” • “Generalized marginal inflammation” • “Generalized diffuse inflammation” |



Figure 5-16. Localized Marginal Inflammation. Note the redness and swelling of the marginal and papillary gingival tissues that are localized to the mandibular anterior sextant. (Courtesy of Dr. Ralph Arnold.)



Figure 5-17. Localized Diffuse Inflammation. Redness and edema of the gingival margin, papillae, and attached gingiva in the mandibular anterior sextant. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)



Figure 5-18. Generalized Diffuse Inflammation. Diffuse inflammation of the gingival margin, papillae, and attached gingiva throughout the entire mouth. (Courtesy of Dr. Ralph Arnold.)



Figure 5-19. Localized Marginal Inflammation. Note the reddened tissue color along the gingival margin, extending down into the papillae on these maxillary anterior teeth. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)



Figure 5-20. Localized Diffuse Inflammation. Inflammation involving the gingival margin, papillae, and attached gingiva of the mandibular anterior sextant. (Courtesy of Dr. Richard Foster, Guilford Technical Community College, Jamestown, NC.)

Chapter Summary Statement

Clinicians must have a clear mental image of gingival health to recognize the signs of gingival inflammation when it occurs. Inflammation in the gingiva causes changes in the color, contour, and consistency of the gingiva that can be recognized even in the earliest stages by the trained clinician.

Section 4 Focus on Patients

Clinical Patient Care

CASE 1

A patient new to your dental team has been appointed with you for a dental prophylaxis. The patient has just relocated to your town. The patient tells you that he saw a dentist just before moving who told him that he has gingivitis. During your discussion with the patient, he asks if there is some way he can tell at home if he has gingivitis. How might you reply to this patient's question?

CASE 2

Reading through your patient's treatment notes from the previous visit, you notice the clinician documented "presence of gingival inflammation." Explain why this statement is not adequate in order to provide quality patient treatment. What would you add to the description to provide another clinician with a clear verbal description of the clinical features of the patient's gingival tissues?



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