

# Photo Quiz

## Mouth Pain with Red Gums

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This series is coordinated by John E. Delzell, Jr., MD, MSPH, Assistant Medical Editor.

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**Figure.**

A 74-year-old man presented with pain in his mouth. The pain had been present for a few months but had recently increased in intensity. He had not had recent dental work and did not see a dentist regularly. He did not have a history of oral, head, or neck surgery. He did not have fever, chills, swelling of the face or neck, or discharge or drainage from the area.

On physical examination there was diffuse erythema of the gums with mild edema and tenderness. The patient had thick deposits at the gum line that could not be wiped off. There were areas of erythema, gum recession, and increased movement of the teeth. There was pain when moving the teeth. There was no purulence, facial edema, or lymphadenopathy.

### Question

Based on the patient's history and physical examination findings, which one of the following is the most likely diagnosis?

- A. Dental abscess.
- B. Dental caries.
- C. Periodontal disease.
- D. Plaque gingivitis.

**See the following page for discussion.**

## Summary Table

Condition	Characteristics
Dental abscess	Localized infection; pain, inflammation, purulent drainage, lymphadenopathy, and facial edema; possible systemic symptoms, such as fever, chills, and malaise
Dental caries	Destruction of enamel and subsequently tooth structure; dark spots, localized pain, hot or cold sensitivity, and pain with eating
Periodontal disease	Chronic gingival disease; pocket formation and gingival recession; characterized by the presence of calculus and tooth destruction
Plaque gingivitis	Reversible gingival erythema and inflammation; soft plaque formation that is easily wiped off; no calculus and pocket formation or tooth destruction

## Discussion

The answer is C: periodontal disease. Periodontal disease is the loss of gum attachment at the base of the tooth, creating at least one pocket.<sup>1</sup> Periodontal disease leads to a calculus comprised of bacteria, acid, food, and saliva located above and below the gum line that cannot be wiped off. This calculus creates pockets along the dentition, providing space for infection, inflammation, and breakdown of the bone and tissues that support the teeth. This causes loose teeth, erythema, edema, bleeding, and pain.

Nearly 50% of adults in the United States have periodontitis, usually with pocket formation around multiple teeth. Men, Mexican Americans, and smokers are at highest risk. The incidence of periodontal disease is inversely proportional to income and education level.<sup>2</sup>

Adolescents are prone to *Actinobacillus actinomycetemcomitans* infection that can rapidly and aggressively cause periodontitis.<sup>3</sup> Pregnancy-related gingivitis can progress to more severe disease. Some diseases are associated with higher rates of periodontal disease, including diabetes mellitus, human immunodeficiency virus infection, and autoimmune disease. Medications such as bisphosphonates, phenytoin (Dilantin), cyclosporine (Sandimmune), and nifedipine (Procardia) have been linked with gingival and jaw changes that contribute to periodontal disease.<sup>4</sup>

Early treatment of periodontal disease helps prevent tooth loss and includes removal of calculi above and below the gum line. There is no indication for antibiotics. Education and prevention include encouraging patients to brush after meals and floss daily. Later treatment includes more invasive and surgical approaches.

Dental abscesses are localized infections resulting from the introduction of bacteria into a gingival pocket or as a progression of decay into the pulp. They cause pain, inflammation, purulent drainage, lymphadenopathy, and facial edema. Systemic symptoms, including fever, chills, and malaise, may also occur.

Dental caries or cavities are the result of decay in the enamel that subsequently causes tooth decay. It is identifiable as dark spots of tooth destruction that occur at any location on the tooth. This causes localized pain, hot or cold sensitivity, and pain with eating.

Plaque gingivitis is a reversible condition defined by gingival erythema and soft plaque deposits that are easily wiped off. It is distinguishable from periodontal disease because there is no calculus and pocket formation or tooth destruction. Gingival irritation may be related to poor dental hygiene and is common in pregnancy and in persons with diabetes.

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