



Gingival disease associated with a decorative crown

Catherine M. Flaitz, DDS, MS Francesca Agostini, DDS, MS

Dr. Flaitz is professor, Oral & Maxillofacial Pathology and Pediatric Dentistry; Dr. Agostini is assistant professor, Department of Pediatric Dentistry, University of Texas at Houston Health Science Center Dental Branch. Correspond with Dr. Flaitz at Catherine.M.Flaitz@uth.tmc.edu

Abstract

Decorative crowns for the teeth have gained a resurgence of popularity among adolescents. Similar to other forms of body art found in the mouth, these trendy crowns may be associated with a variety of oral complications. This case report describes a localized form of necrotizing ulcerative gingivitis, exacerbated by a cosmetic gold crown in a teenage girl. Healthier artistic options are discussed to replace this flashy dental fad. (*Pediatr Dent* 24:47-49, 2002)

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Painful, ulcerative lesions involving the gingival tissues are usually indicative of infectious disease or traumatic insults, when observed in children. Establishing a diagnosis is further complicated when both potential causes exist. The purpose of this case report is to describe the clinical features of localized necrotizing ulcerative gingivitis (NUG) that was exacerbated by a poorly adapted, decorative gold crown. In addition to providing a differential diagnosis, healthier trends for ornamentation of the teeth are discussed.

Case history

A healthy 16-year-old African-American girl sought emergency dental treatment for painful gingivitis that began about 7 days. Clinical examination revealed a deep ulcer of the palatal gingiva, adjacent to the maxillary, left, central and lateral incisors (Fig 1). The localized ulcer was surrounded by a brightly erythematous margin and covered by a thick and tenacious pseudomembrane. Upon periodontal probing at the affected site, the average pocket depth was 2 mm, but significant bleeding and pain were elicited. Painful erythema, superficial ulceration and necrosis of the interproximal and marginal gingiva extended from the right to the left first premolar region. Throughout the remaining dentition, a generalized, nontender gingivitis was noted. Most impressive was a decorative gold crown on the left central incisor that was overcontoured with rough, open and overextended margins. The ornamented incisor exhibited a Class 1 mobility and was in traumatic occlusion with the mandibular incisors. Except for a slightly widened periodontal ligament space and incipient interproximal alveolar bone loss, no other radiographic findings were detected.

Historically, the decorative crown had been placed about 4 months by a dentist with no reduction of the tooth. Approximately 4 weeks prior to the development of this ulcerative disease, the same teenager was seen during another emergency visit for gingival swelling and bleeding of the maxillary anterior teeth (Fig 2). At that appointment, it was recommended that the patient have the gold tooth removed, but she would not consent to treatment. She denied having any health problems, but did admit to occasional use of cigarettes.

Based on the clinical features and lack of constitutional signs or symptoms, a working diagnosis of localized necrotizing ulcerative gingivitis was made. Following local anesthesia, the gold crown was removed and povidone-iodine 10% solution was applied to the affected gingiva. The necrotic tissue was debrided; the residual dental cement was removed; and the teeth were scaled and polished. Fluoride varnish was placed on the facial aspect of the central incisor for the management of an incipient white spot lesion, where the cutout artwork exposed the crown of the tooth. The patient was instructed to rinse with chlorhexidine gluconate 0.12% for 1 week. At the 1-week follow up visit, the gingival health had significantly improved. The teenager wished to have the crown resealed during this appointment, but she was advised to reconsider this decision and potential alternatives were discussed.

Discussion

Necrotizing ulcerative gingivitis (NUG) has been known by such names as Vincent's disease, trench mouth and acute necrotizing ulcerative gingivitis (ANUG). Based on a new



Fig 1. Localized necrotizing ulcerative gingivitis of the anterior palatal gingiva



Fig 2. Gingivitis associated with an ill-fitting, decorative, gold crown

classification system for periodontal diseases, this lesion has been defined as necrotizing periodontal disease, which includes both NUG and necrotizing ulcerative periodontitis (NUP).¹ The cause of this disease is multifactorial, but a bacterial etiology, in particular, fusiform-spirochetal microorganisms, plays an important role in its development. Microbiologic studies have demonstrated the presence of an anaerobic microflora consisting of *Fusobacterium nucleatum*, *Prevotella intermedia*, *Porphyromonas gingivalis*, *Treponema* and *Selenomonas* species.² Human herpesviruses, especially the cytomegalovirus and Epstein-Barr virus, along with other viruses, have also been implicated in the pathogenesis of this disease.^{3,4} Several predisposing factors are associated with NUG, including psychological stress, cigarette smoking, malnutrition, inadequate sleep, preexisting gingivitis, tissue trauma, recent illness and immune suppression.³ Although uncommon, children infected with the human immunodeficiency virus (HIV) are more vulnerable to this oral condition.

NUG is a rare disease in the United States that typically affects adolescents and young adults. In contrast, this disease is diagnosed more frequently in African children under the age of 12 years old with a predilection for the summer months.⁵ Clinically, NUG is characterized by ulceration and

necrosis of the interdental papillae and marginal gingiva, spontaneous bleeding, and severe pain.³ Other signs and symptoms that are reported to occur less often with NUG include lymphadenopathy, fetid malodor, and rarely, fever and malaise. The necro-ulcerative lesion starts at the tip of the interdental papilla and progresses until there is a cratered or punched out defect. It is this residual scarring of the interdental papilla that increases the susceptibility of the patient to recurrent disease with loss of attachment and bone. Typically presenting as a multifocal disease, occasionally the lesion distribution is more localized as in the present case. Persistent trauma from the ill-fitting crown, especially on the palatal gingiva, predisposed this site to more extensive destruction.

Management of this disease consists primarily of mechanical debridement and improvement in oral hygiene.³ Topical antimicrobial agent, such as short-term use chlorhexidine gluconate 0.12% oral rinse, may promote healing following scaling and curettage. Systemic antibiotics, in particular, metronidazole, are indicated for the treatment of severe, refractory cases or when there is a contributing systemic disease, such as HIV infection.² The prognosis is very good for most cases of NUG, resulting in rapid lesion resolution, following conservative management. In some cases, regeneration of the interdental papilla is possible when there is adequate treatment and plaque control. However, NUG may recur, which increases the risk for loss of gingival attachment and alveolar bone. Furthermore, when the immune status of the child is compromised, disease progression to NUP and noma are possible sequelae, if left untreated.³

Differential diagnosis

In children and adolescents, painful ulcerative gingivitis of sudden onset usually is indicative of an infectious disease. The most common of these conditions is primary herpetic gingivostomatitis. In contrast to NUG, systemic signs and symptoms are prominent and precede the painful gingivitis by several days. Although the gingival tissues are frequently affected, concurrent and widespread vesicles and coalescing ulcers are distributed throughout the oral mucosa and perioral skin. Significant tissue destruction and scarring are found only in chronic cases in which a child is severely immunocompromised. Another viral infection that may mimic NUG is infectious mononucleosis. Prominent lymphadenopathy, painful tonsillar enlargement with or without surface exudates, tonsillar abscesses, fever, and palatal petechiae are head and neck manifestations of this disease. Occasionally, necrotizing mucosal and gingival lesions are an oral manifestation, especially necrotizing pericoronitis.⁶ Lastly, factitial gingival injury may result in multifocal destructive lesions in this age group. Typically, the lesions are limited to the labial or buccal surfaces of the anterior or premolar teeth, which are accessible to picking habits. Gingival clefting and asymmetrical recession are observed, in contrast to cratering of the interdental papillae.

Pediatric significance

Decorative gold crowns are gaining popularity among adolescents and young adults and are influenced by the music culture. This latest fashion trend is worn primarily by African-American, Hispanic, Asian and Russian youths. These crowns are commercially available and easily accessible through various websites, body art shops and flea markets. Although many of the cutouts on the crowns have no particular meaning, some examples are custom designed and represent their status in a cult or gang. Since many of these crowns are prefabricated and are not always inserted by a dentist, a number of oral health problems may develop. Periodontal disease, dental caries, traumatic occlusion, fractures and devitalization of the teeth and contact allergies are potential complications.

A new alternative to the cosmetic gold crown is a 22- to 24-karat yellow or white gold charm or ornament that is bonded to the facial surface of one or more of the anterior teeth.⁷ This oral jewelry is the latest fashion trend from Europe and is placed by the dentist, who can instruct the patient on proper maintenance and potential complications. Another trendy but reversible option is the tooth tattoo that represents a temporary decorative appliqué.⁸ The tattoo is self-adherent to a clean tooth surface for a short period but, typically, is designed for a younger age group. Self-expression

with body art is common during adolescence, but when it comes to tooth art, healthier alternatives exist, which may prevent irreversible and disfiguring oral complications in the future.

References

1. Armitage GC. Development of a classification system for periodontal disease and conditions. *Ann Periodontol* 4:1-6, 1999.
2. Novak MJ. Necrotizing ulcerative periodontitis. *Ann Periodontol* 4:74-77, 1999.
3. Rowland RW. Necrotizing ulcerative gingivitis. *Ann Periodontol* 4:65-73, 1999.
4. Contreras A, Falker W, Enwonwu CO, Idigbe EO, Savage KO, Afolabi MB et al. Human *Herpesviridae* in acute necrotizing ulcerative gingivitis in children in Nigeria. *Oral Microbiol Immunol* 12:259-265, 1997.
5. Arendorf TM, Bredekamp, B, Cloete C-A, Joshipura K. Seasonal variation of acute necrotizing ulcerative gingivitis in South Africans. *Oral Diseases* 7:150-154, 2001.
6. Courant P, Sobkov T. Oral manifestations of infectious mononucleosis. *J Periodontol* 40:279-283, 1979.
7. *Dental Products Report*. 35(10):20,136, October 2001.
8. *Dental Products Report*. 35(10):30, October 2001.