Oral Medicine and the Teenage Patient

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Oral Medicine and the Teenage Patient
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LEARNING OBJECTIVES
After reading this article, the individual will learn:
• That habits, abuses, and eating disorders have many adverse effects on the tissues of the oral cavity of teenage patients.
• That the dentist may be the only person to accurately diagnose some potentially life-threatening conditions in teenage patients yet may legally be limited as to whom may be informed.

ABOUT THE AUTHOR
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INTRODUCTION
Approximately 51% of young Americans have experimented with an illegal substance by the time they graduate from high school.1 When treating adolescent patients, the dentist must realize that when questioned, almost all teenagers will emphatically deny any involvement with habits, abuses, sex, eating disorders, or other potentially harmful behavior. Therefore, the diagnostic skills and a nonthreatening professional demeanor will be of utmost importance when trying to communicate with the teenage patient in order to prevent a poor clinical outcome.

This article discusses certain habits, abuses, and eating disorders (HAED) that may affect adolescent patients, their oral manifestations, and important diagnostic features and clinical consequences, including what the dental clinician may (or may not) be able to do to help these patients.

COMMON ORAL EFFECTS OF HABITS, ABUSES, AND EATING DISORDERS
One of the most common oral side effects of HAED is dental caries. Prior to and during the teenage years, children are subjected to the world’s most prevalent disease—dental caries.2 Caries is the loss of tooth structure under plaque that is a result of direct chemical action of bacterial acids, and can be reversible. Frequent ingestion of dietary sugars (fermentable carbohydrate)3 in the form of snacks, candy, sodas, fruit drinks, etc, are major etiologic factors. Habitual craving for cariogenic food and drink, combined with poor oral hygiene, can lead to periodontal disease, tooth loss, diabetes, obesity, and even to cancer4 as a possible secondary result of inflammation.5 Much of this may be preventable. However, when parental influence is compromised as the child becomes older, more independent, and subjected to peer pressure, caries may be the least of the oral problems adolescents face.

Another common effect of HAED is dry mouth or xerostomia. This symptom can result in caries, tissue irritation, fungal infection with Candida albicans, and inflammation. While there are several forms of commercially available salivary substitutes as well as prescription medications, correction of the abuse causing the xerostomia is the most important method for rectifying the problem.

Another common, untoward effect of eating disorders as well as drug abuse is tooth erosion. Erosion is the loss of superficial tooth structure that results from the chemical action of acids that does not involve bacteria, is not reversible, and therefore is readily detectable.

The most devastating effect of certain HAEDs is oral cancer. The dentist must be eternally vigilant to detect oral cancer, especially when the other effects of HAED as noted above are present. However, with regard to human papillomavirus (HPV)-induced lesions, many dentists may not be sufficiently prepared.
**SMOKING AND ALCOHOL CONSUMPTION**

The most dangerous habit in terms of health consequences is smoking, with ethanol use a close second. Both are implicated in promoting the prevalence of cancer, including oral cancer. There has been a decline in smoking among teenagers in the United States from 1999 to 2009, partly due to the media blitz and increased taxes on cigarettes. However, the dentist must be constantly attentive for the signs of smoking, such as white or red mucosal lesions (Figure 1), stained teeth and/or fingers, and bad breath. Poor oral hygiene will exacerbate the effects of smoking, and both will increase the inflammatory component.

While few teenagers will present for a dental appointment in an inebriated state, as part of a preventive protocol the practitioner, after performing a thorough soft-tissue examination, might inform the patient as to the purpose of such an examination and alert said patient as to the dangers of smoking and drinking. In addition, the clinician can emphasize that the carcinogenic effects of smoking and drinking combined are a multiplicative, rather than an additive, effect for oral cancer causation. The patient should be examined for red or white mucosal lesions and signs of acid erosion of the teeth due to frequent regurgitation after excessive alcohol consumption. Poor oral hygiene, gingival inflammation, and obesity may be contributing factors for a diagnosis of alcohol consumption. Further, alcohol abuse may stimulate the production of acetaldehyde, which promotes malignant tissue transformation.

As a result of the increase in smoke-free laws in the United States, the dental practitioner must also be aware of alternative smoking habits such as chewing tobacco (spit tobacco) and other smokeless tobacco products in various forms. Placement of tobacco products between mucosal tissues and gingiva can cause the same effects on tissues as smoking, ie, leukoplakia and erythroplasia, and in addition, gingival recession, cervical abrasion, root caries, extrinsic stain, and occlusal attrition (Figure 2). These products contain nicotine and other carcinogens, are addictive, and extend health risks beyond those of oral cancer. Recent products such as “snus” (moist snuff) are intended to dissolve in the mouth, and the juices may be swallowed rather than expectorated. These products are designed to attract young people and can be used discretely. They also circumvent smoke-free policies in some locations and tobacco cessation efforts, and some individuals combine smoking and smokeless tobacco.

**DRUG ABUSE**

The most commonly abused substances in the United States are cannabis, methamphetamine, and cocaine, with cannabis (9-tetrahydrocannabinol [THC]) being the most commonly used illegal drug. The use of cannabis (marijuana, dope, hash, grass, pot, weed) has increased and will continue to increase as more states seek to legalize its use for therapeutic purposes. While medical marijuana use is justified for the purposes of pain management and to improve the quality of life for cancer and AIDS patients, there is now an increased effort to legalize its use for recreational purposes in states such as California for taxable revenue and employment opportunities. While regulations to restrict its use to adults (similar to tobacco and alcohol) will be implemented, it may become more available to teenagers.

With the distinct possibility of an increased use of cannabis within the near future (smoking marijuana or oral THC), the dentist must be aware of the documented side effects as well as the suggested possible consequences that have not as yet been proven conclusively. Increased consumption of sweets and tasty foods with resultant
weight gain have been documented. The fact that cannabinoids and nicotine are increasingly used in combination by adolescents creates situations that may not be attributable to cannabis alone.

Documented oral side effects of cannabis usage include xerostomia and an increased prevalence of C. albicans (but not prevalence of oral candidosis). THC has an immunosuppressive effect on lymphocytes, natural killer cells, and macrophages that can result in an increase in viral and bacterial infections. This is manifested by acute and chronic inflammation of the oral mucosa and gingivae, as well as caries and periodontal disease.

Some outcomes suggested by poor dietary habits include obesity, diabetes, and tumor promotion. The fact that marijuana smoke delivers 50% to 70% more carcinogens than tobacco smoke would also suggest an increased risk for head and neck cancers when used in combination with nicotine and alcohol.

Methamphetamine (METH, ice, speed, crystal METH) is a rapidly addictive illicit amphetamine analogue that can be snorted, smoked, swallowed, or injected. Other analogues include methylenedioxyamphetamine (MDMA, ecstasy) and methylenedioxyethylamphetamine (MDEA, eve). While METH abuse had been widespread mainly throughout the western United States, there has been a notable eastward migration of this abuse. Some clinically observable effects include hyperactivity, talkativeness, and increased physical and sexual endurance. The most common oral complaint is xerostomia. Abusers also crave sugars and consume large quantities of soft drinks that are high in carbohydrates. Because oral hygiene is infrequent, or absent, during abusive periods, extensive rampant decay is a diagnostic finding with this abuse (Figures 3a and 3b). Typically, the facial and cervical surfaces of both maxillary and mandibular teeth are affected with slowly progressing caries that may eventually involve the entire crown. In addition, tooth wear is often observed and results from the acidic ingredients used in the production of the drug as well as an increase in tooth grinding and clenching (bruxism) due to hyperactivity. The combination of tooth grinding, poor oral hygiene, and extensive dental caries has been termed “METH mouth.”

The diagnostic evidence of unexplained, extensive tooth decay and wear combined with a dry mouth and poor oral hygiene should alert the dental practitioner to suspect this METH abuse. Besides trying to ascertain confirmation (which may be difficult), and since treatment will be mandatory, the dentist should also be cautious about drug interactions. Local anesthetics without vasoconstrictors are preferred and should be avoided for at least 24 hours following the last METH dose. Dietary instructions should be given and pure water consumption stressed.

Cocaine (coke, crack cocaine) can be applied topically to the gingival tissues, smoked, or inhaled (snorted). It can cause intense vasoconstriction when in contact with tissues and can also result in rapid gingival recession. Dental erosion can also occur due to the acidity of the drug. When inhaled continuously, cocaine can produce epistaxis, mucopurulent nasal exudate, nasal cavity necrosis, nasal septum perforation, palatal perforation, and saddle nose deformity. In the event of palatal and nasal septum perforation, speech may be affected to the extent of strong nasality, which should alert the practitioner to investigate for this abuse. Additionally, confirmed or suspected cocaine abusers should be given frequent oral examinations because they commonly use alcohol and tobacco, and all of these substances can induce significant changes in oral epithelial cells.
EATING DISORDERS

Anorexia Nervosa and Bulimia Nervosa

Two psychological diseases that can affect the teeth of adolescents, and can also result in fatalities, are anorexia nervosa and bulimia nervosa. The media has played a large role in propagating eating disorders by employing thin fashion models and implying that this is the “norm.” Approximately 80% of American women are dissatisfied with their appearance.27 As many as 10 million American females and one million males are affected by eating disorders28 and 95% are between the ages of 12 and 25 years.29 Bulimia nervosa is more common than anorexia nervosa by a ratio of 9:1. About 50% of anorexics are bulimic.30

While serious systemic problems can be associated with these disorders, anorexics are more readily revealing about their condition as their physical appearance does not allow them to easily hide their condition. In contrast, bulimics are secretive about their condition. They enjoy food to the extent that they eat excessively (binge) but they are obsessive about not gaining weight and therefore they regurgitate (purge). This is referred to as the “binge/purge phenomenon.” The regurgitation is also done in secret, either late at night or when nobody is around. Bulimics also abuse laxatives and diuretics.19

The dentist can play a major role in the diagnosis of bulimia nervosa. In fact, the dentist may be the only person able to diagnose it because of the oral signs, and bulimics are not likely to admit their habit to anyone, even when confronted with the signs of the disease. The 3 major signs of bulimia nervosa are: (1) lingual acid erosion of the maxillary anterior teeth due to regurgitation (Figures 4a and 4b); (2) skin abrasions, lacerations, and/or calluses, called Russell’s sign, on the dorsum of the hands caused by contact of the teeth when attempting to stimulate regurgitation; (3) bilateral, asymptomatic, soft, parotid gland swelling in 10% to 60% of the patients. The swelling is a result of hypertrophy of the gland due to the constant cholinergic stimulus produced by emesis.31

Oral signs associated with anorexia nervosa include xerostomia, caries, decreased gag reflex, and angular cheilitis due to candidiasis. If there is a bulimic phase, then the 3 signs previously mentioned will also be present. In addition, continuous regurgitation during a long period of time may result in an anterior open occlusion (Figures 5a and 5b).

FADS

One relatively recent fad that has captured the imagination of teenagers, as well as adults, is piercing. Piercing with an ornament can involve almost any part of the body, including
the lips and tongue, the latter being the most common oral site\(^2\) (Figures 6a and 6b). While this situation is reversible and relatively benign, what must be impressed upon the recipient is that an object placed within, and protruding from, the tongue can induce trauma to the teeth as well as to those of a person with whom he or she has forceful lingual interactions. Such trauma can also induce fractures known as “Cracked Tooth Syndrome.”\(^3\) Other consequences include allergic contact stomatitis; difficulty in eating, speaking, and wearing oral appliances; airway obstruction; and formation of diastemas. In addition, tongue piercing under unsanitary conditions may lead to hemorrhage, toxic shock syndrome, or serious infections.\(^4\)

**SEXUAL ACTIVITY**

The 2009 Use Risk Behavior Surveillance\(^6\) states that 34.2% of high school students nationwide (United States) are sexually active, and of these 38.9% had not used a condom during their last sexual intercourse.

HPV-16 is now a recognized cause of oropharyngeal squamous cell cancer (OPSCC) and is transmitted through oral sexual contact and perhaps from not washing hands after intimate digital palpation. Recent data revealed that 57% of 1,316 cases of OPSCC were HPV-16 positive.\(^6\) There are 3 important aspects to consider when discussing this situation. One, the vaccines Gardasil (Merck) and Cervarix (GalaxoSmithKline) can be administered (and either is recommended for girls to prevent cervical cancer) to both girls and boys at the beginning of sexual development. Two, the prognosis for this cancer after standard surgery, radiation, or chemotherapy is more favorable than for oral cancers caused exclusively by (but can also be confounded by) tobacco and alcohol.\(^6\) The third aspect, however, is more problematic. The location for these lesions is the most posterior (and most difficult to examine) lateral border of the tongue, floor of the mouth, as well as the tonsillar and posterior oropharyngeal tissues. An obvious recommendation for prognostic purposes would be for a comprehensive oral examination with appropriate biopsy procedures regarding oral lesions, necessary to confirm the presence or absence of HPV.

**DENTAL MANAGEMENT OF THE TEENAGE PATIENT**

Dentists and physicians take an oath to help those who present for treatment and to “do no harm.”\(^3\) However, this oath can become confounded in the case of certain teenage patients. The dental practitioner must be extremely diligent when examining the oral cavity of an adolescent, or any patient. Since water fluoridation and other preventive treatments such as pit and fissure sealants have decreased the overall incidence of caries, the presence of caries in multiple teeth or in advanced stages may suggest an abusive activity. The largest problem may be trying to ascertain the etiology of the condition rather than the treatment itself. Approaching a teenager directly with questions about smoking, drugs, oral sex, etc, will almost always result in denial or an “attitude” rather than a truthful answer. The natural response by the practitioner would be to approach the parent or guardian; however, this too must be handled within legal parameters to avoid malpractice repercussions.

One way to approach an adolescent who presents with a “suspicious” condition might be implemented in the following way. First, establish a private, quiet environment between patient and practitioner without any auxiliary personnel, with operatory doors closed, and instructions not to be interrupted (patient informed of such). Tell the patient that he or she has
a condition that is suggestive of...habit. The patient is not obligated to tell the dentist if this “suggested” causative factor is correct. However, by not telling [the dentist] the truth, proper diagnosis and treatment cannot be initiated and the consequences could be very serious if nothing is done. If the patient is cooperative, then a (possible) cause for the presenting signs and symptoms may be established. However, the next step may be even more difficult. If a biopsy, referral to a specialist, or direct treatment is necessary, it must be decided whether to inform, or not to inform, the parent or guardian of the presenting clinical situation. (With regard to HIPPA federal law, it is not permissible for the dentist to disclose patient information for patients age 18 or older, or at any age if that person is “emancipated” [ie, they do not live at home and are self-supporting], to the patient’s parents without permission of the patient.) If the patient is a minor, the dentist might inquire as to who will pay for the diagnostic procedure(s). This latter inquiry may promote the patient to consider parental cooperation. Another strategy would be to give the patient literature that contains unbiased, documented information on his or her condition and emphasize that the choice for treatment and/or consequences ultimately remains with the patient. While the “standard of care” would suggest informing a parent or guardian of a minor’s oral condition, in the event of patient’s adamant refusal to divulge privileged information, a consultation with an attorney might be appropriate for the safety of the patient. At this point the Hippocratic Oath becomes confounded.

CONCLUSION
Teenage patients may present with oral signs and symptoms caused by certain abusive habits, including eating disorders, drug abuse, smoking, alcohol consumption, sexual activity (specifically oral sex), and piercing of oral structures. The consequences of failure to diagnose and treat these conditions in a teenage patient may include death or disability, or minimally, the loss of quality of life and a malpractice lawsuit against the dentist. With this population of patients, the dentist must be exceptionally vigilant and continuously practice preventive oral medicine.

REFERENCES
3. Deesen KC, Marder MZ, Knee D. A logistic model equates sugar ingestion frequency with tooth decay incidence. Submitted for publication. 2010.


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POST EXAMINATION QUESTIONS

1. Dental caries are:
   a. Reversible.
   b. The loss of tooth structure under plaque.
   c. Preventable.
   d. All of the above.

2. Which is NOT true of dental erosion?
   a. It is reversible.
   b. It results from the chemical action of acids.
   c. It does not involve bacteria.
   d. All of the above.

3. At the present time the most common cause of oral cancer is:
   a. Smoking.
   b. Human papillomavirus (HPV).
   c. Marijuana.
   d. All of the above.

4. Which of the following is NOT one of the most commonly abused substances in the United States?
   a. Methamphetamine (METH).
   b. Chewing tobacco.
   c. Cocaine.
   d. Cannabis.

5. Which of the following is NOT among the most common documented side effects of cannabis?
   a. Xerostomia.
   b. Increased prevalence of oral Candida albicans.
   c. Oral candidosis.
   d. Increase in infections.

6. Which of the following is NOT true of METH abuse?
   a. Rampant decay.
   b. Increased tooth wear.
   c. Bruxism.
   d. Hypersalivation.

7. If the dentist suspects the use of METH, he/she:
   a. Should defer emergency treatment until 24 hours after the last dose.
   b. Will notice a dramatic increase in interproximal caries.
   c. Should avoid the use of local anesthetics that contain epinephrine for 24 hours after the last dose of METH.
   d. All of the above.
8. The use of cocaine by various methods does NOT usually result in:
   a. Gingival hypertrophy.
   b. Epistaxis.
   c. Palatal perforation.
   d. Dental erosion.

9. Regarding anorexia nervosa:
   a. It affects about 10 million American women.
   b. It is more common than bulimia nervosa.
   c. Fifty percent of anorexics are bulimic.
   d. All of the above.

10. Which of the following is NOT true?
    a. The diagnostic sign for bulimia nervosa is lingual erosion of the maxillary anterior teeth.
    b. Bulimics are secretive about their condition.
    c. Anorexics are secretive about their condition.
    d. The diagnostic sign for anorexia nervosa is lingual erosion of the maxillary anterior teeth.

11. Possible problems as a result of tongue piercing include:
    a. Fractured teeth.
    b. Allergic contact stomatitis.
    c. Recurrent ulcerative stomatitis.
    d. All of the above.

12. HPV is NOT associated with the following cancers:
    b. Ovarian cancer.
    c. Oropharyngeal cancer.
    d. A and C.

13. HPV associated oral cancer:
    a. Occurs predominantly on the anterior one third of the tongue.
    b. Occurs predominantly on the posterior-lateral area of the tongue.
    c. Cannot be prevented by vaccines.
    d. Does not respond favorably to radiation and chemotherapy.

14. If a dental practitioner suspects a habit, abuse, or eating disorder (HAED), he/she MAY discuss this with the parents of the patient under the following conditions:
    a. The patient is considered a minor.
    b. The patient is older than the age of 18 years.
    c. The patient is younger than the age of 18 years but does not live at home.
    d. B and C.

15. If a dental practitioner suspects a HAED, one way to approach this situation in a nonconfrontational way in order to establish the etiology would be to:
    a. Discuss the clinical observations, possible diagnosis, and consequences under totally private conditions with the patient.
    b. Discuss the above with a parent present.
    c. Discuss the above with a guardian present.
    d. All of the above.

16. While some of the HAEDs discussed may be more recent in their historical origin, it may be suggested that:
    a. Some, if not most, are done without knowledge of the parents.
    b. Some are done as a result of peer pressure.
    c. Some are done in order to imitate parental behavior.
    d. All of the above.
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