The 2000 Surgeon General’s report Oral Health in America, stated that a “silent epidemic of oral diseases is affecting our most vulnerable citizens,” including the poor and many members of racial and ethnic minority groups (1). Oral health, which includes health of the gums, teeth, and jawbone, is a “mirror for general health and well-being” (1). The World Health Organization Global Oral Health Programme emphasizes this interrelation and notes that oral health is a determining factor for quality of life (2). To prevent tooth decay, oral infections, and tooth loss, the American Dental Association recommends semiannual dental examinations and cleanings as well as daily brushing and flossing (3). The American Dental Association also affirms the importance of oral health care during pregnancy (4).

General Health

Oral health disorders, such as periodontitis, are associated with many disease processes, including cardiovascular diseases, diabetes, Alzheimer disease, respiratory infections, as well as osteoporosis of the oral cavity. These are all significant diseases that affect women across the lifespan (5–11). The prevention and treatment of these disorders are essential for general well-being.

The efficacy of endocarditis prophylaxis among patients who undergo dental procedures has been controversial based on published studies. However, the American Heart Association recommends that prophylaxis for dental procedures is reasonable only for patients with heart conditions that place them at the highest risk of adverse outcomes from endocarditis (12). For patients with these conditions, prophylaxis is reasonable for all dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa (12).

It is important for patients to discuss screening for oral cancer with their dentists. Although the U.S. Preventive Services Task Force concludes that there is insufficient evidence to recommend for or against routine screening for oral cancer, approximately 37,000...
new cases of oral cancer are diagnosed each year with the resultant annual death of 8,000 individuals (13, 14). Human papillomavirus (HPV) infection is one of the causes of oral cancer and HPV can be transmitted through oral sex. Evidence suggests that an increase in HPV-related oral cancer exists; however, further research is warranted to understand the public health and clinical implications (15).

**Pregnancy**

Physiologic changes during pregnancy may result in noticeable changes in the oral cavity (16–18). These changes include pregnancy gingivitis, benign oral gingival lesions, tooth mobility, tooth erosion, dental caries, and periodontitis (see Table 1). It is important to reassure women about these various changes to the gums and teeth during pregnancy and to reinforce good oral health habits to keep the gums and teeth healthy.

**Periodontal Disease and Pregnancy Outcomes**

Approximately 40% of pregnant women have some form of periodontal disease (19). Periodontal disease during pregnancy is most prevalent among women who are African American, cigarette smokers, and users of public assistance programs. A study conducted in 1996 showed an association between maternal periodontal disease and preterm birth (20). Since then, other studies have supported this conclusion (21, 22). Theoretically, blood-borne gram negative anaerobic bacteria or inflammatory mediators, such as lipopolysaccharides and cytokines, may be transported to the placental tissues as well as to the uterus and cervix. This results in increased inflammatory modulators that may precipitate preterm labor, particularly in African Americans (23). However, recent meta-analyses and other large trials have not shown any benefit of periodontal therapy during pregnancy in the reduction of preterm birth and infant low birth weight (24–29). Similarly, there have been conflicting results with respect to the effect of periodontal disease on pre-eclampsia (30, 31). More research is needed in these areas. Randomized controlled trials of periodontal treatment during the preconception or interconception periods may better define whether prepgregnancy treatment could reduce adverse pregnancy outcomes.

Despite the lack of evidence for a causal relationship between periodontal disease and adverse pregnancy outcomes, the treatment of maternal periodontal disease during pregnancy is not associated with any adverse maternal or birth outcomes. Moreover, prenatal periodontal therapy is associated with the improvement of maternal oral health (26–28).

**Oral Health Assessment and Counseling During Pregnancy**

Pregnancy is a “teachable” moment when women are motivated to adopt healthy behavior. For women of lower socioeconomic status, pregnancy provides a unique opportunity to obtain dental care because of Medicaid

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**Table 1. Common Oral Health Conditions During Pregnancy**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy gingivitis</td>
<td>An increased inflammatory response to dental plaque during pregnancy causes the gingivae to swell and bleed more easily in most women. Rinsing with saltwater (ie, 1 teaspoon of salt in 1 cup of warm water) may help with the irritation. Pregnancy gingivitis typically peaks during the third trimester. Women who have gingivitis before pregnancy are more prone to exacerbation during pregnancy.</td>
</tr>
<tr>
<td>Benign oral gingival lesions (known as pyogenic granuloma, granuloma gravidarum or epulis of pregnancy)</td>
<td>In approximately 5% of pregnancies, a highly vascularized, hyperplastic, and often pedunculated lesion up to 2 cm in diameter may appear, usually on the anterior gingiva. These lesions may result from a heightened inflammatory response to oral pathogens and usually regress after pregnancy. Excision is rarely necessary but may be needed if there is severe pain, bleeding, or interference with mastication.</td>
</tr>
<tr>
<td>Tooth mobility</td>
<td>Ligaments and bone that support the teeth may temporarily loosen during pregnancy, which results in increased tooth mobility. There is normally not any tooth loss unless other complications are present.</td>
</tr>
<tr>
<td>Tooth erosion</td>
<td>Erosion of tooth enamel may be more common because of increased exposure to gastric acid from vomiting secondary to morning sickness, hyperemesis gravidarum, or gastric reflux during late pregnancy. Rinsing with a baking soda solution (ie, a teaspoon of baking soda dissolved in a cup of water) may help neutralize the associated acid.</td>
</tr>
<tr>
<td>Dental caries</td>
<td>Pregnancy may result in dental caries due to the increased acidity in the mouth, greater intake of sugary snacks and drinks secondary to pregnancy cravings, and decreased attention to prenatal oral health maintenance.</td>
</tr>
<tr>
<td>Periodontitis</td>
<td>Untreated gingivitis can progress to periodontitis, an inflammatory response in which a film of bacteria, known as plaque, adheres to teeth and releases bacterial toxins that create pockets of destructive infection in the gums and bones. The teeth may loosen, bone may be lost, and a bacteremia may result.</td>
</tr>
</tbody>
</table>

insurance assistance with prenatal medical and dental coverage. However, most women do not seek dental care. According to postpartum survey data from the Pregnancy Risk Assessment Monitoring System in 10 states, 56% of mothers did not have dental care and 60% did not have their teeth cleaned during their most recent pregnancy (32). Black non-Hispanic women (24%) and Hispanic women (25%) were significantly less likely to have their teeth cleaned during pregnancy than white non-Hispanic women (44%) (32). Additionally, most women (59%) did not receive any counseling about oral health during pregnancy (32). Prenatal counseling about oral health care has been shown to be highly correlated with teeth cleaning during pregnancy (33).

Dental and obstetric teams can be influential in helping women initiate and maintain oral health care during pregnancy to improve lifelong oral hygiene habits and dietary behavior for women and their families. For example, women with poor oral health may harbor high levels of Streptococcus mutans in their saliva. These bacteria can be transmitted to their infants during common parenting behavior, such as sharing spoons or licking pacifiers. Minimizing the number of cariogenic bacteria in pregnant mothers through good oral health may delay or prevent the onset of colonization of these bacteria in their infants, which results in less early childhood caries (34–37). Although most obstetricians acknowledged a need for oral health care during pregnancy, 80% did not use oral health screening questions in their prenatal visits, and 94% did not routinely refer all patients to a dentist (38). Most obstetricians and dentists agreed that pregnant women should undergo dental services but many dentists were concerned about the safety of dental procedures and medications during pregnancy (38). Obstetricians were more comfortable with their patients undergoing dental procedures during pregnancy but were less likely than dentists to recommend dental care to their patients (38). Improved training in the importance of oral health, recognition of oral health problems, and knowledge of procedure safety during pregnancy may make health care providers more comfortable with assessing oral health and more likely to address it with patients (39).

At the first prenatal visit, health care providers should assess a woman’s oral health. A simple approach to prenatal assessment can be accomplished by using the questions provided in Box 1. As part of routine counseling, health care providers should encourage all women to schedule a dental examination if it has been more than 6 months since their last examination or if they have any oral health problems. Patients often need reassurance that prevention, diagnosis, and treatment of oral conditions, including dental X-rays (with shielding of the abdomen and thyroid) and local anesthesia (lidocaine with or without epinephrine), are safe during pregnancy. Conditions that require immediate treatment, such as extractions, root canals, and restoration (amalgam or composite) of untreated caries, may be managed at any time during pregnancy. Delaying treatment may result in more complex problems. Counseling should include reinforcement of routine oral health maintenance, such as limiting sugary foods and drinks, brushing twice a day with fluoridated toothpaste, flossing once daily, and dental visits twice a year. Dental providers often recommend the use of chlorhexidine and fluoridated mouth rinses, and xylitol-containing chewing gum to decrease oral bacteria. No adverse effects have been reported with these products during pregnancy but they have not been studied extensively. For patients with vomiting secondary to morning sickness, hyperemesis gravidarum, or gastric reflux during late pregnancy, the use of antacids or rinsing with a baking soda solution (ie, 1 teaspoon of baking soda dissolved in 1 cup of water) may help neutralize the associated acid. For additional information on oral health during the perinatal period, refer to Oral Health During Pregnancy: A National Consensus Statement, developed by the Health Resources and Services Administration’s Maternal and Child Health Bureau in collaboration with the American College of Obstetricians and Gynecologists and the American Dental Association (40).

Access to Dental Care

The greatest burden of oral disease lies in disadvantaged and poor populations where considerable unmet need for dental care is observed. In 2007–2009, 35% of U.S. women reported that they did not have a dental visit within the past year and 56% did not visit a dentist during pregnancy (37). Access to dental care was directly related to income level; the poorest women were least likely to have received dental care. Aside from financial constraints and lack of insurance coverage, barriers to dental care among those underserved include lack of education, lack of access to transportation, and lack of dental providers. Additional factors that complicate oral health among the underserved include poor nutrition and higher rates of tobacco, alcohol, and illicit drug use. These factors also are apparent during pregnancy. It is important for obstetricians to be aware of their patients’

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**Box 1. Sample Oral Health Questions**

1. Do you have swollen or bleeding gums, a toothache, problems eating or chewing food, or other problems in your mouth?
2. When was your last dental visit?
3. Do you need help finding a dentist?

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• Advise women that oral health care improves pregnancy outcomes, ample evidence shows that oral health care during pregnancy is safe and should be recommended to improve the oral and general health of the woman. Improved oral health of the woman may decrease transmission of potentially cariogenic bacteria to infants and reduce children’s future risk of caries (34–37). For many women, obstetrician–gynecologists are the most frequently accessed health care professional, which creates a unique opportunity to educate women throughout their lifespan, including during pregnancy, about the importance of dental care and good oral hygiene.

Recommendations

• Discuss oral health with all patients, including those who are pregnant or in the postpartum period.

• Advise women that oral health care improves a woman’s general health through her lifespan and may also reduce the transmission of potentially caries-producing oral bacteria from mothers to their infants.

• Conduct an oral health assessment during the first prenatal visit.

• Reassure patients that prevention, diagnosis, and treatment of oral conditions, including dental X-rays (with shielding of the abdomen and thyroid) and local anesthesia (lidocaine with or without epinephrine), are safe during pregnancy.

• Inform women that conditions that require immediate treatment, such as extractions, root canals, and restoration (amalgam or composite) of untreated caries, may be managed at any time during pregnancy. Delaying treatment may result in more complex problems.

• For patients with vomiting secondary to morning sickness, hyperemesis gravidarum, or gastric reflux during late pregnancy, the use of antacids or rinsing with a baking soda solution (ie, 1 teaspoon of baking soda dissolved in 1 cup of water) may help neutralize the associated acid.

• Be aware of patients’ health coverage for dental services during pregnancy so that referrals to the appropriate dental provider can be made. Note that each state’s Medicaid coverage for oral health may vary considerably.

• Develop a working relationship with local dentists. Refer patients for oral health care with a written note or call, as would be the practice with referrals to any medical specialist.

• Advocate for broader oral health coverage of women before, during, and after pregnancy. Pregnancy is a unique time when women may gain access to oral health coverage.

• Reinforce routine oral health maintenance, such as limiting sugary foods and drinks, brushing twice a day with fluoridated toothpaste, flossing once daily, and dental visits twice a year.

Conclusion

Regular dental care is a key component to good oral and general health. Despite the lack of evidence that prenatal oral health care improves pregnancy outcomes, ample evidence shows that oral health care during pregnancy is safe and should be recommended to improve the oral and general health of the woman. Improved oral health of the woman may decrease transmission of potentially cariogenic bacteria to infants and reduce children’s future risk of caries (34–37). For many women, obstetrician–gynecologists are the most frequently accessed health care professional, which creates a unique opportunity to educate women throughout their lifespan, including during pregnancy, about the importance of dental care and good oral hygiene.

References


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