Periodontal disease treatment does not affect pregnancy outcomes

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JADA 2014;145(7):757-759
10.14219/jada.2014.26

CRITICAL SUMMARIES

Periodontal disease treatment does not affect pregnancy outcomes

A critical summary of Chambrone L, Pannuti CM, Guglielmetti MR, Chambrone LA. Evidence grade associating periodontitis with preterm birth and/or low birth weight, II: a systematic review of randomized trials evaluating the effects of periodontal treatment. J Clin Periodontol 2011;38(10):902-914.

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Systematic review conclusion. Periodontal disease treatment does not lower the risk of preterm birth, low birth weight or both.
Critical summary assessment. Although periodontal disease treatment is recommended during pregnancy, the results of a systematic review of 13 randomized controlled clinical trials, for which a meta-analysis was conducted in 11 of the trials, do not indicate that there is a lower risk of preterm birth or low birth weight.
Evidence quality rating. Good.

Clinical question. For live births to women who have gingivitis or periodontitis, does periodontal disease treatment (PDT) compared with no treatment reduce the incidence of preterm birth (PB), low birth weight (LBW) or both?

Review methods. The authors searched three databases—including one that incorporated references from the gray literature—and hand searched reference lists for randomized controlled clinical trials (RCTs) that involved pregnant patients diagnosed with periodontal disease on the basis of a clinical or radiographic examination. The RCTs' investigators reported the number, percentage or means for PB, LBW or both for live and single births for pregnant women with and without PDT. The systematic review (SR) authors investigated the methodological quality of the included studies by using the Cochrane Collaboration's tool for assessing the risk of bias, and they considered method of randomization, allocation criteria, whether the examiners were masked and completeness of the follow-up.[1]

Main results. The SR included 13 trials. A total of 7,107 women were screened or enrolled in the trials, and 6,813 participants completed the trials. Investigators in eight of the trials (61.5 percent) reported that maternal periodontal disease treatment (MPDT) may reduce the incidence of adverse pregnancy outcomes such as PB, LBW or both. The investigators in the other trials did not support that statement. The results of meta-analyses in 11 of the trials showed that PDT had little to no effect on pregnancy outcomes.

Conclusions. Although the results of more than one-half of the included trials show that PDT had a positive effect on PB, LBW or both, the results of meta-analyses in 11 of the trials showed little or no effect.

The authors of the systematic review reported that they received no financial support.

COMMENTARY

Importance and context. As the links between oral and systemic health are becoming accepted more generally, there has been an evolution in the understanding of the link between oral health and pregnancy outcomes. In the last decade (2001-2010), it became accepted generally that there is a link between periodontal disease and perinatal health. Yeo and colleagues[2] suggested a mechanism for that relationship in 2005; they postulated that like the proven risk factor bacterial vaginosis, bacteria associated with periodontitis increases levels of blood-borne endotoxin and microbiological products that may cause LBW and PB. In 2006, Bobetsis and colleagues[3] advised dentists that it is their responsibility to inform patients about the biological plausibility that untreated periodontal disease may increase the risk of experiencing unfavorable pregnancy outcomes. Since then, investigators have conducted many trials, studies and SRs to assess the relationship between periodontal health and adverse pregnancy outcomes. The authors of this SR provide a short critique of SRs by Oliveira and colleageus,[4] Polyzos and colleagues[5] and Uppal and colleagues.[6] The results of the first two SRs[4,5] do not support the hypothesis that PDT improves birth outcomes whereas those of the latter do.[6] Although the results of the SR do not provide conclusive evidence, they demonstrate the range of opinions and evidence on both sides of the equation.

Strengths and weaknesses of the systematic review. This SR is particularly thorough and well reported. The authors searched three databases, hand searched reference lists and searched the gray literature for RCTs in which investigators evaluated the effect of MPDT on PB, LB or both. All studies met predetermined inclusion criteria (report of birth outcomes and diagnosis of periodontal health by clinical examination, radiographic examination or both). The SR authors assessed the methodological quality of the included studies and reported it by using an accepted standard. The SR included a thorough discussion of sources of bias of each of the included studies. The authors compared the results of this SR and the included studies with those of earlier SRs, which lent insight into the biases and limitations of the study of the possible effect of periodontal disease on pregnancy and birth outcomes.

Strengths and weaknesses of the evidence. The authors of this SR included prospective RCTs in which investigators followed participants through their pregnancies to delivery. The authors of the SR noted various problems with the trials that met the inclusion criteria. Investigators in four trials did not report how gestational age was determined. Investigators in all of the trials, except one, reported that an adequate method was used to assess periodontal conditions; however, the authors decried a lack of a standard definition of periodontal disease. The results of a thorough evaluation of the quality of the trials showed how each trial accounted for randomization, allocation, masking of examiners, and withdrawals and dropouts. Investigators in 10 of the trials reported adequate randomization. Those in five trials reported the techniques used to mask examiners to the treatment status of participants (allocation concealment). Investigators in all of the trials, except two, provided thorough information regarding withdrawals and dropouts (the reasons that participants did not complete the studies). Although the results of five trials demonstrated a low risk of bias, six demonstrated a high risk.

The SR included a table of baseline characteristics considered by the investigators in each trial in an appendix that is available online. The investigators in each trial considered a different set of risk factors, and there were some striking omissions. For example, the National Institutes of Health reported that a history of PB is one of the most important risk factors for future PB[7]; however, investigators in two of the included trials did not record this information. Investigators in most of the trials failed to report common environmental risk factors such as smoking status, alcohol use and occurrence of domestic violence.

Implications for dental practice. The results of this SR show that evidence for a correlation between PDT and adverse pregnancy outcomes, although compelling, remains elusive. In August 2013, the American College of Obstetricians and Gynecologists Committee on Health Care of Underserved Women published an opinion entitled "Oral Health Care During Pregnancy and Through the Lifespan."[8] The committee concluded that there was a lack of evidence showing that prenatal oral health care improves pregnancy outcomes. However, oral health care during pregnancy is safe, and improved oral health care for women improves general health and reduces the risk of transmission of cariogenic bacteria to children. On the basis of this recommendation, dentists might experience an increase in referrals from obstetricians. It is appropriate for dentists to support obstetricians' recommendations by providing thorough oral health care including PDT to women who are pregnant, while being secure in the knowledge that such treatment is desirable and that pregnancy does not preclude most necessary treatment, including radiography. ■

doi:10.14219/jada.2014.26

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Disclosure. Dr. Leader did not report any disclosures.

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For more information on the evidence quality rating provided above and additional critical summaries, please visit http://ebd.ada.org.

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8. American College of Obstetricians and Gynecologists, Committee on Health Care for Underserved Women. Committee opinion: oral health care during pregnancy and through the lifespan. Obstet Gynecol 2013;122(2, pt 1):417-422.