

Periodontal disease and women reproductive health

Abstract

Periodontal diseases (PDs) include a group of inflammatory diseases characterized by periodontium hard and soft tissues destruction leading to host immune response activation. It has been suggested that bacterial infection-induced direct tissue damages along with indirect effects of host immune responses play roles in pathogenesis of PDs. Increasing numbers of reports have provided strong evidence that there is a potential association between maternal PDs and delivery of preterm low birth weight infants. Moreover, having PDs during pregnancy has been linked with an increased risk for preeclampsia. Previous reports have also exhibited that PDs are associated with significant higher percentage of endometriosis and maternal PDs can affect the effectiveness of infertility therapies and *in vitro* fertilization success. Increased levels of inflammatory mediators including PGE2 and TNF due to lipopolysaccharides production by periodontopathic bacteria have been attributed to adverse pregnancy outcomes. Since PDs may increase the risk of perinatal mortality and developmental disorders as well as infertility treatments failure, oral health promotions through well-organized strategies should be prioritized particularly in mothers-to-be.

Keywords: periodontium, endometriosis, pregnancy, fertilization

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Mini review

Periodontium as a tooth supporting apparatus is composed of hard tissues (cementum and alveolar bone) as well as vascularized soft tissues (gingiva and periodontal ligament) and its homeostasis is associated with complex multifactorial relationships.^{1,2} Periodontal diseases (PDs) include a group of inflammatory diseases characterized by periodontium hard and soft tissues destruction leading to host immune response activation.³ It has been reported that PDs as one of the two biggest threats to the oral health have a high prevalence in United States and they have been found in nearly half (45.9%) of the population aged 30 years and older.^{4,5} Further, it has been revealed that PDs affect up to 15% of the population of childbearing age and some degrees of PDs can be seen in relatively high proportions of pregnant women.⁶ It has been suggested that bacterial infection-induced direct tissue damages along with indirect effects of host immune responses play roles in pathogenesis of PDs.⁷ Increasing numbers of reports have provided strong evidence that there is a potential association between maternal PDs and delivery of preterm low birth weight (PLBW) infants.^{8,9} Accordingly, it has been indicated that lower risk for low birth weight infants can be observed in mothers with healthy gingiva.¹⁰

Moreover, having PDs during pregnancy has been linked with an increased risk for preeclampsia.¹¹ Also, it has been shown that PDs treatment during pregnancy can result in PLBW infant rates reduction.¹² Increased levels of inflammatory mediators including PGE2 and TNF due to lipopolysaccharides production by periodontopathic bacteria have been attributed to adverse pregnancy outcomes.¹³ Additionally, it has been suggested that PDs-induced gonadotrophin-releasing and luteinizing hormones levels reductions can result in ovulation failure.¹⁴ Previous reports have also exhibited that PDs are associated with significant higher percentage of endometriosis¹⁵ and maternal PDs can affect the effectiveness of infertility therapies and *in vitro* fertilization success.¹⁶ Reportedly, PDs can also increase a woman's time to conception.¹⁷ In general, since PDs may increase the risk of perinatal mortality and developmental disorders as well as infertility treatments failure (Figure 1), oral health promotions through well-

organized strategies including regular preventive dental check-ups as well as lifestyle modifications should be prioritized particularly in mothers-to-be.

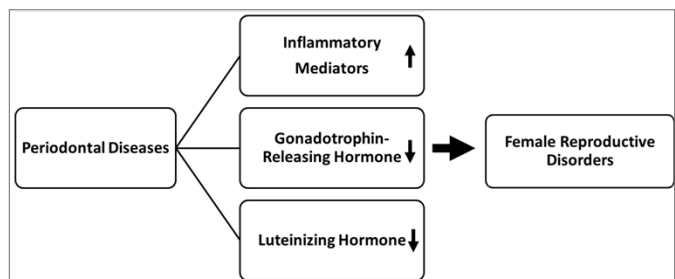


Figure 1 Possible association between periodontal diseases and female reproductive disorders.

Acknowledgment

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Conflict of interest

None.

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