

Review Article

Periodontal Diseases and Pregnancy

Priyanka Singla

Senior Resident. Unit No 6 (Dental), PGIMER Outreach OPD centre, Ghabdan, Sangrur, Punjab, India

ABSTRACT:

Oral health is essential for overall better health. Multiple physiologic changes occur in a women's body during pregnancy. Some of these changes have an adverse effect in the oral cavity leading to gingival diseases during pregnancy and vice versa. The purpose of this review is to summarize the association of pregnancy and periodontal disease.

Key words: Pregnancy, Periodontal Diseases, Oral Health.

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Corresponding Author: Dr. Priyanka Singla, Senior Resident. Unit No 6 (Dental), PGIMER Outreach OPD centre, Ghabdan, Sangrur, Punjab, India, E mail: drpriyanka.ndc@gmail.com

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Introduction

The oral cavity is one of the main areas involved in the hormonal changes that take place during pregnancy. The importance of oral health during pregnancy was highlighted in the 2000 Surgeon General's oral health report and recommendations regarding changing the attitudes and beliefs among health care professionals and patients towards oral health. Periodontal disease is an infectious disease classified into two stages based on the severity as gingivitis, a mild and reversible form characterized by inflammation without tissue damage; and periodontitis, a more advanced and severe form characterized by attachment and bone loss. The potential connection between periodontal disease and other systemic conditions, has attracted much research attention in recent decades. During the course of a pregnancy, a series of physiological changes occur in both the mother and fetus. Studies on the link between periodontal disease and adverse pregnancy outcome have gone through several phases.

Pregnancy and Pyogenic Granulomas

Also known as Granuloma Gravidarum or Pregnancy Tumours or Angiogramuloma. Pyogenic granuloma is a non-specific inflammatory lesion of skin and mucous membranes. It occurs most often during pregnancy, with gingival lesions developing in approximately 0.5–2.0% of pregnant women.(1) The pathogenesis of the lesion has

been linked to female sex hormones, which stimulate increased local synthesis of angiogenic factors such as vascular endothelial growth factor and angiopoietin-2.(2) Treatment may include surgical removal, especially if the lesion is large and symptomatic.(3) However, in many cases, the lesions undergo partial or complete resolution after delivery, especially if local irritants are removed.(4)

Plaque Induced Periodontal Infections during Pregnancy

Studies suggest that 100% of women develop gingivitis between 3–8 months of their pregnancy, with a gradual decrease after parturition.(5) Longitudinal studies have demonstrated that, during pregnancy, probing depths increase as the gingival inflammation increases.(6) Microbiological studies have shown that estrogen and progesterone changes associated with pregnancy have an effect on the composition of the subgingival microbiota (7, 8, 9). Some of the periodontal pathogens that apparently develop or increase in number under the effect of pregnancy-associated steroids are *Prevotella intermedia* (7), *Bacteroides* species (8) and *Campylobacter rectus* (9). Physiological changes associated with pregnancy have reflective effects on the host–parasite interactions found in these polymicrobial infections.

Periodontal Infections and Pregnancy Outcomes

Number of epidemiological studies have shown that there is a statistically significant association between periodontal infections and adverse pregnancy outcomes such as pre term low birth weight babies, pre -eclampsia, stillbirths, intrauterine growth retardation and miscarriages.(10,11) These findings have been described comprehensively in the Oral Conditions and Pregnancy (OCAP) cohort study conducted in the United States.

Pre-term birth is defined as a pregnancy of < 37 weeks and a low birth weight of < 2500 g. A suggested mechanism is that endotoxin from gram-negative bacteria enters the circulation at high enough levels to stimulate production of inflammatory mediators, such as prostaglandin E2, by the amnion (12). Prostaglandin E2 and other inflammatory mediators are potent inducers of labor. It has been shown that periodontal pathogens (or their antigens) such as *C. rectus*, *P. intermedia*, *F. nucleatum*, *P. micra*, *P. gingivalis*, *T. forsythia*, *T. denticola* and *P. nigrescens* cross the placenta and reach the developing fetus in high enough levels to stimulate the fetus to produce IgM antibody against these bacteria.(13) Significantly higher titers of fetal IgM against *C. rectus* and *P. intermedia* were found in the cord blood from pre-term compared to term babies.(14) Therefore it can be said that the fetus can be exposed in utero to antigens from a wide range of oral bacteria.

Periodontal Infections and Pre-eclampsia

Another serious complication of pregnancy associated to periodontal infections is pre-eclampsia. This is characterized by hypertension, with blood pressure $\geq 140/90$ mmHg, peripheral edema and proteinuria (i.e. urinary excretion of ≥ 300 mg protein in 24 h) (15). Failure to control these physiological abnormalities can lead to eclampsia, in which convulsions, coma and death of the mother may occur. A number of studies have linked an increased risk of pre-eclampsia with elevated serum levels of C-reactive protein. (16)

Effect of Non-Surgical Periodontal Therapy on Pregnancy

It has been known for many years that non-surgical periodontal therapy is effective in reducing the increased amount of periodontal inflammation associated with pregnancy.(17)Data clearly show that this therapy is safe and does not trigger an increase in adverse pregnancy outcomes.(18) It is quite possible that modifications in innate and adaptive immune responses during pregnancy make it more difficult to control periodontal infections by routine therapeutic interventions.

Conclusion

The importance of oral health during pregnancy cannot be underestimated. Scientific studies have shown connections between periodontal diseases and adverse pregnancy outcomes such as premature birth, low birth weight, and pre-eclampsia. Therefore, it is paramount that prenatal and dental providers discuss oral changes with pregnant women, reinforce positive oral health practices,

and assure women that oral health care during pregnancy is safe and important.

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