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Periodontal Disease and Preterm Birth, is There any Relationship?

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Abstract

Aim: Prematurity and low birth weight are major causes of neonatal morbidity, mortality and long-term disability. The purpose of this study was to determine if an association exists between periodontal disease and preterm birth (PT).

Material and methods: 59 females from the delivery ward at St. Mary's Health Center, St. Louis, MO. Group I had 29 women who had Preterm birth (PT). Group II had 30 women whose babies were born full term (T). Full-mouth periodontal examination performed. Data collected about risk factors: race, maternal age, pregnancy complications; infections/infammation; number of previous pregnancies and chemical abuse. Mothers es 1 e-

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Conclusion: Moderate to severe periodontal disease may be an independent risk factor for preterm birth.

d : Oral health; Systemic disease; Periodontitis; Preterm

term neurological morbidity [1]. Despite all the medical efforts to reduce the preterm birth, the rate is still relatively high; according to the Centers for Disease Control and Prevention, preterm birth affected about 1 of every 10 infants born in the United States in 2014. Prevention and treating the underlying causes of preterm labor would be more successful than treating existing preterm labor [2]. Maternal infections are responsible for between 30%-50% of preterm births [3]. Remote subclinical infections have also been considered as causes of preterm labor [1]. Periodontal disease being an inflammatory disease triggered by microbial biofilm has been identified as a risk factor for preterm birth [4-6]. The purpose of this study is to determine if a relationship exists between periodontal disease and preterm birth.

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This Case-Control study was conducted at St Mary's Health Center in St Louis Missouri in 2005. A convenience sample of 70 postpartum women were asked to participate in the study. Selection criteria were: 1) Hospital stay within three days postpartum 2) 18 years of age or older 3) No postpartum complications. Exclusion criteria were: 1) Requiring prophylactic antibiotics before periodontal examination 2) Bleeding tendency 3) Immune-compromised patients 4) Acute infections or chronic in ammatory diseases that directly caused preterm labor 5) Inability to comprehend and sign the informed consent written in English 6) Multiple gestation. Institutional Board Review approvals were obtained from Saint Louis University and Southern Illinois University, Informed consents were signed by participating patients.

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The purpose of the study risks, benefits and alternatives were discussed with each particle and prior to the examination. A midical history was obtained from each subject and verified from the subjects happing respond, if a collected were 1 Baby's gestational age at delivery 2 Baby's weight 3) Race 4) Maternal age 5) Smoking 6) Pregnancy complications 7) Current infections and/or inflammation 8) Number of previous pregnancies

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9) Chemical substance.

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or absent on two surfaces per tooth, buccal and lingual 6) Calculus marked as present or absent on two surfaces one on the buccal and one on the lingual surface of each tooth 7) Teeth with large cavities, remaining roots, purulent exudates were also marked. e examination instruments used were sterile disposable plastic mirrors, UNC-15 periodontal probes, and sterile gauze. Universal precautions and infection control measures were applied by the examiner and assistant recording the ndings. Examinations were performed by one examiner who was not blinded to the pregnancy outcome. e timeline for the total encounter with the subject ranged between 20-30 minutes.

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All subjects were informed about their dental needs, based on the limited nding of this clinical examinations. Oral hygiene instructions were given and each subject was given an oral hygiene kit as a compensation for their participation supplied by Saint Louis University Graduate Periodontal program.

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is a retrospective case-control study. Test cases were de ned as subjects who delivered their babies before completion of 37 weeks of gestation, referred to as Preterm Birth (PT Group). Control were subjects delivered their babies a er 37 weeks of gestation, referred to as Term Birth (T Group).

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Age distributions in the two groups were tested for normality with Shapiro-Wilk W tests and equality of variances were tested for equality

subjects, who did not have preeclampsia did not have PT whereas 5 of 6 (83%) of subjects who had preeclampsia had PT. Fourteen of 37 (18%) of subjects, who did not have infection/in ammation did not have PT whereas 15 of 22 (68%) subjects who had infection/in ammation had PT. Six of 21 (29%) of subjects, who did not have previous pregnancies did not have PT birth whereas 23 of 38 (61%) of subjects who had previous pregnancies had PT birth. e results of a nominal logistic regression analysis (Table 2) indicated that a er adjustment for smoking, preeclampsia, and infections/in ammation, a statistically signi cant association was found between PT and moderate to severe periodontal disease (odds ratio =5.8, 95% CI=1.2-37.5, p=0.04). association between smoking and PT birth was not signi cant (odds ratio =1.6, 95% CI=0.3-8.8, p=0.61). ere was a signi cant association between PT and preeclampsia (odds ratio =18.02, 95% CI=2.1- 420.6, p=0.02), but no signi cant association between in ammation/infection (including potential dental infection) and PT (odds ratio =3.3, 95% CI =0.8-14.5, p=0.09) nor between previous pregnancy and PT (odds ratio=3.6, 95% CI=0.9-16.8, p=0.08).

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is study demonstrated that moderate to severe periodontal disease is associated with preterm birth. is association is highly signi cant with odds ratio of 5.8 (p=0.04). ese ndings are in agreement with many other studies that found a positive correlation [4,6-10].

e rst study to suggest an association between periodontal disease and preterm labor and low birth weight was in 1996 [4], despite the di erences in the selection criteria, adjusted variables and de nition of periodontal disease, the investigators found that results consistent with this study with odds ratio for periodontal disease and premature birth 7.9. In a 5-year prospective study titled "Oral Conditions and Pregnancy (OCAP)" O enbacher et al. [11], demonstrated that both antepartum maternal periodontal disease and incidence/progression of periodontal disease based on full mouth periodontal examination

are associated with preterm birth and growth restriction. Regarnt w55 Ttion. Regas in the sme iitostn e ath equplace.5(toyindgreater)0.5(th

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- 10. Khader YS, Ta'ani Q (2005) Periodontal diseases and the risk of preterm birth and low birth weight: a meta-analysis. J Periodontol 76: 161-165.
- 11. Offenbacher S, Lieff S, Boggess KA, Murtha AP, Madianos PN, et al. (2001) Maternal periodontitis and prematurity. Part I: Obstetric outcome of prematurity and growthrestriction. Ann Periodontol 6: 164-174.
- 12. Creasy RK, lams JD (1999) Preterm Labor and Delivery. Maternal-Fetal Medicine: Saunders, Philadelphia. pp: 498-531.
- 13. Page RC (1998) The pathobiology of periodontal diseases may affect systemic diseases: inversion of a paradigm. Ann Periodontol 3: 108-0120.
- 14. Offenbacher S (1996) Periodontal diseases: pathogenesis. Ann Periodontol 1: 821-878.
- 15. Madianos PN, Bobetsis YA, Offenbacher S (2013) Adverse Pregnancy Outcomes (APOs) and Periodontal Disease: Pathogenic Mechanisms. J Periodontol 84: 170-180.
- 16. Sanz M, Kornman K, Working group 3 of the joint EFP/AAP workshop (2013) Periodontitis and adverse pregnancy outcomes: consensus report of the Joint EFP/AAP Workshop on Periodontitis and Systemic Diseases. J Periodontol 84:
- 17. Perunovic NDJ, Rakic MM, Nikolic LI, Jankovic SM, Aleksic ZM, et al. (2016) The Association Between Periodontal