

Oral immune activation and alveolar bone loss in postmenopausal women and men living with HIV

Isaac Donkor– Columbia University, College of Dental Medicine | Class of 2024
 Mentors: Dr. Sunil Wadhwa and Dr. Michael Yin

Research Question: Is there an association between menopause, age, and sex on periodontal outcomes of HIV positive individuals?

BACKGROUND

With effective combination antiretroviral therapy (cART), HIV-infected women are now surviving long enough to transition through menopause. Menopause itself is associated with increased alveolar bone loss; so, HIV-infected postmenopausal women may be at even greater risk of periodontal disease progression. Although it is known that cART has decreased the prevalence and severity of periodontal disease, few studies have included older women. It has also been seen that men appear to have a higher prevalence of periodontal disease than women at all ages. There are however, very few studies published on sex-differences in periodontal disease among HIV-infected individuals.

OBJECTIVES

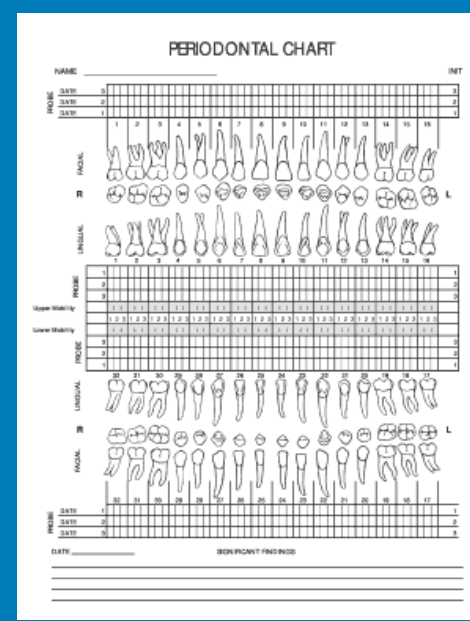
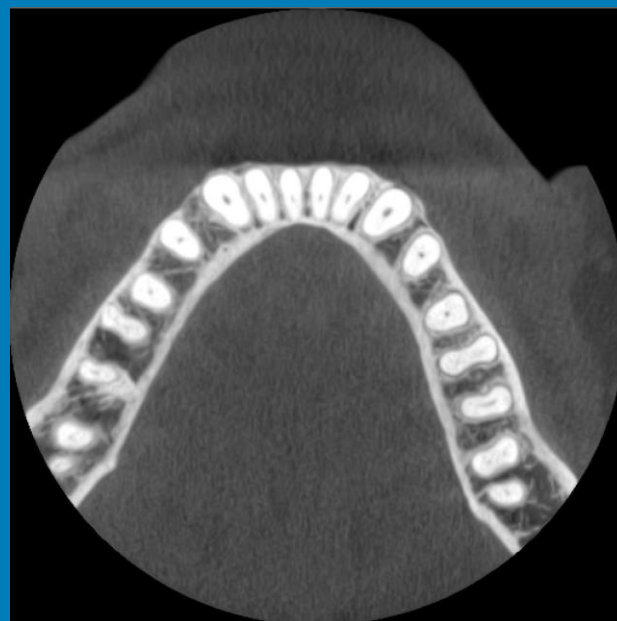
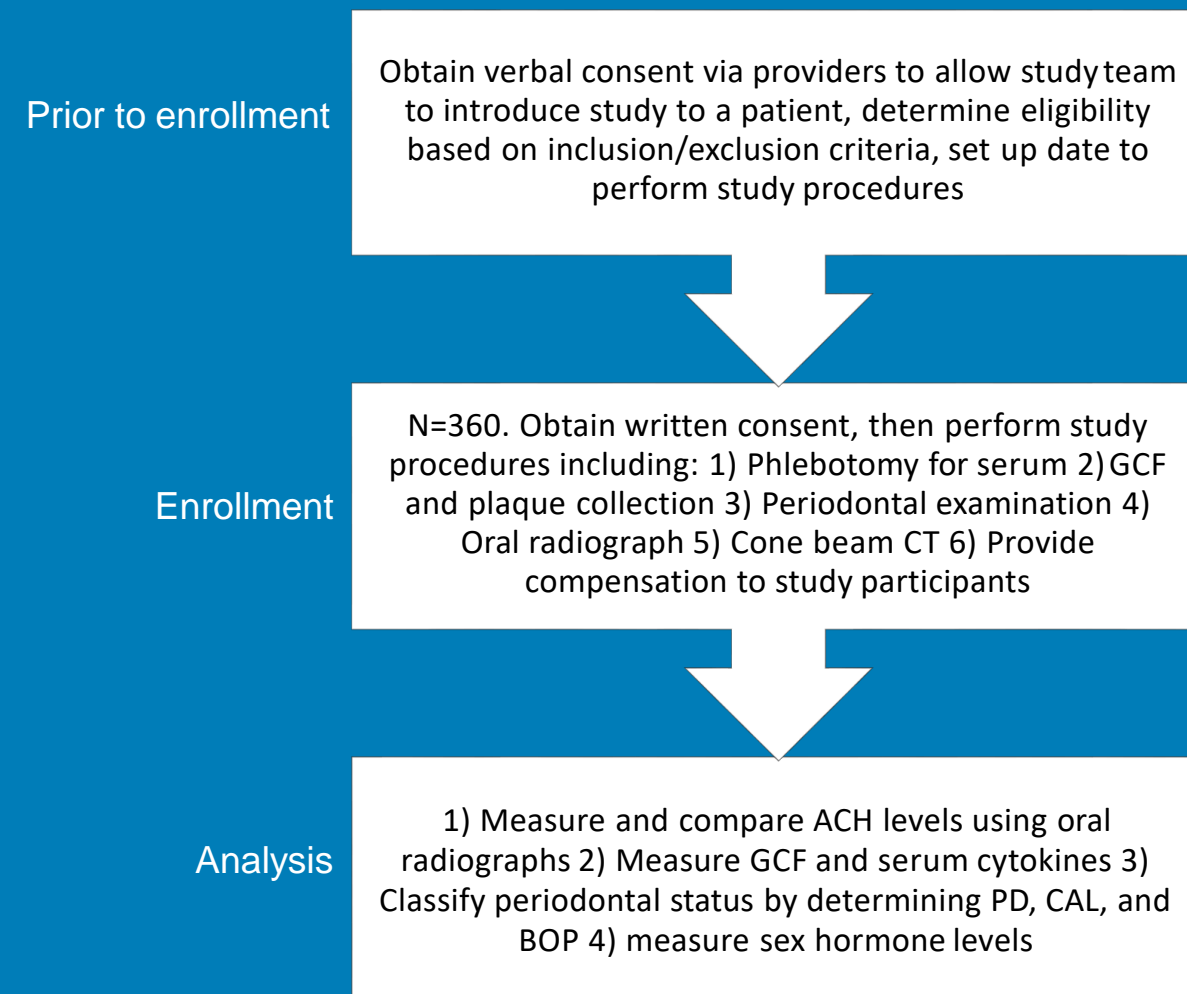
Aim 1: Determine the impact of HIV infection and menopause on periodontal health

Hypothesis 1: Postmenopausal women living with HIV will have evidence of worsened clinical periodontal parameters, higher GCF inflammatory biomarkers, greater alveolar bone loss and fewer teeth than uninfected postmenopausal women, and premenopausal women with or without HIV.

Aim 1a: Determine the impact of HIV infection, age, and sex on periodontal health

Hypothesis 1a: Men with HIV will have evidence of worsened clinical periodontal parameters, higher GCF inflammatory biomarkers, greater alveolar bone loss and fewer teeth than uninfected men, and women with and without HIV at all ages.

DESIGN



METHODS

- 1) Blood samples: Measure sex hormones (FSH, estradiol, testosterone and Sex Hormone Binding Globulin) and inflammatory markers (IL-1 β , TNFa IL-6, OPG and MMP-9).
- 2) GCF and plaque: Collected from the distal site of 6 index teeth: 2 molar teeth, 2 premolar teeth and 2 incisor teeth.
- 3) Periodontal exam: Probing depth (PD) and clinical attachment level (CAL) were determined at 6 sites per tooth.
- 4) Oral Radiographs: 11 Standardized intraoral radiographs consisting of seven anterior periapical and four posterior bitewing radiographs were taken per patient.
- 5) CBCT: Region of interest: Lines connecting each PDL in the buccal-lingual direction will define the alveolar bone as well as height from the apex of the mesial root or single root to the superior aspect of the alveolar crest bone.

PREDICTED RESULTS

Analysis of data has not been performed however we expect the results to reflect the hypotheses of postmenopausal women with HIV having worse periodontal outcomes than uninfected women and men with HIV having worse periodontal outcomes than all other included groups.

ANALYSIS

- 1) Blood samples: All specimens are collected, processed, aliquoted, frozen and stored they will be run in batches at the Irving Institute for Clinical and Translational Research.
- 2) GCF: Analyzed via ELISA
- 3) Periodontal Exam: Presence of disease was classified according to the (CDC/AAP) definitions.
- 4) Oral Radiographs and CBCTs: Analyzed using Image J/ Bone J.

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- 3 Steffens JP, Wang X, Starr JR, Spolidorio LC, Van Dyke TE, Kantarci A. Associations Between Sex Hormone Levels and Periodontitis in Men: Results From NHANES III. *J Periodontol* 2015;**86**:1116-1125.