Mandibular Bone Microarchitecture Changes in Postmenopausal Women With and Without HIV

Michael M. Levit, Columbia University College of Dental Medicine, Class of 2025
Dr. Sunil Wadhwa: DDS, College of Dental Medicine
Dr. Michael T. Yin: MD, MS, College of Physicians and Surgeons

Research Question: Are there differences in the mandibular trabecular and cortical bone between postmenopausal women living with and without HIV?

BACKGROUND

Women with HIV are living longer with effective antiretroviral therapy (ART) and transitioning into menopause. HIV infection, ART and menopause are associated with bone loss at the spine and hip, but the impact of these combined factors on mandibular bone is uncertain. We hypothesized that mandibular bone mass would be lower and microarchitecture more abnormal in postmenopausal women with HIV compared to controls.

DESCRIPTION OF ORGANIZATION

Columbia University Irving Medical Center (CUIMC) is a clinical, research, and educational institution located in northern Manhattan. The College of Dental Medicine, which is part of CUIMC, is the largest provider of oral health care in the northern Manhattan communities. These organizations combine the pursuit of knowledge with the compassion for patients and their families to maintain the highest standard of care.
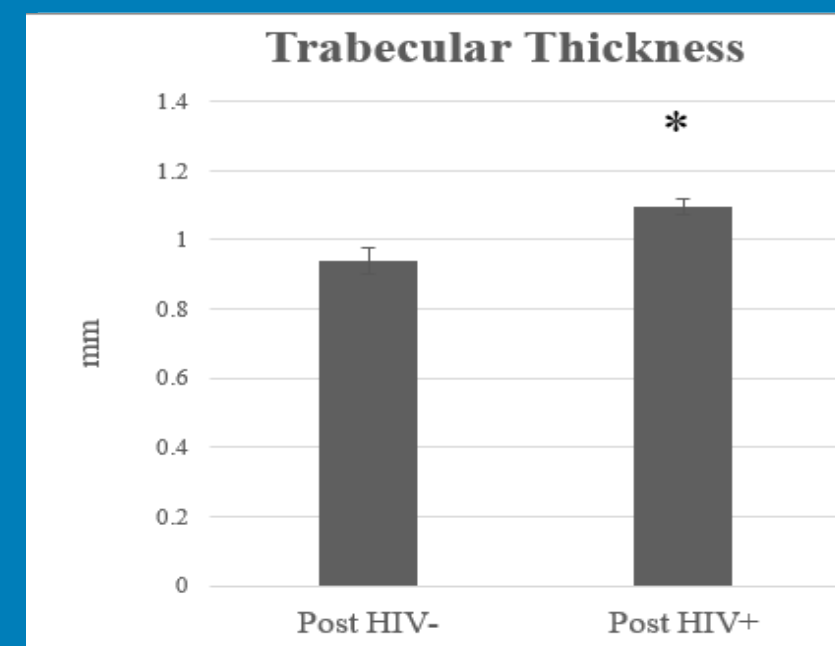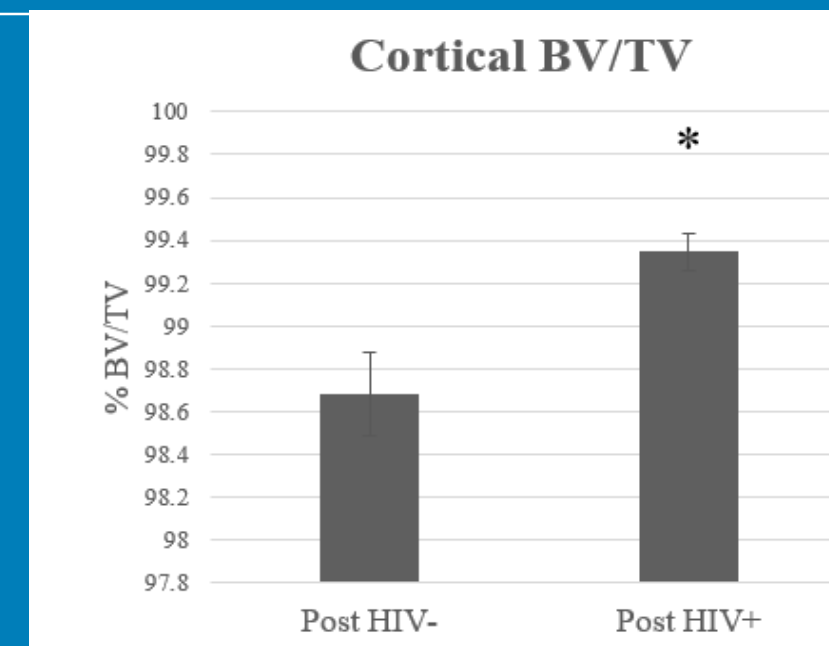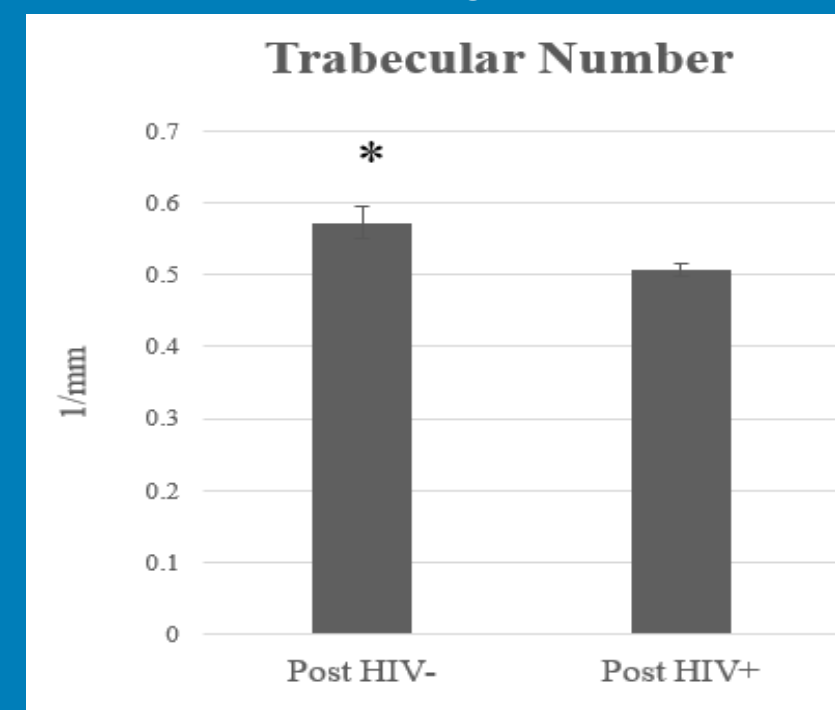
TABLES

Fig. 1 — Trabecular Thickness

Fig. 2 — Cortical BV/TV

Fig. 3 — Trabecular Number
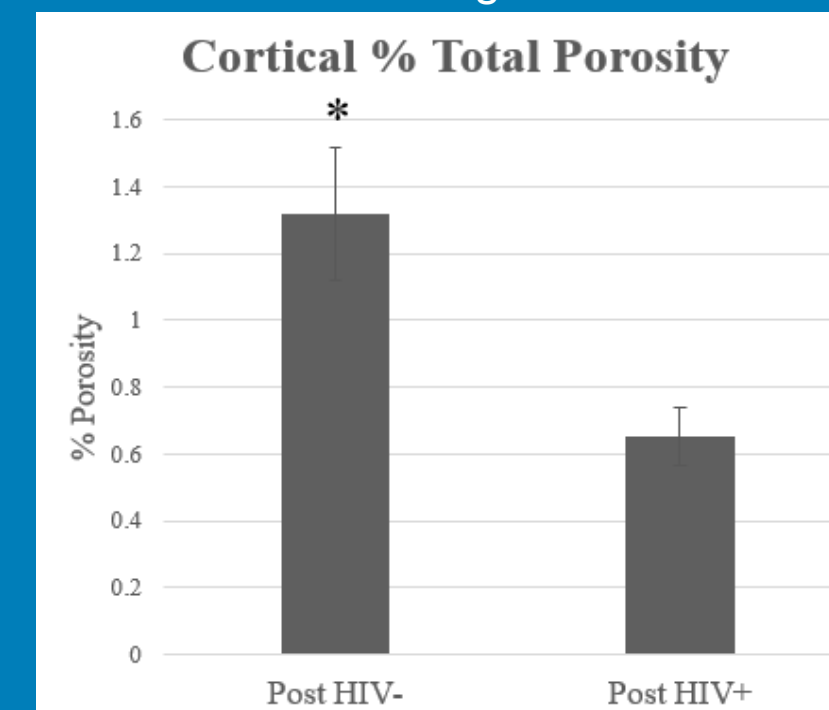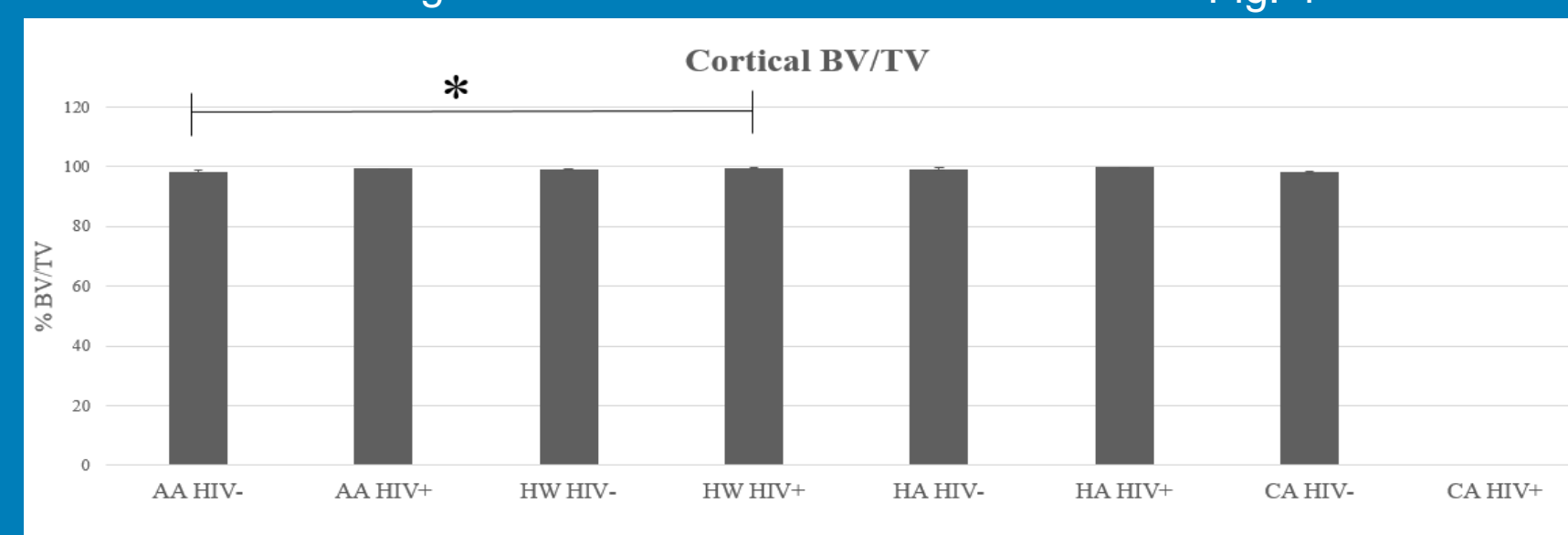

Fig. 4 — Cortical % Total Porosity

Fig. 5 — Cortical BV/TV

AA: African American, HW: Hispanic White,
HA: Hispanic African, CA: Caucasian
Asterisks Denote Significance, P<0.05

METHODS

1. A total of 119 postmenopausal women (72 HIV positive; 47 HIV negative; 51% African American, 44% Latina, and 5% White) were recruited at Columbia University Irving Medical Center.
2. Cone Beam Computed Tomography was analyzed with Bruker Skyscan *Ctan* Software.
3. The region of interest was standardized to the inferior coronal view of the mandible, offset from the mental foramen.
4. Trabecular and cortical bone were segmented manually and analyzed with local thresholding.
5. Analyzed parameters of cortical and trabecular bone included: porosity, thickness, number, separation, and bone volume divided by total volume.
6. Unpaired Student T tests and ANOVAs were used to determine differences between groups, p<0.05.

RESULTS

1. Women with HIV had increased trabecular thickness and cortical bone volume fraction, but lower cortical porosity than controls. (Fig. 1-4)
2. Effects were attenuated after stratifying by race/ethnicity, suggesting these results may be partly attributable to known racial differences in bone microarchitecture. (Fig. 5)

DISCUSSION

Our results suggest that mandibular bone is not negatively impacted by HIV/ART. A larger sample size with balanced race/ethnicity will be needed to corroborate our findings among postmenopausal women. Additional complementary analyses within other regions of the mandible and comparisons between premenopausal women and men with and without HIV are ongoing.

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Contact Information:

Michael Levit — MML2239@cumc.columbia.edu

Dr. Michael Yin — mty4@cumc.columbia.edu

Dr. Sunil Wadhwa — sw2680@cumc.columbia.edu