

# Characterization of the Healthy Peri-implant Mucosa

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**Aim:** This cross-sectional study aimed to characterize the soft tissue around healthy implants and compare it with healthy natural teeth.

## Introduction

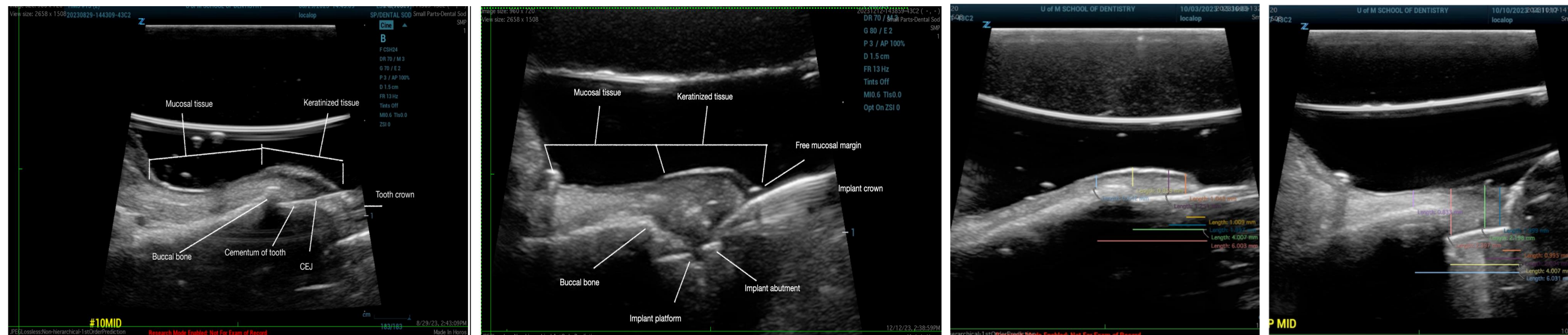


Implant exhibiting an implant-supported crown surrounded by healthy peri-implant mucosal tissues at the #8 site

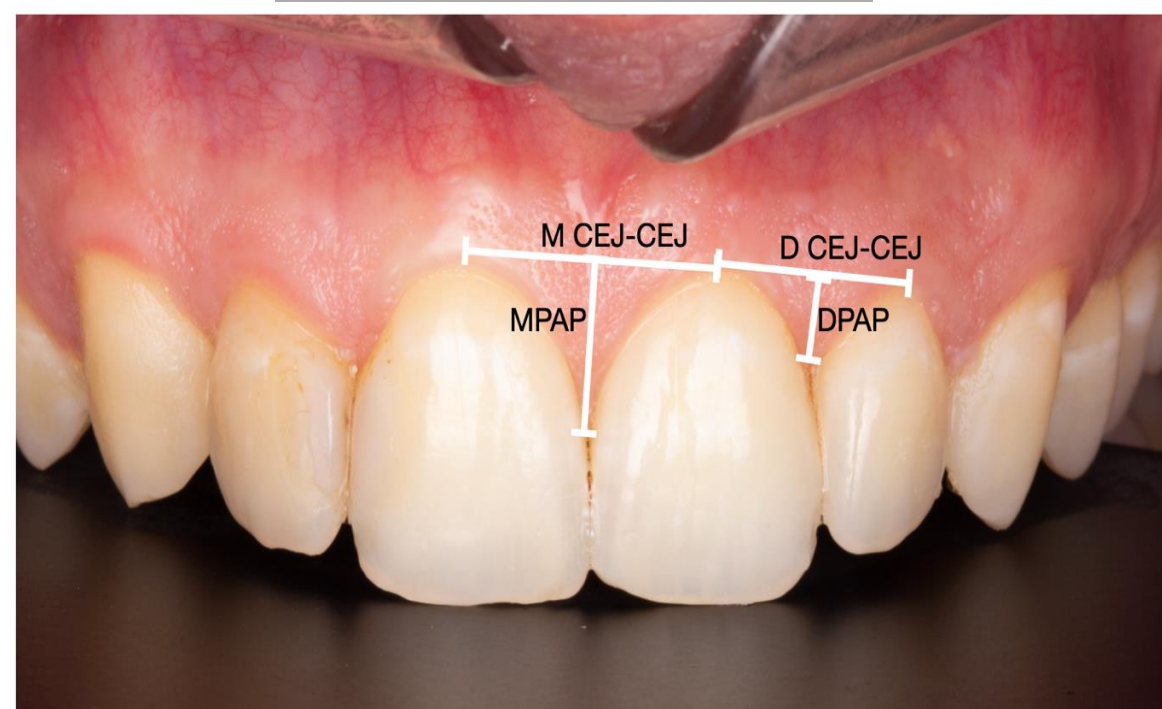
## Materials and Methods

**Study Design:** Split Mouth Cross-sectional Clinical Study  
**Subjects:** 33 ASA I patients (20 males, 13 females; mean age- 66.5 yrs)

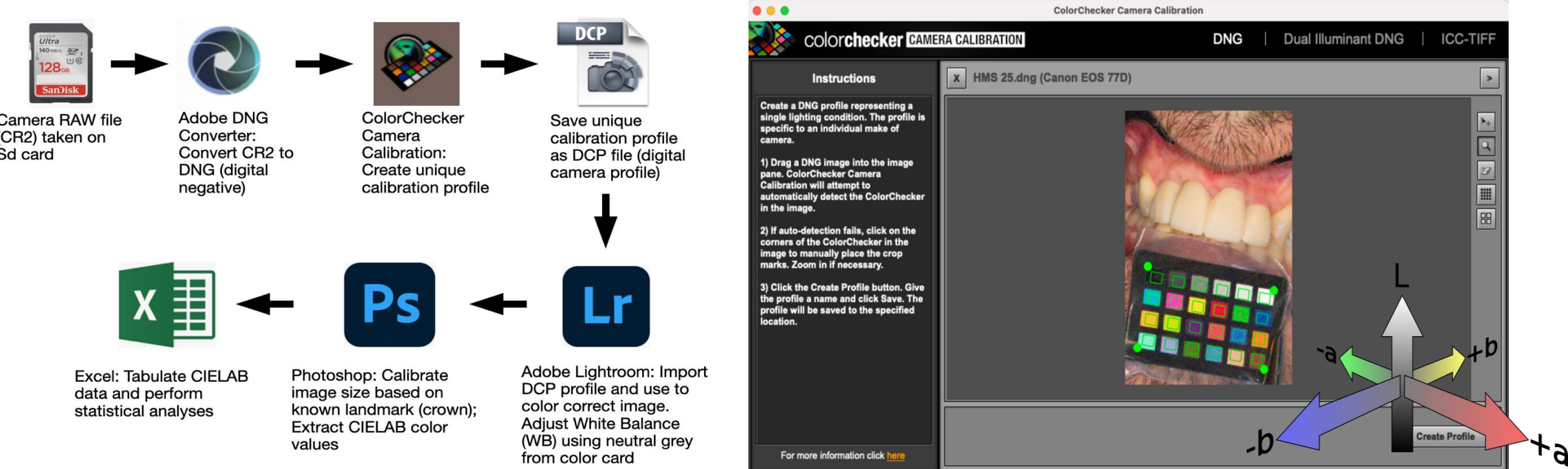
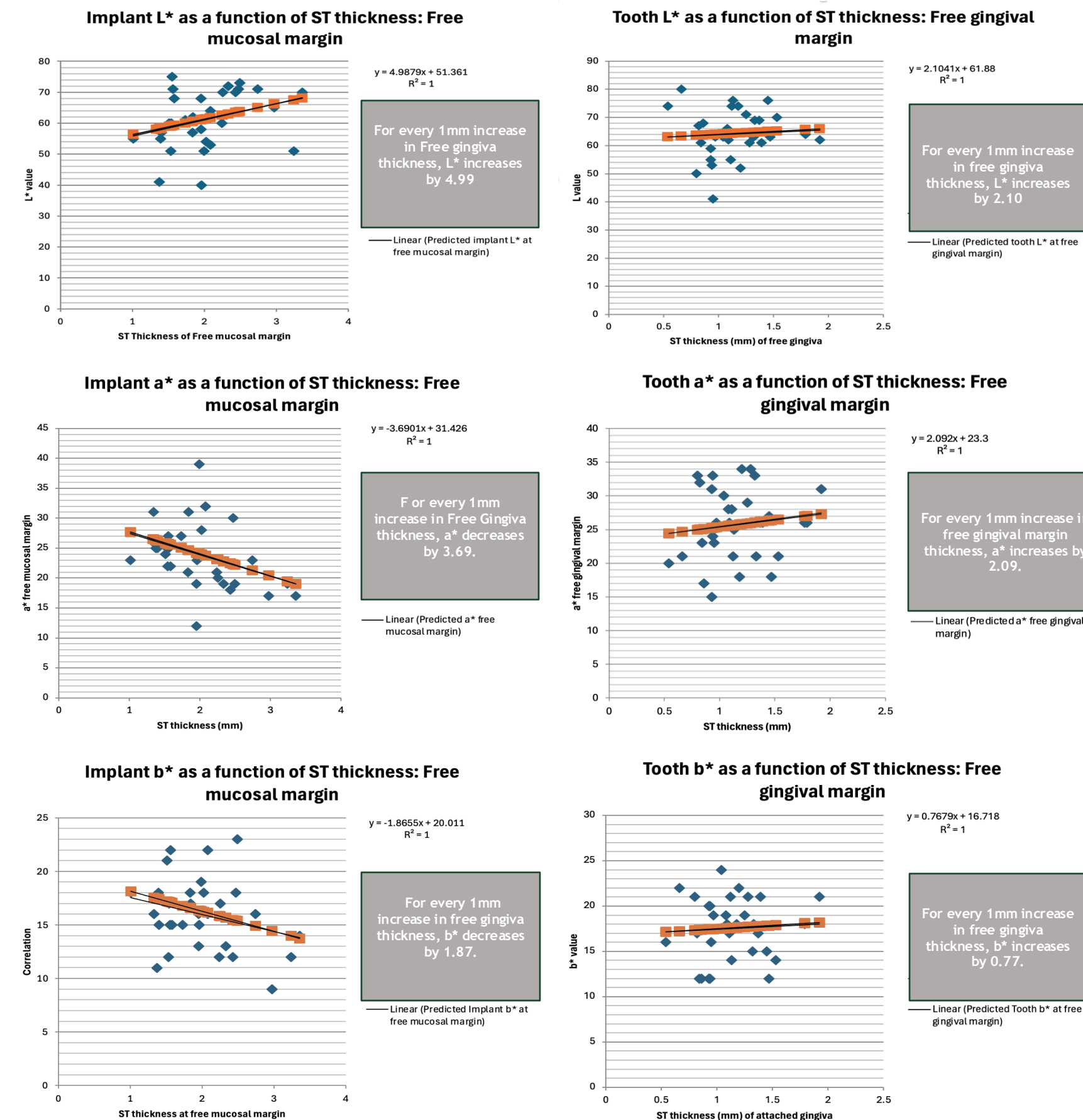
### Ultrasonography:



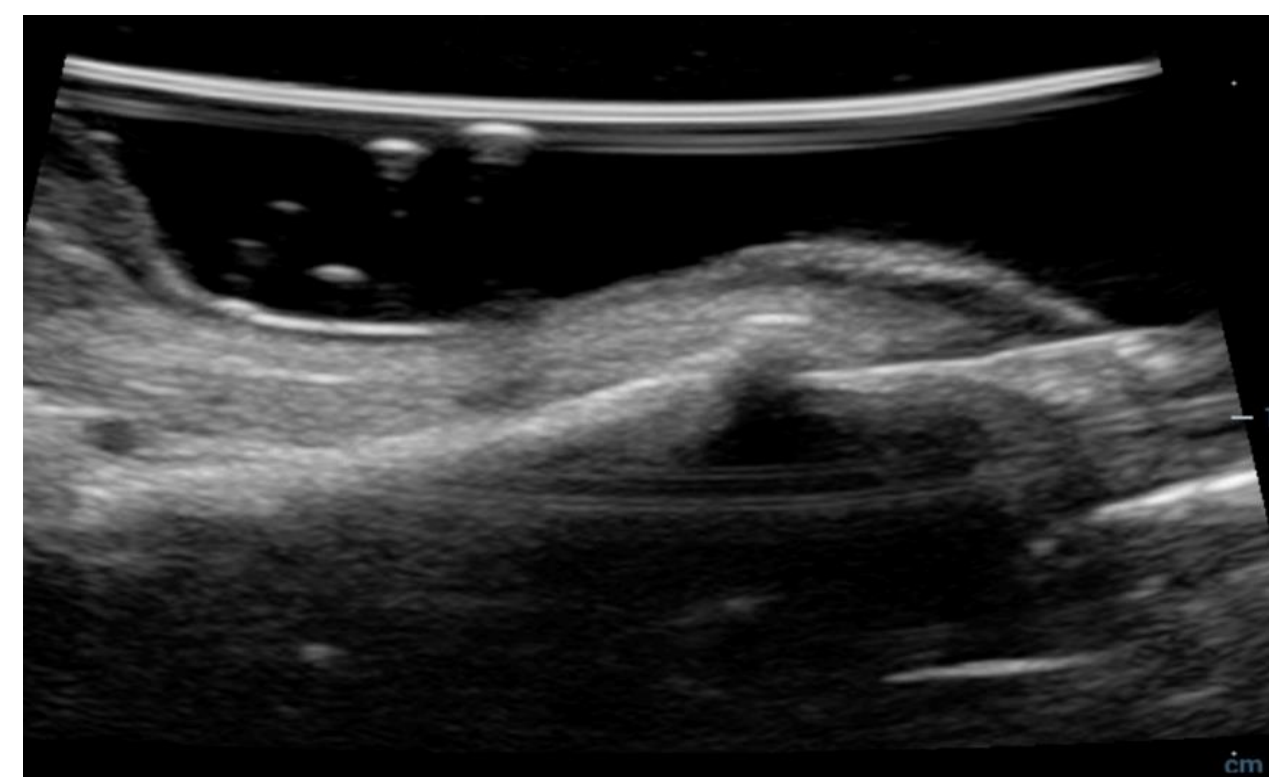
### Clinical Measurements:



### Photography & Imaging:



$\Delta E$  clinical perception level: 1-2 - Barely Perceptible; 2-10 = Slightly Perceptible

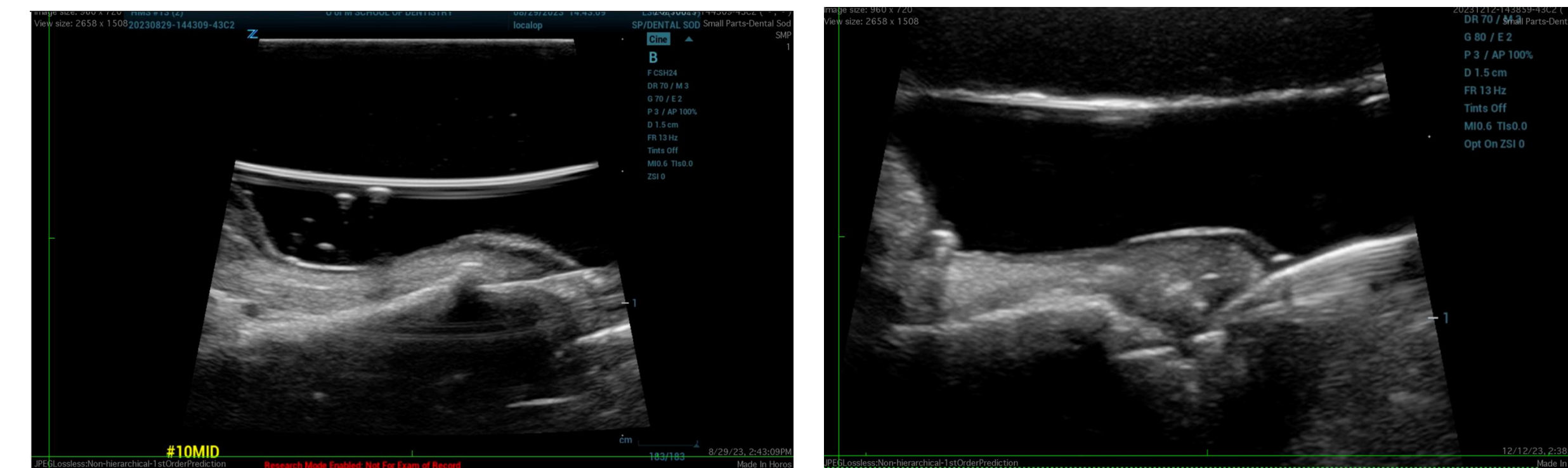


Implants: Thicker buccal tissues; Higher complete papilla fill; Greater distance of buccal bone to free mucosal margin; Deeper PDs

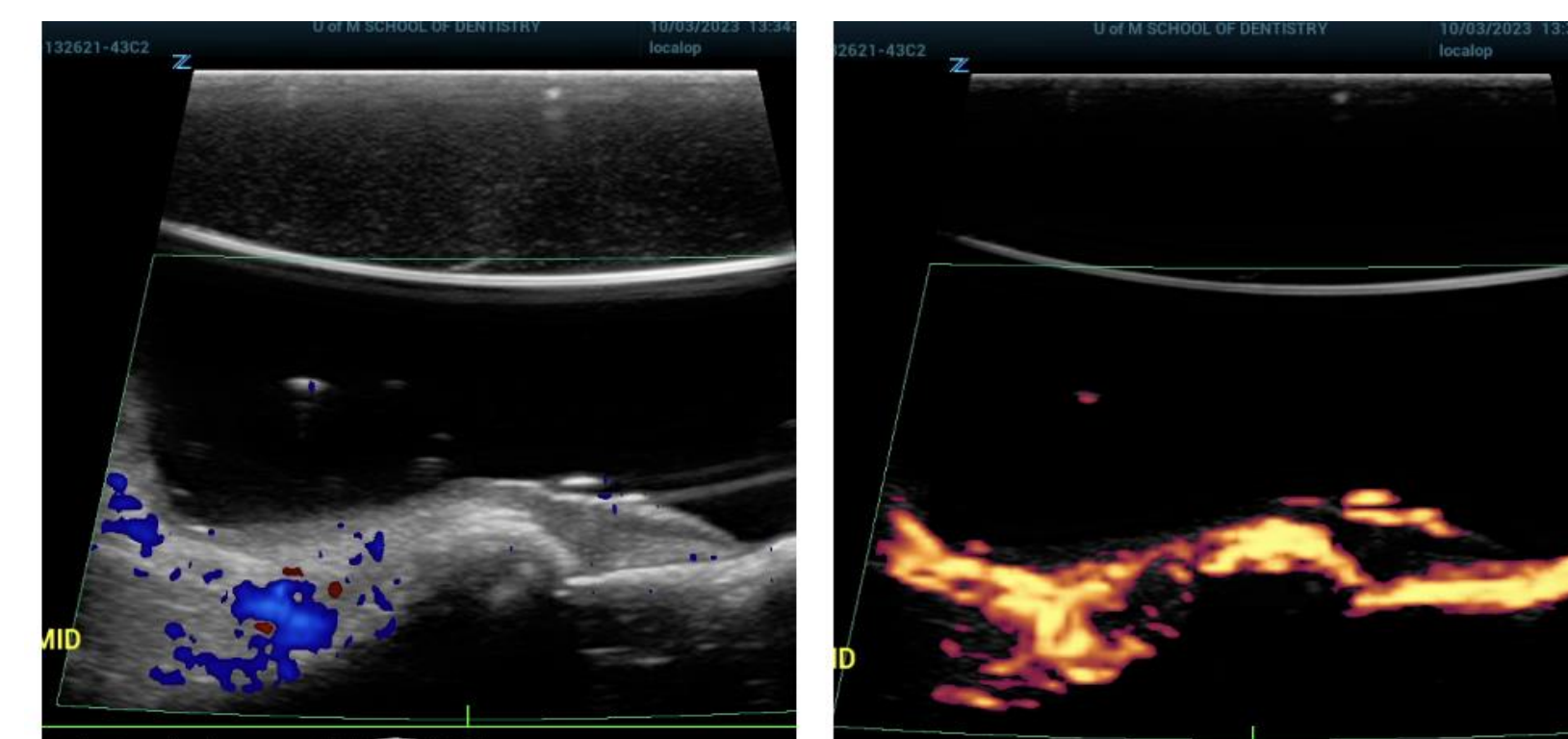
## Results



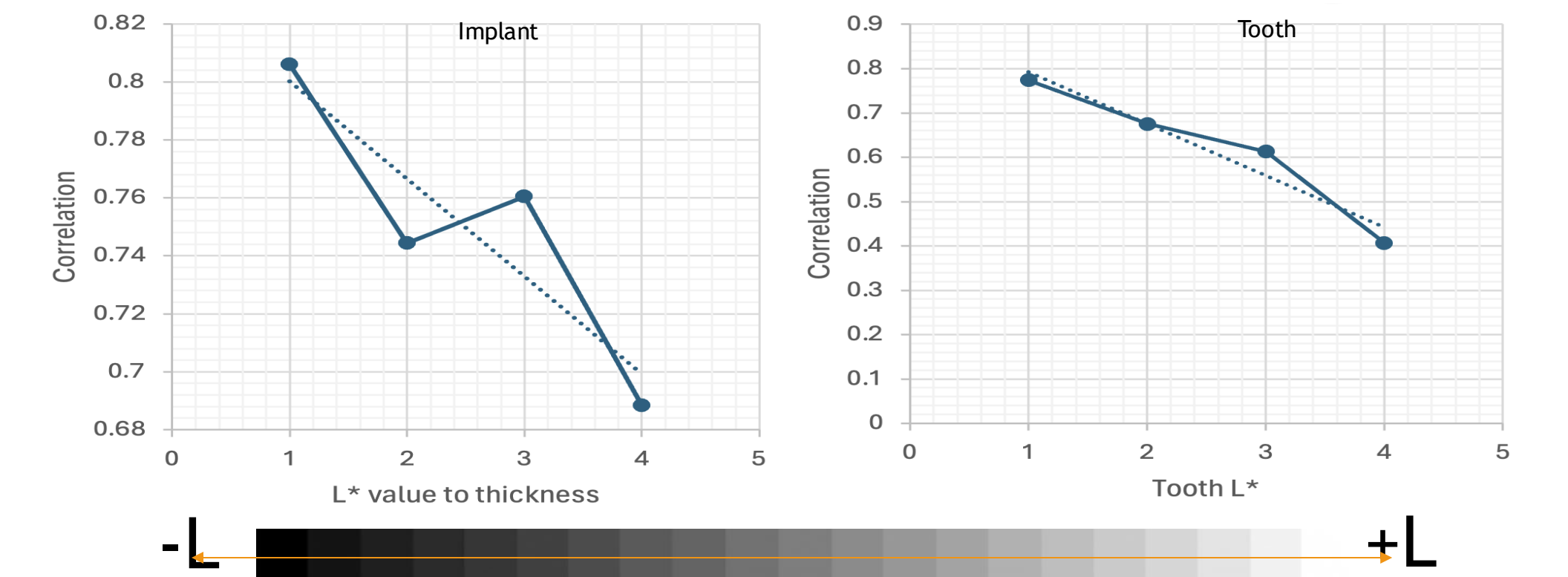
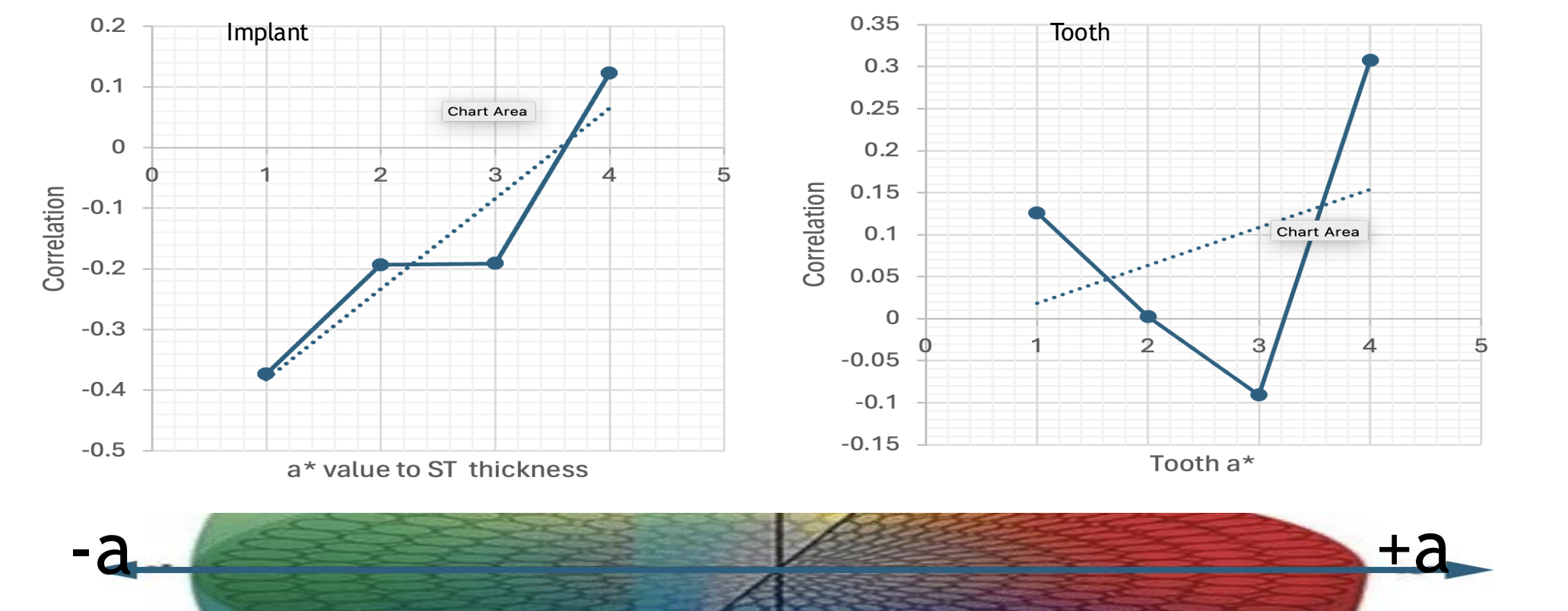
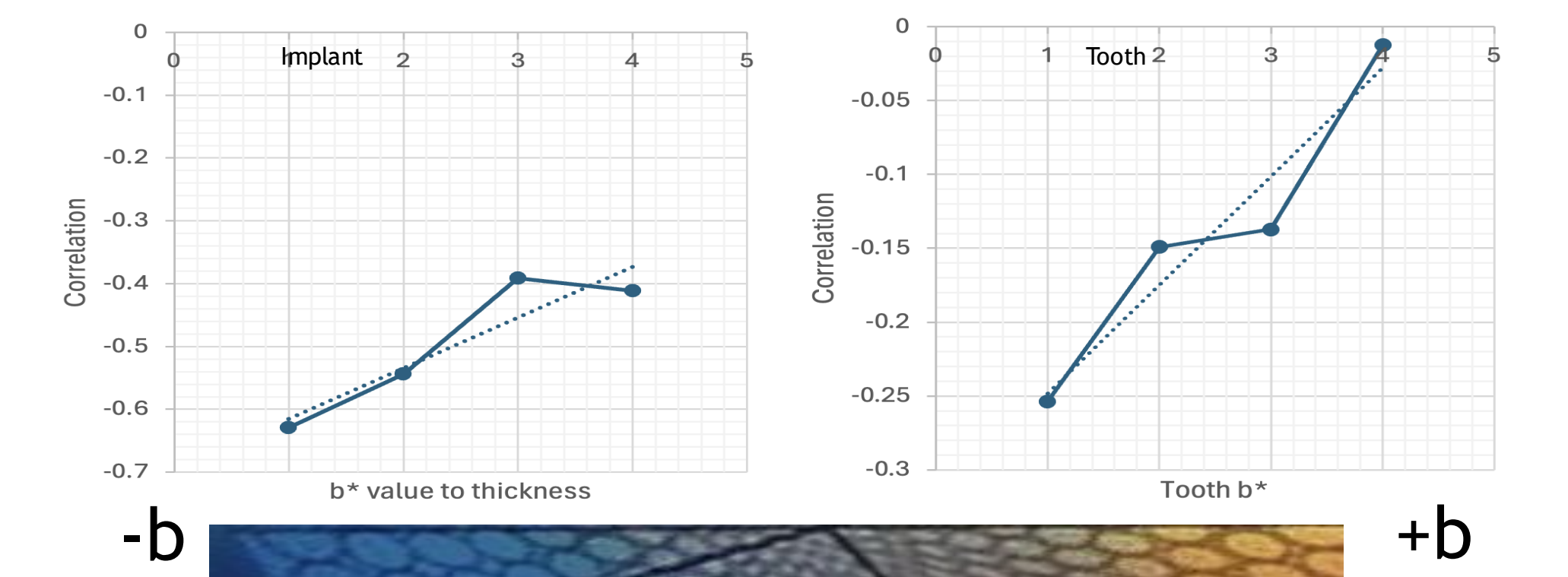
Thicker buccal tissues



Greater distance from bone crest to FGM



Power and Perfusion:  
No differences



Color ( $L^*a^*b^*$ ,  $\Delta E$ ) appears correlated with soft tissue thickness of implants and teeth.

## Characterization of Peri-implant Healthy Mucosa

| Parameter          | Distance of buccal bone crest to free gingival margin | Buccal soft tissue thickness             | Buccal bone thickness | KTW | BOP  | Papilla heights (Mesial) | Papilla heights (Distal) | Ultrasonographic power | Ultrasonographic perfusion | Stippling             | Contour           | Form                       | Consistency                     | Color      |
|--------------------|-------------------------------------------------------|------------------------------------------|-----------------------|-----|------|--------------------------|--------------------------|------------------------|----------------------------|-----------------------|-------------------|----------------------------|---------------------------------|------------|
| Average Value (mm) | 4.13 (1.5)                                            | -0.8 mm thicker than contralateral teeth | 0.7 (0.3)             | 3.3 | 7.6% | 2.7 (1.0)                | 2.7 (0.9)                | 0.04 (0.03)            | 0.07 (0.16)                | Can be present/absent | Minimal recession | Scalloped gingival margins | Resilient; rebounds to pressure | Coral pink |

**Conclusion :** There are significant differences between implants and natural teeth. Soft tissue color is influenced linearly by increasing tissue thickness at an implant or tooth site

Ultrasonography using a Mindray ZS3 device captured sagittal slices of buccal bone, soft tissues, and papilla, which were analyzed for thickness and vascular perfusion with Horos and Pixel Flux. A calibrated examiner took clinical measurements, including KTW, papilla dimensions, and probing depths, using a UNC-15 probe and Boley gauge. Standardized photography with a Canon EOS 77D and CIELAB-based color calibration documented soft tissue color and texture. Data were analyzed using paired statistical tests, ANOVA, and regression, with significance set at  $p = 0.05$ .