### Abstract

#### AIM:

To assess blooming artifacts caused by root canal sealers in CBCT images compared with those that appeared in micro-CT scan images used as references.

#### MATERIALS AND METHOD:

Thirty freshly extracted human mandibular central incisors were used. Root canals were prepared with nickel titanium files with an ISO size 40/0.06 taper and filled with a single cone (40/0.06 taper) and three different sealers. The samples were divided into the following three groups with 10 roots each: (I) AH Plus sealer; (II) Sure Seal Root; and (III) Total BC sealer. Teeth were scanned with the same voxel sizes (0.2 mm) in different CBCT devices and the micro-CT images were acquired as reference images.

#### RESULTS:

Significantly different results in terms of blooming artifacts were detected between CBCT and micro-CT images, as well as among the CBCTs images. The canals filled with AH Plus sealer showed more blooming artifacts than those filled with bioceramic sealers (p < 0.05). Additionally, the worst blooming artifact was observed when the images were acquired with lower kilovoltage peak.

#### CONCLUSION:

The appearance of blooming artifacts is dependent on sealer and CBCT, and their effects are significantly worse than they are in micro-CT images. The differential effect of different sealers and distinct CBCT protocols should be further investigated to enable the use of bioceramic sealers without a significant impact on post-treatment imaging.

#### CLINICAL RELEVANCE:

Root canal sealers showed a different extent of blooming artifact in CBCT images. Hence, researchers and clinicians should be aware of these artifacts before conducting endodontic evaluations using CBCT images.

#### KEYWORDS:

Bioceramic sealers; Blooming; CBCT; Micro-CT; Root canal sealer; Volumetric distortion artifact