CLINICAL NOTES
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First Peer-Reviewed Evaluation of HyperSight Imaging Solution Patient Images

Study Summary: Researchers at Nova Scotia Health acquired HyperSight Imaging Solution CBCT images of lung, liver, and left breast patients on an Ethos Therapy under both breath-hold and free-breathing conditions. HyperSight images were compared to conventional TrueBeam Radiotherapy System CBCT and to CT simulation images across multiple measures of image quality.

Take-home Messages:

- This is the first peer-reviewed scientific publication presenting analyses of patient images acquired with HyperSight.
- Beam hardening and motion artifacts along with artifact index of HyperSight breath hold images were comparable to those of CT simulation images.
- The Hounsfield Units (HU) of HyperSight images were also comparable to CT simulation images across multiple tissue types.

Key Quote: “The HyperSight technology [on Ethos/Halcyon] provides 6-second CBCT acquisition with artifacts similar in severity to those in CTsim. Artifacts in HyperSight BH imaging are significantly reduced compared with both HyperSight free breathing and TrueBeam BH imaging. CTsim yields improved uniformity and CNR characteristics, but HyperSight can provide superior performance to TrueBeam in this regard. The median HU value in HyperSight BH imaging is within 15 HU for muscle, fat, bone, and lung tissues, suggesting the utility of the image data for direct dose calculation in adaptive workflows."

Citation: Robar JL, Cherpak A, MacDonald RL, et al. Novel technology allowing cone beam computed tomography in 6 seconds: A patient study of comparative image quality. *Pract Radiat Oncol* 2023.
https://www.practicalradonc.org/article/S1879-8500(23)00295-3/fulltext