OncoFreeze

Acquire images virtually free of respiratory motion without extending scan time[1]

In 90% of PET/CT oncology cases, disease is located in the chest or abdomen.[2] These areas are subject to respiratory motion, which can displace organs and lesions by a range of 5 mm to 30 mm, blurring images and reducing diagnostic confidence.[3]

OncoFreeze delivers images virtually free of respiratory motion without extending your scan time[1], helping to improve detection, delineation and quantification of lesions and helping to increase your clinical confidence via:

- Improved workflow for broader clinical use
- Optimal images for each individual patient
- Flexible reconstruction

Improved workflow makes respiratory motion correction part of your clinical routine

Using only selected information from a specific section of the respiratory cycle and "discarding" the rest of the data, conventional respiratory-gated imaging requires longer acquisition times to collect additional statistics, limiting its use as part of clinical routine.

OncoFreeze employs an optical flow algorithm that enables it to use 100% of the counts in image reconstruction, allowing for images that are virtually free of motion in the same amount of time as a conventional static image.[1]

An optimal image for individual patients

Conventional motion management solutions rely on a uniform breathing pattern. However, during examination, a patients' breathing patterns can vary—increasing if they get nervous, or spiking if they sigh.

With OncoFreeze, variable breathing patterns are not a concern. OncoFreeze anticipates and adapts to the patient's breathing pattern, consistently delivering an optimal motion-frozen image.

Flexible reconstruction

The Biograph family of PET/CT scanners acquires PET data in list mode, and respiratory motion is managed retrospectively in the acquisition. A single data set can be used to reconstruct both the static and gated images. It also provides the flexibility to change any reconstruction parameter, including range, after the acquisition.

HD•Chest – The foundation of OncoFreeze

HD•Chest is a special type of automated respiratory gating system designed to address the problem of image blurring due to respiratory motion during the scan. HD•Chest analyzes each patient's individual breathing pattern and identifies the portion of the respiratory cycle with the least motion. This portion of the cycle is where most data can be collected with the least amount of respiratory motion.

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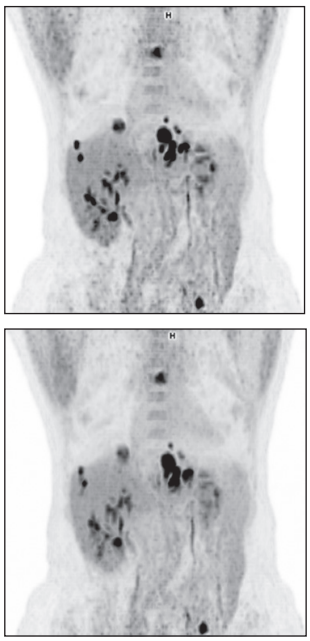

OncoFreeze

Static

Data courtesy of University of Tennessee, USA.

OncoFreeze uses the HD•Chest image as a reference and employs an optical flow algorithm to deblur the static image until it matches the HD•Chest image, using 100% of the information.[1]

Percentage of data utilized and relative acquisition time for motion-free imaging[1]

	Static	Conventional 4D gating (6 frames)	HD·Chest	OncoFreeze
% of data that is utilized in each frame of the final image	100%	~16.7%	~35%	~100%
Relative acquisition time for the same statistics (normalized to static)	~1x	6x	3.5x	~1x
Motion-corrected	No	Yes	Yes	Yes

Key benefits of OncoFreeze

- Provides images virtually free of respiratory motion in the same time as a regular whole-body scan
- Helps improve delineation and quantification of small lesions, increasing physician confidence
- Adapts to each individual's unique breathing pattern to deliver the best possible image

OncoFreeze is currently under development and does not yet fulfill all the essential requirements according to the European Medical Device Directive (93/42/EEC) and its national implementations. It is not yet commercially available in the European Union and not available for sale in the US or any other country. Future availability cannot be guaranteed.

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1. Based on internal measurements at time of publication. Data on file.

2. BIO-TECH SYSTEMS, INC. Report 2008.

3. Grills, Inga S et al. "Potential for reduced toxicity and dose escalation in the treatment of inoperable non–small-cell lung cancer: A comparison of intensity-modulated radiation therapy (IMRT), 3D conformal radiation, and elective nodal irradiation." *International Journal of Radiation Oncology • Biology • Physics*, Volume 57, Issue 3, 875-890.

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