Purpose

- Evaluating the use of end-Systole™ and end-Diastole™ images to improve image quality.
- Discussing the importance of selecting the correct reconstruction phase in cardiac CT imaging.
- Highlighting the role of ECG synchronization in achieving optimal image quality.

Background

- Cardiac CT imaging produces high-resolution images to assess heart function and diagnose cardiac conditions.
- Proper selection of the reconstruction phase is crucial to avoid motion artifacts and ensure diagnostic quality.
- The use of ECG-gated reconstruction allows for better alignment of cardiac phases, improving image quality.

Cardiac Displacement Artifacts

- Artifacts arise from cardiac motion, leading to misregistration and degradation of image quality.
- Various techniques, including software-based corrections, are employed to mitigate these artifacts.
- The importance of accurate ECG signal quality for artifact reduction is emphasized.

Non-cardiac Artifacts

- Artifacts from non-cardiac sources, such as metal implants, can significantly impact image quality.
- Strategies for minimizing these artifacts include proper patient preparation and hardware upgrades.

Selecting the "Best" Reconstruction Phase

- The "best" reconstruction phase varies depending on the cardiac cycle and patient characteristics.
- Different coronary territories may require different phases for optimal visualization.
- The suggested approach involves manual selection of ECG markers and manual correction of images.

Adding New Syncs

- New syncs can be added interactively to optimize image quality in problematic phases.
- The use of automated algorithms for sync selection is also discussed.

Moving Existing Syncs

- Existing syncs can be moved to improve phase alignment and image quality.
- This is particularly useful in cases where the initial sync selection was suboptimal.

Eliminating Un desirable Syncs

- Unwanted syncs, such as post-pacemaker spikes, can be automatically eliminated to enhance image quality.
- The use of adaptive thresholding and iterative refinement for sync selection is highlighted.

When All Else Fails

- Alternative approaches, such as image processing techniques, can be employed in cases where standard methods fail.
- The importance of a multidisciplinary approach in troubleshooting image quality issues is underscored.

References