

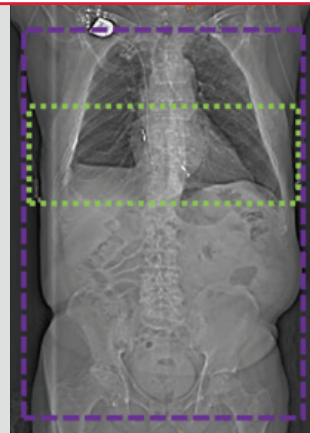
CT in Transcatheter Aortic Valves: Quick Reference

WHAT YOU NEED

- Contrast-enhanced ECG-assisted cardiac CT data of the aortic root/heart covering ideally the entire cardiac cycle, but at least systole
- Contrast enhanced CTA of the thorax, abdomen and pelvis – including entire femoral heads

Cardiac ECG-assisted
data acquisition

Non-gated CTA of
the thorax, abdomen,
and pelvis



ACQUISITION TECHNIQUE FOR ECG-ASSISTED CTA

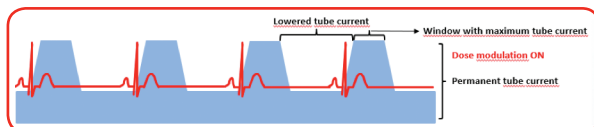
Retrospectively ECG Gated Cardiac CT Without Dose Modulation

- No dose modulation – thus full tube current throughout the entire cardiac cycle



Retrospectively ECG Gated Cardiac CT With Dose Modulation

- Peak tube current during systole

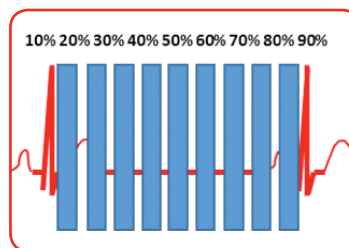


RECONSTRUCTION TECHNIQUE

Multiphasic data set of the entire cardiac cycle at 5% or 10% intervals (eg, 0% to 95% or 0% to 90%)

ECG editing if necessary

Slice thickness 0.6 to 0.75mm, filtered back projection or iterative reconstruction techniques



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ECG Editing with Retrospective ECG Gating

- The inpart redundant image data which is acquired using retrospective ECG gating and helical data acquisition allows for manual editing of the ECG signal with adjustment or deletion of certain trigger points (eg, an entire heart beat may be deleted in case of a premature contraction)
- This technique should be employed in cases of misalignment artifacts due to premature contractions or atrial fibrillation
- ECG editing has to be performed at the scanner console using the raw data
CAVEAT: Raw data is commonly stored for a limited time only.

References

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Mahesh M, Cody D. AAPM/RSNA Physics Tutorial for Residents: Physics of Cardiac Imaging with Multiple-Row Detector CT. RadioGraphics. 2007; 1495-1509. DOI: <http://dx.doi.org/10.1148/rg.275075045>

Min JK, Berman DS, Leipsic J. Multimodality Imaging for Transcatheter Aortic Valve Replacement. Springer; 2013.

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