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**Scientific Abstract**

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**Comparison of Radiation Dose, Contrast Enhancement and Image Quality of Prospective ECG-Gated CT Coronary Angiography: 256-slice Single-Source CT versus 192X2-Slice Dual-Source CT**

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**Purpose**

The purpose of this study is to retrospectively evaluate radiation dose, contrast enhancement and image quality of prospective ECG-gated CT coronary angiography (CTCA) between a 256-slice single-source CT and a 192x2-slice dual-source CT.

**Methods**

We retrospectively assessed data from 63 patients undergoing CTCA on a 256-slice CT with prospective ECG-gated technique (group 1) and 72 patients undergoing CTCA on a 192X2-slice dual source CT with adaptive prospective ECG triggered technique (group 2). Scanner-reported dose length product values were used together with a conversion factor ( $k=0.014$  mSv/mGy x cm) to estimate the effective dose values. Contrast enhancement was assessed objectively in terms of mean CT attenuation at selected regions of interest on axial coronary images. Image quality of the main coronary arteries (RCA, LAD and LCx) was assessed by a 4-point grading score (1=non-diagnostic, 4=excellent image quality).

**Results**

The radiation doses in group 2 were significantly lower than group 1 (3.71±2.13 mSv vs 4.81±1.56 mSv,  $p<0.001$ ). There were no significant differences in terms of contrast enhancement in left main artery, proximal right coronary artery and left ventricular wall for the two groups. The vessel image quality scores for group 2 were significantly higher than group 1 (RCA: 3.2±0.7 vs 2.4±0.7,  $p<0.001$ ; LAD: 3.0±0.8 vs 2.5±0.6,  $p<0.001$ ; LCx: 3.3±0.7 vs 2.6±0.6,  $p<0.001$ ). The coronary artery contour scores for group 2 were also significantly higher than group 1 (RCA: 3.2±0.8 vs 2.3±0.7,  $p<0.001$ ; LAD: 3.0±0.7 vs 2.4±0.6,  $p<0.001$ ; LCx: 3.3±0.6 vs 2.5±0.6,  $p<0.001$ ).

**Conclusion**

Prospective ECG-gated CTCA done with 192X2-slice CT is able to produce better image quality with lower radiation dose than 256-slice CT.