

Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

Supplement to: Miller JM, Rochitte CE, Dewey M, et al. Diagnostic performance of coronary angiography by 64-row CT. *N Engl J Med* 2008;359:2324-36.

MDCTA Core Laboratory

Raw/Image Data

- Reconstruction of Systolic & Diastolic Phases
- Standard & Sharp Convolution Kernel
- Coronary Artery Calcification Assessment (Agatston Score)

Coronary Artery Tree Segmentation^{*†}

- Segmentation based on fiducial landmarks
- Vessel Size Determination ($\geq 1.5\text{mm}$)

Segment Assessment[‡]

- 2 independent readers performed assessment
- Identification of reference diameter & minimal lumen diameter
- Visual assessment (categorical scale)
 - No disease, 1-29%, 30-49%, 50-69%, 70-99%, 100%
- Quantitative assessment (continuous scale)

Reader 1 Reader 2

Database/Statistical Core Lab

- Reader 1 & Reader 2 readings locked
- Ineligible segments by CCA removed

Concordant Reads

- Readers scores averaged

Discordant Reads

- Scores crossing thresholds (50%, 70%, or unevaluable) identified for consensus

Consensus

- Final diameter stenosis determined by consensus with 3rd observer

Final Segment Diameter Stenosis^{||}

- Cross modality alignment of segments

Vessel Diameter Stenosis

- LAD = maximum segment diameter stenosis in L1-L6
- LCX = maximum segment diameter stenosis in C1-C8
- RCA = maximum segment diameter stenosis in R1-R5

Patient Diameter Stenosis

- Maximum diameter stenosis in all segments

*Coronary Artery segmentation model modified from the CASS¹ and BARI² investigators used for the CORE-64 trial (with 19 segments; 5 in the right coronary artery, 6 in the left anterior descending coronary artery [including left main], 7 in the left circumflex coronary artery, and the intermediate branch). Segmentation performed independently by blinded angiography and computed tomography core labs.

[‡] For segments with multiple lesions, the most severe lesion and stenosis determined the segment final segment stenosis value.

^{||} In the visual analysis, non-evaluable segments were consensus derived. In the quantitative analysis segments which could not be measured by all 3 observers were considered non-evaluable.

¹ Ringqvist I, Fisher LD, Mock M, et al. Prognostic value of angiographic indices of coronary artery disease from the Coronary Artery Surgery Study (CASS). J Clin Invest 1983;71:1854-66.

² Alderman EL, Stadius M. The angiographic definitions of the Bypass Angioplasty Revascularization Investigation. Coronary Artery Disease 1992;3:1189-208.

Abbreviations: MDCTA, multidetector computed tomography angiography; CCA, conventional coronary angiography; LAD, left anterior descending artery; LCX, left circumflex coronary artery; RCA, right coronary artery; RPL, right posterolateral; OM, obtuse marginal; LPL, left posterolateral; PDA, posterior descending artery.

CORE-64 Coronary Artery Segmentation[†]

Artery	CORE-64 Segment	CASS Segment ¹
Left main	L1	11
Proximal LAD	L2	12
Mid LAD	L3	13
Distal LAD	L4	14
1 st Diagonal Branch	L5	15
2 nd Diagonal Branch	L6	16
Proximal RCA	R1	1
Mid RCA	R2	2
Distal RCA	R3	3
Right PDA	R4	4
Grouped RPL	R5	5,6,7,8
Proximal LCX	C1	18
Mid LCX	C2	19
1 st OM	C3	20
2 nd OM	C4	21
3 rd OM	C5	22
Grouped: distal LCX & LPL	C6	19.1, 23, 24, 25, 26
Left PDA	C7	27
Ramus intermediate Branch	C8	28