**SUPPLEMENTARY INFORMATION**

**Patient demographics and preoperative characteristics**

The following preoperative characteristics and parameters were collected:

Age, gender, race, height, weight, BMI; BSA, smoking history, history of CAD, dyslipidemia, hypothyroidism, cerebrovascular disease, respiratory disease, diabetes, peripheral vascular disease, abdominal aortic aneurysm, procedural status (elective versus emergency), history of previous MI, angina, history of heart failure, NHYA status, dyspnea, arrhythmia, previous PCI, left main stenosis, number of diseased vessels, aortic disease and calcification, left ventricular ejection fraction (LVEF), preoperative medication, STS score and Euroscore.

**Intraoperative parameters and saphenous vein graft characteristics**

The following intraoperative, surgical and saphenous vein graft characteristics were collected:

Vein harvesting technique (endoscopic versus open), harvest location (thigh versus leg), graft length, graft segment (proximal versus distal), target region A or B, (A: circumflex, diagonal or other territory versus B: right coronary system, diagonal or other), grafting area, target coronary size, external vein diameter, wall thickness, vein quality, varicosity, solution exposure time, flow signal quality, flow frequency, duration of surgery, technique (off-pump versus on-pump), use and duration of cardiopulmonary bypass and aortic cross clamping

**Computed Tomography Coronary Angiography Procedure**

Modern CT scanners combine high spatial and temporal resolution with the ability to demonstrate anatomy through multiplanar and volume-rendered reformats, thus allowing to image small and moving objects. The implementation of electrocardiographic synchronization (using prospective or retrospective methods) minimizes or eliminates cardiac motion; in these settings coronary graft motion is also reduced or null, further improving the sensitivity and specificity of CT evaluation for graft patency [1-2]. CTCA is highly accurate at detecting stenosis in bypass grafts with sensitivity, specificity, negative and positive predictive values of 97%, 97%, 93% and 99%, respectively [3]. More specifically, 64-slice CTCA has been used to assess graft wall thickness and patency rates as early as 1 month and 12 months after CABG procedures [4]. CT has demonstrated its sensitivity to measure wall thickness and lumen diameter. The work of Lau et al. demonstrated CT measure of a non-occluded SVG mean loss of SVG lumen diameter of 9% (3.69 mm to 3.36 mm) between postoperative months 1 and 12, and a decrease in SVG wall thickness over this period of time [5]. The CTCA was selected for this study based on its general ability to assess vessel plaque volume, percentage diameter stenosis with excellent sensitivity and specificity [6-7], including the assessment of SVG wall thickness [6]. The methodology to be used for assessing wall thickness is derived from the study by Lau et al [5] and graft occlusion and significant stenosis based on Fitzgibbon’s scale B and O [8]. CTCA examination will be performed with 64-slice or higher CT scanners (VCT, GE Medical Systems; Aquilion One, Toshiba; iCT, Philips; Somatom Force & Somatom Flash, Siemens Medical Systems) for angiographic evaluation of grafts as follow-up procedure at 4-6 weeks, 3 and 12 months. Metoprolol 50 to 100 mg orally will be administered (in absence of contra-indications) before CT scanning when heart rate at arrival is >65bpm with the intention to reduce it below 60bpm. A non-contrast ECG-synchronized CT scan (e.g. VCT Lightspeed Plus, GE Medical Systems; 4X2.5 mm collimation, 1.3 to 1.5 pitch, 0.5-second rotation time, 140 kV, 250 mA) will be performed. Contrast material synchronization will be performed using test bolus or bolus tracking techniques. Non-ionic iodinated contrast material will be used for vascular enhancement in the angiographic phase (mostly Iodixanol 320mg/I/ml, GE Healthcare). Contrast-enhanced scan (e.g. VCT Lightspeed Plus, GE Medical Systems; 64x0.625 mm collimation, 0.15-0.25 pitch, 0.33-second rotation time, 80-140 kV, 220-280 mA) will be performed using 60-140 mL of intravenous contrast at 3.5-5.5 mL/s, according to locally optimized CTCA protocols. All images will be acquired on a single breath-hold (variable duration depending on protocols and CT scanners; always <20s). To ensure consistency between patients, CT scans will be reconstructed using a soft convolution kernel from a data acquisition window centered at 70% of the RR interval. When available, iterative reconstruction algorithms will be applied to improve image quality.

**CTCA Image Analysis**

A centralized CT Core Lab will receive the anonymized DICOM datasets for each CTCA procedure, store them, and upload on the software platform for evaluation (SyngoVia, Siemens Medical Solutions, Forchheim, Germany).

One experienced operator (>15 years of experience with image analysis in Cardiac CT) will assess all grafts of all patients. As discussed above, the analysis of SVG wall thickness will be performed using a modified approach based on the one previously reported by Lau et al [5].

Each SVG will be assessed using semi-automated vessel tracking algorithm that will stretch the SVG along a straight line from the ostium to the distal anastomosis (not on axial images as described by Lau). This will render easier to perform the measurements at 10 mm spatial intervals and, even more important, will allow a comparability of the analysis of the same SVG at different time points and, within the same scan, in the pre-contrast and post-contrast phases.

The parameters assessed will be: total vessel diameter, lumen diameter, and wall thickness. Wall thickness, as measured by CTCA [5], will be calculated with the formula (total vessel diameter – lumen diameter)/2. Lumen diameter and total vessel diameter will be assessed every 10 mm from the ostium, with these “segmental” measurements averaged for each graft for the analysis. The measure of the total vessel diameter will be performed on non-contrast CT while lumen diameter will be measured on post-contrast CT scans. When non-contract CT will not grant enough image quality for assessment, total vessel diameter will be obtained on post-contrast scans. The operator will be blinded to the storage solution used. The operator will be able to identify the 2 study SVGs to distinguish them from eventual other grafts performed in the same patient. All MDCT images are to be read and evaluated by a single reader and as a quality control, the intra-reader reliability of the MDCT assessments is to be assessed. Intra-reader reliability refers to the consistency or repeatability of the assessments done by a reader. A randomly selected subset of patients will be analyzed.

**Supplementary References**

1. Nieman K, Pattynama PM, Rensing BJ, et al. Evaluation of patients after coronary artery bypass surgery: CT angiographic assessment of grafts and coronary arteries. Radiology 2003;229(3):749–56.
2. Ropers D, Ulzheimer S, Wenkel E, et al. Investigation of aortocoronary artery bypass grafts by multislice spiral computed tomography with electrocardiographic-gated image reconstruction. Am J Cardiol 2001;88(7):792–5.
3. Meyer TS, Martinoff S, Hadamitzky Met al. Improved noninvasive assessment of 3. coronary artery bypass grafts with 64-Slice computed tomographic angiography in an unselected patient population. J Am Coll Cardiol 2007;49(9):946–50 27.
4. Gao C, Ren C, Li D, et al. Clopidogrel and aspirin vs. clopidogrel alone on graft patency after coronary artery bypass grafting. Ann Thorac Surg 2009;88(1):59–62.
5. Lau GT, Ridley LJ, Bannon PG, et al. Lumen loss in the first year in saphenous vein grafts is predominantly a result of negative remodeling of the whole vessel rather than a result of changes in wall thickness. Circulation 2006;114:I435–40.
6. Taggart D. Saphenous vein graft failure - an outcomes study in coronary artery bypass grafting (SAFINOUS-CABG). A systematic review (meta-analysis), Radcliffe Department of Medicine, Center for Statistics in Medicine, University of Oxford 2014.
7. Ugolini P, Pressacco J, Lesp rance J, et al. Evaluation of coronary atheroma by 64- slice multidetector computed tomography: Comparison with intravascular ultrasound and angiography. Can J Cardiol 2009; 25(11):641–7.
8. Fitzgibbon GM, Kafka HP, Leach AJ, et al. Coronary bypass graft fate and patient outcome: angiographic follow-up of 5,065 grafts related to survival and reoperation in 1,388 patients during 25 years. J Am Coll Cardiol 1996;28:616–626.