Recanalization of a Chronic Total Occlusion Supported by *syngo* CTO Guidance*

Courtesy of Christian Schlundt, MD

Associate Director of Cardiology at Erlangen University Hospital, Germany

Patient History

A 64-year-old man with typical stress-induced angina was referred for elective recanalization of a chronic total occlusion (CTO) of the left anterior descending artery (LAD). Echocardiography showed normal LV function and an MRI confirmed full viability of the anterior wall.

Diagnosis

Chronic total occlusion of the LAD.

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Treatment

Before beginning the percutaneous coronary intervention, a coronary CT angiography was performed to plan and guide the recanalization of the CTO. The CT showed the details, plaque composition, calcifications, and occlusion length necessary to plan the procedural strategy. Two options were available for segmentation:

First, segmentation of the coronaries as well as the occluded segment could be performed at the CT workstation. The results of the segmentation are stored and sent to the 3D workstation in the cath lab. Second, the segmentation could be performed at the 3D workstation in the cath lab using *syngo* CTO Guidance software. *syngo* CTO Guidance offers automatic segmentation of the coronaries, centerline extraction, and color-coding of the centerlines. The color-coding indicates foreshortening of the vessel segment. This allows optimal angulations of the lesion segment to be selected, which was not visible on X-ray before the actual procedure begins. The color-coded centerlines were then used for registration during the case. Therefore, only two angiography images were needed with at least 30° difference.

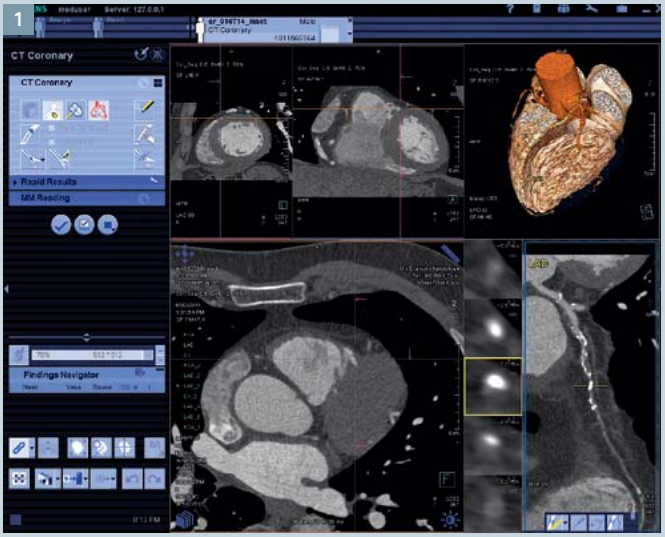
The percutaneous coronary intervention was started using a XB 3.5 Guiding 7F for the left coronary artery, a JR 4 6F for the right coronary artery, and a Fielder XT Wire® supported by a microcatheter crossed the occlusion of the LAD controlled by contralateral angiographic injection. *syngo* CTO Guidance was used all the way along with side-by-side visualization of COROwave. COROwave facilitates the "follow C-arm functionality" by displaying CT images next to the current angiogram during the procedure. After verifying the intracoronary peripheral wire position and tracking the microcatheter, an extra support wire exchange was performed and removal of the microcatheter via trapping maneuver initiated. Dilatation of the LAD was performed using a NC balloon. Finally, two drug-eluting stents were implanted.

Comments

The additional use of *syngo* CTO Guidance in interventional treatment of CTO facilitates wire crossing and positioning allowing side-by-side guidance. Further information such as calcification and the true distance and course of closed vessel segments are useful for wire selection, procedural orientation, and success.

Contact

david.winneberger@siemens.com



1 Coronary CT angiography showing a CTO of the LAD.

2 Color-coded centerlines registered with 2 angiograms.

3 Side-by-side guidance with *syngo* CTO Guidance.

4 Angiogram showing the CTO of the LAD.

5 Final result after recanalization of the LAD.