## **Cardiovascular Medicine**

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## Full moon coronary calcium seen on cardiac tomography: can it change PCI decision-making and procedure?

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We report the case of a 57-year-old mal complaining of recurrent chest pain admitted electively for a recanalisation attempt to a known chronically totally occluded right coronary artery (RCA). Angiographically, the RCA was seen to have a high-grade in-stent restenosis in its proximal part followed by complete occlusion of the vessel, starting from the mid part of the stent deployed 13 years before (fig. 1). Cardiac computed tomography (CT) was performed as a preparation before the procedure. The RCA was seen to have heavy calcification in its proximal part and within the stent, indicating neoatherosclerotic disease (fig. 2A). The cross-sectional image of the calcified plaque revealed a circular heavy calcified "full moon"-like structure within the middle of the occluded stent (fig. 2B). A complex intervention was accordingly anticipated. An AL1 with side holes was used to engage the RCA. During the procedure, it was only possible to cross this heavily calcified plaque with a stiff chronic total occlusion (CTO) heavyweight wire (Fielder XT followed by Gaia second then finally Gaia third); all attempts to cross with various CTO microcatheters (that included Finecross MG, Tornus microcatheter and Corsair Pro XS) and balloons (0.6 mm and 0.85 mm diameters) assisted by a guide extension device failed. Finally, we could advance a rotablation wire through the occluded segment using a buddy wire approach. After four attempts we successfully crossed this heavily calcified plaque (fig. 3A). Intravascular ultrasound imaging showed a heavily calcified circular plaque within the previously well-deployed stent and the cracks caused by rotablation (fig. 3B).

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Complexity and difficulty of successful percutaneous coronary intervention (PCI) for a CTO can be to a great extent predicted by CT evaluation [1]. Severe calcification is known to present a serious challenge to the success of the CTO PCI [2]. With severe calcification and a full moon appearance, device delivery failure and the need for rotablation or lithotripsy should be taken into consideration during procedure planning. However more evidence and more studies are needed to support this concept.

## **Disclosure statement**

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