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MAGNETIC NAVIGATION SYSTEM AND CT ROADMAP ASSISTED PERCUTANEOUS CORONARY INTERVENTION: A COMPARISON TO THE CONVENTIONAL APPROACH

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Objectives Computer tomography (CT) coronary angiography has been successfully integrated with the magnetic navigation system (MNS) to facilitate a roadmap assisted percutaneous coronary intervention (PCI) for coronary artery disease. But the priority of this new approach of PCI has not yet been investigated. The aim of this study was to compare the MNS and CT roadmap assisted PCI versus conventional PCI regarding the difference of contrast usage, x-ray exposure, and procedure success.

Methods Thirty-eight patients with stable coronary artery disease were enrolled in the MNS group. Target vessels from pre-procedure CT coronary angiography were extracted, reconstructed, and finally transferred to the live fluoroscopic screen as roadmaps. Another 38 patients within the same study period were recruited in the conventional group, matched with the MNS group by the vessel and lesion type base on ACC/AHA criteria.

Results The contrast usage for guidewire crossing was significantly lower in the MNS group than that in the conventional group (0.0 (0.0, 3.0) vs 5.0 (3.1, 6.8) ml; $p < 0.001$), with zero contrast usage in 25 of the 44 guidewire placements in the MNS group, but in none of the conventional group. The radiation dosage for guidewire crossing in MNS group was also significantly lower than that in the conventional group (235.8 (134.9, 455.1) vs 364.4 (223.4, 547.2) μGym^2 ; $p = 0.033$). All the enrolled vessels were successfully intervened in both groups.

Conclusions Compared to conventional PCI, the MNS and CT roadmap assisted PCI can reduce contrast usage and radiation dosage for guidewire crossing during the process of coronary intervention.