The International Journal of Cardiovascular Imaging (2023) 39:1617–1619
https://doi.org/10.1007/s10554-023-02946-3

Editor's choice to the September 2023 issue

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Published online: 21 September 2023

1) Treatment recommendation based on SYNTAX score 2020 derived from coronary computed tomography angiography and invasive coronary angiography.
2) Comparison of definitions of coronary artery reference sizes and effects on stent selection and evaluation of stent expansion.

Dear Reader,

For this September 2023 issue, I have selected two papers from the field of interventional cardiology, the first one on the use of the SYNTAX 2020 score, and the second one on the definitions of coronary artery reference sizes and possible treatment effects.

The first paper is by Dr S Masuda and co-authors under the leadership of Prof PW Serruys and Prof Y Onuma from the University of Galway in Ireland [1]. In this paper they compare the treatment recommendations using the SYNTAX 2020 score derived from coronary computed tomography (CCTA) versus invasive coronary angiography (ICA). This interim analysis was based on 57 of the planned 114 patients enrolled in the ongoing FAST-TRACK CABG trial. An example of the SYNTAX 2020 score calculations and the predictions for an individual patient is presented in Fig. 1.

In this study the mean anatomical SYNTAX scores (SS) derived from ICA and CCTA were found to be 35.1 ± 11.5 and 35.6 ± 11.4 ($p = 0.751$), respectively. The Bland–Altman analysis showed mean differences of -0.26 and -0.93, with standard deviation of 3.69 and 5.23, for 5- and 10-year all-cause mortality, respectively. The concordance in recommended treatment for 5- and 10-year mortalities were 84.2% (48/57 patients) and 80.7% (46/57 patients). The authors concluded based on this interim analysis, that there was moderate to substantial agreement between treatment recommendations based on the SS-2020 derived using CCTA and ICA, suggesting that CCTA could be used as an alternative to ICA, when making decisions regarding the modality of revascularization.

The second paper is by Dr LN Andreasen and co-authors from the department of Cardiology at the Aarhus University hospital in Denmark under the supervision of Dr Niels R Holm [2]. They studied the effects of coronary reference sizes on the optimal stent selection and evaluation of stent expansion during percutaneous coronary interventions (PCIs). They identified a total of 12 different reference size definitions from 17 clinical studies, and applied 10 of these in 32 study cases with pre-PCI and post-PCI OCT data from the DOCTOR Fusion study and the SORT OUT VII OCT sub-study. Schematic illustrations of these 10 methods are presented in Fig. 2.

This is really a complicated issue: how to define the proper reference sizes. Due to the post hoc nature of this study and the limited number of cases, the authors concluded that they could not come to firm conclusions. Also, they propose to establish a future consensus based on clinical outcome data expected from ongoing randomized trials.

Their main findings indicate that reference methods: (1) should be vessel and not lumen-based, (2) should be applicable to long lesions with major diameter shifts, (3) should identify reference segments more than 2 mm from the stent edge, and (4) potentially be based on diameters rather than area measurements to provide more actionable measurements for selecting balloons sizes. And as a result, the choice of method for reference size estimation using intravascular imaging may influence stent selection and greatly affects evaluation of post-PCI stent expansion.

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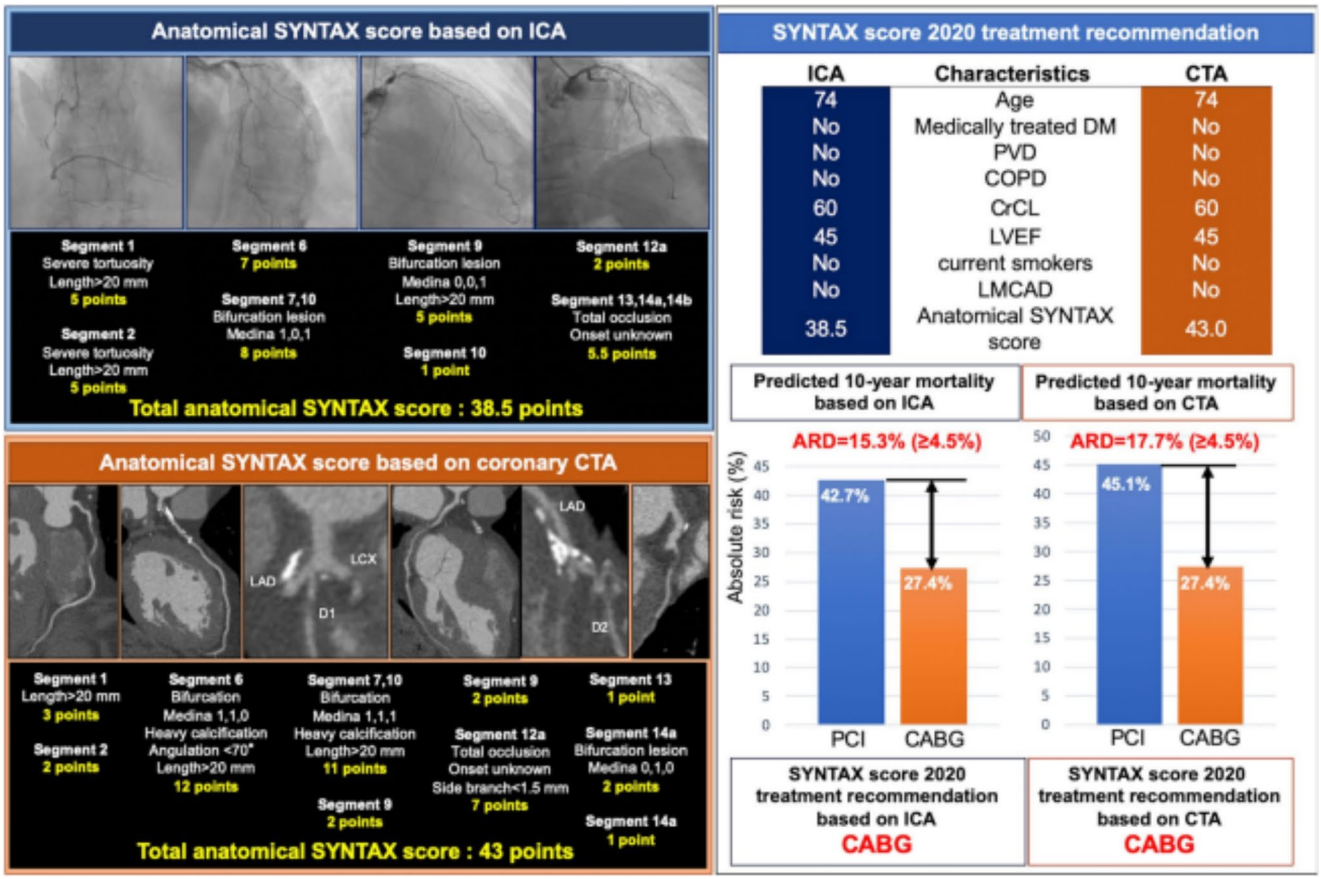

Fig. 1 Representative case of the SYNTAX 2020 calculations for a 74-year-old man. The anatomical SYNTAX score derived from ICA is 38.5 points and from CCTA 43 points. Predicted 10-year all-cause mortality based on ICA with PCI and CABG are estimated to be 42.7% and 27.4%, respectively. And for CTA these percentages are 45.1% and 27.4%, respectively. Based on these findings, CABG is recommended by both ICA and CCTA.

These two papers are both very exciting and should provoke further debates; the readers should definitely refer to the original publications for further details.

With this, I would like to wish you much reading pleasure with these two and all the other very interesting papers published in this September 2023 issue of the International Journal of Cardiovascular Imaging.

Johan HC Reiber, PhD
Editor-in-chief

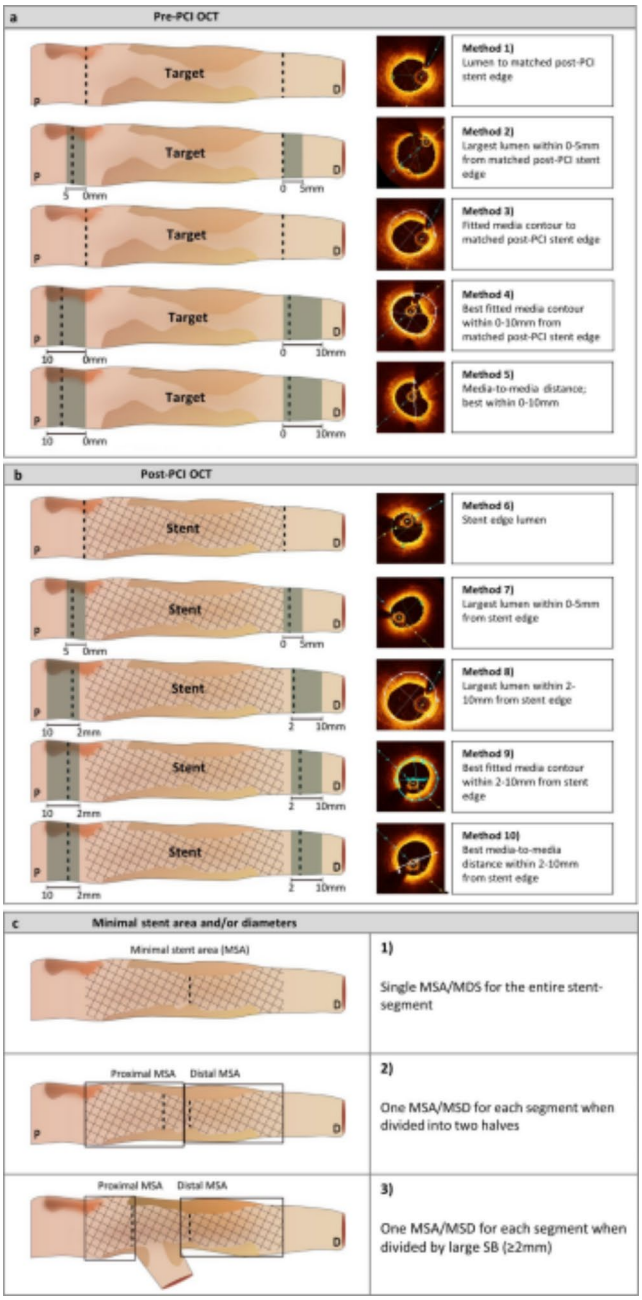

Fig. 2 Position and methods for different reference estimations and minimal stent area (MSA) and/or minimal stent diameter (MSD). a: References obtained in pre-PCI OCT-runs. b: References obtained in post-PCI OCT-runs. c: Classification of different MSA and/or MSD obtained in each clinical case

References

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