

Reducing the need for invasive pressure wire assessment in patients using a novel angiographic scoring tool

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BACKGROUND DILEMMA score is a validated angiographic scoring tool incorporating minimal lumen diameter, lesion length and subtended myocardial area and can be used to reliably exclude lesions which have a predictably high likelihood of being functionally significant or non-significant as assessed by FFR. We sought to evaluate the use of the DILEMMA score to rationalize the selection of patients being referred for invasive pressure wire studies. Additionally, we sought to validate the DILEMMA score against the instantaneous wave-free ratio (iFR).

METHODS Patients prospectively enrolled into the DEFINE-FLAIR study from three UK sites were included. The DILEMMA score was calculated retrospectively by operators blinded to the FFR or iFR results. Diagnostic performance of DILEMMA was assessed using negative predictive value (NPV), positive predictive value (PPV) and using receiver operating characteristic (ROC) curve analysis to predict FFR ≤ 0.80 and iFR ≤ 0.89 .

RESULTS A total of 346 lesions (181 assessed by FFR and 165 by iFR) from

259 patients (mean age 66.0 ± 10.7 years, 79.0% male) were included. A DILEMMA score ≤ 2 had a NPV of 96.3% and 95.7% for identifying lesions with FFR > 0.80 and iFR > 0.89 , respectively. A DILEMMA score > 9 was associated with a PPV of 88.9% and 100% for lesions with FFR ≤ 0.80 and iFR ≤ 0.89 , respectively. The ROC area under the curve values for DILEMMA score to predict FFR ≤ 0.80 and iFR ≤ 0.89 were 0.83 (95% CI 0.77-0.90) and 0.82 (95% CI 0.75-0.89), respectively. A DILEMMA score ≤ 2 or > 9 occurred in 172 out of 346 lesions, thus pressure wire assessment could be deferred in 49.7% of cases.

CONCLUSION DILEMMA score demonstrates excellent diagnostic performance against FFR and iFR in patients with intermediate coronary stenosis and can reduce the need for pressure wire studies by approximately 50%, with no change in subsequent patient management. This can offer significant cost-savings as well as minimizing the small risks associated with pressure wire assessment.