

## Letter to the Editor



# Non-Invasive Physiological Assessment after Coronary Stent Implantation

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The data generated in this study is available from the corresponding author upon reasonable request.

A very knowledgeable and logical review was presented by Hwang et al.<sup>1)</sup> regarding physiologic assessment after coronary stent implantation. It seemed to focus mostly on invasive methods of assessment in this scenario. We would like to complement this with some thoughts on non-invasive methods to achieve this objective.

Myocardial perfusion scintigraphy (MPS) has traditionally served this purpose well. It has been shown to demonstrate that normal MPS is associated with an excellent prognosis.<sup>2)</sup> Some minor abnormalities may be shown but these are often non-contributory.

Fractional flow reserve (FFR) can also be assessed by computed tomography (CT) scan. It has become more popular in recent times and was reviewed comprehensively in this Journal earlier.<sup>3)</sup> We have found, unfortunately, this is unavailable in many hospitals presently as specialised software and sub-specialist radiologist training is required.

According to the major trials comparing FFR-CT and MPS,<sup>4),5)</sup> the two showed overall similar diagnostic accuracy. FFR-CT was found to have higher sensitivity but MPS had higher specificity. In addition, MPS may provide additional information such as end-diastolic volume and ejection fraction.<sup>6)</sup>

The echocardiographic group of assessments may also be helpful. Stress echocardiography (SE) is a major part of this group. This modality can be used in conjunction with exercise – which has the added benefit of assessing functional data such as exercise tolerance, blood pressure and rhythm assessment at rest and with exercise; as can be with MPS – and dobutamine. The use of exercise (by conventional means, such as with a treadmill or bicycle) can be limited by a number of patient related factors such as the ability to walk on a treadmill sufficient to achieve the specified target heart rate or metabolic workload, the need to acquire diagnostic images at peak heart rate and adequate endocardial definition to accurately assess for ischaemia.

SE may also be performed with the aid of pharmacological agents. This is most typically dobutamine.<sup>7)</sup> In addition, it may be used to assess not only for ischaemia but also for myocardial viability.<sup>8)</sup> The dobutamine option is also possible with MPS,<sup>6)</sup> although sympathomimetics might be avoided sometimes in this population.

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Contrast can be used to enhance the endocardial definition. Emerging techniques for coronary ischaemia include myocardial contrast echocardiography (MCE) used in conjunction with dobutamine stress imaging. MCE has been found to be more sensitive for detecting underlying coronary disease.<sup>9)</sup>

The potential for angiographic complications is present – even if reduced with a trans-radial approach.<sup>10)</sup> Thus, would a non-invasive measure be equally justified (and more convenient for patients)? There is certainly no shortage of options!

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