

Echocardiography to Assess Viability

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Abstract

The reduction in mortality from acute myocardial infarction in developed nations has resulted in a larger number of survivors with consequent left ventricular dysfunction. Management of these patients with ischaemic cardiomyopathy remains a challenge, since prognosis remains poor—and worse than that of non-ischaemic heart failure—despite appropriate use of implantable cardioverter-defibrillator and resynchronization devices. A large body of evidence accrued over the past three decades—predominantly retrospective in nature and observational in design—suggests that revascularization is superior to optimal medical therapy in patients with a large amount of ‘viable’ myocardium (i.e. dysfunctional myocardium at rest, which is not scar tissue and thus has, in theory, the potential to recover function after treatment). The global cardiology community has embraced this dogma, as many units worldwide place great emphasis upon the results of imaging tests (which aim to determine the presence and extent of myocardial ‘viability’) in guiding management strategy—specifically, whether to offer or deny a patient revascularization. This practice has been challenged recently by the results of the STICH trials, which suggested both lack of benefit from revascularization and no incremental benefit from viability testing. A number of imaging techniques exist for identifying viable myocardium. This chapter reviews the echocardiographic modalities that can be used to identify viable myocardium and compare these with other available techniques. We also analyse the results of the main STICH trial and the STICH viability sub-study and suggest an algorithm for integration of multi-modality imaging in the evaluation of myocardial viability.