FEATURE

Is There a Role for Deferred Stenting in Patients With STEMI?

Written by Emma Hitt Nichols, PhD

Patients who present with STEMI are frequently treated with primary percutaneous coronary intervention (PCI). In a keynote lecture, Hany Eteiba, MD, Glasgow Royal Infirmary, Glasgow, Scotland, United Kingdom discussed deferred stent deployment in the context of STEMI and presented evidence suggesting that deferred stenting in select patients may lead to lower rates of thrombotic complications.

In patients with STEMI, the goal of therapy is to restore normal blood flow, reduce any mechanical obstruction, reestablish normal myocardial perfusion, and prevent reocclusion. Where available, primary PCI is preferred over fibrinolytic therapy. Patients with STEMI frequently have a large thrombus burden. As a result, microvascular obstruction (MVO) due to distal embolization of the thrombus can occur in approximately one-third of successful coronary interventions. MVO has been associated with lower rates of event-free survival and has been identified as an independent predictor of adverse outcomes following STEMI. Another common complication of PCI is no-reflow, which tends to occur in patients with large thrombotic burden, long lesions, and long duration of ischemia. Unfortunately, there are currently no evidence-based therapies for this complication that have been shown to improve clinical outcomes.

These potential complications have caused some to question the benefit of immediate stenting in all patients with STEMI. Prof Eteiba hypothesized that thrombus burden could be reduced in select patients who have risk factors for no-reflow through continuation of antithrombotic and antiplatelet therapies with deferred stent placement for up to 16 hours. In the Deferred Stent Trial in STEMI [DEFER-STEMI; Carrick D et al. *J Am Coll Cardiol.* 2014], 101 patients with STEMI and risk factors for no-reflow were randomly assigned to undergo immediate or deferred stenting, with a median of 9 hours (range, 6 to 12 hours) to stenting. To be included in the trial, patients had to have at least 1 of the following risk factors: previous myocardial infarction (MI), age ≥65 years, initial TIMI grade of 0 to 1, thrombus burden with TIMI ≥2, small vessel diameter (≤2.5 mm), long lesion length (≥24 mm), persistent ST elevation, or ischemia lasting >6 hours. Patients who had abnormal flow in the culprit artery or who had received cardiogenic shock were excluded from the DEFER-STEMI trial. The primary end point was incidence of no- or slow-reflow, and the secondary end points included the occurrence of no-reflow and intraprocedural thrombotic events (IPTEs) in the main vessel or side branch.

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Patients who had undergone immediate stenting, as compared with patients who had undergone deferred stenting, had greater rates of no-reflow (TIMI 0/1; 14% vs 2%, respectively; $P=.03$), no- or slow-reflow (TIMI <3; 29% vs 6%, respectively; $P=.003$), and IPTEs (33% vs 10%; $P<.0001$).

In addition, incidence of MVO was higher, and median infarct size larger, in patients who underwent immediate stenting as compared with patients who underwent deferred stenting. Adverse events included recurrent MI in 2 patients, both in the deferred stenting arm. Prof Eteiba highlighted that a lesson learned from the DEFER-STEMI trial was that deferred stent placement should not be considered in patients with a mechanical obstruction.

Other trials conducted in Europe have had similar results. The MIMI trial found that no-reflow occurred in 10% of patients who underwent immediate stenting versus none with deferred stenting. Similarly, in the OTOCLAV trial, patients underwent stent placement 2, 6, or 30 days following STEMI, and 38% of patients received no stent placement at all.

Another important consideration in patients with STEMI is the occurrence of thrombosis following stent placement. The T-TIME trial is an ongoing study that has been designed to evaluate the potential benefit of intracoronary low-dose fibrinolysis therapy on reducing MVO. In this trial, 10 or 20 mg

of alteplase or placebo will be administered via thrombectomy catheter. Patients enrolled in the T-TIME study will be followed for 1 year and will receive clinical, angiographic, and magnetic resonance imaging outcomes.

In conclusion, Prof Eteiba stated that deferred stenting warrants further study to determine if this strategy can decrease no-reflow and IPTE complications without increasing the risk of other adverse events in patients with STEMI who require primary PCI. Prof Eteiba called for larger multicenter prospective studies to further evaluate the role of deferred stent placement in select patients with STEMI.

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