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A RANDOMISED CONTROLLED TRIAL OF DEFERRED STENTING VERSUS IMMEDIATE STENTING TO PREVENT NO-REFLOW IN ACUTE ST-ELEVATION MYOCARDIAL INFARCTION

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Introduction In primary percutaneous coronary intervention (PCI) for ST elevation myocardial infarction (STEMI), no-reflow after stenting may cause heart failure acutely and in the longer term. Currently there are no evidence-based treatments for no-reflow. We hypothesised that after initial myocardial reperfusion, deferring stent implantation for a limited period of time might reduce no-reflow and its sequelae compared to usual care with immediate stenting.

Methods A prospective randomised controlled trial in consecutive STEMI patients (NCT01717573). Patients with risk factors for no-reflow (eg, occluded artery (TIMI 0/1), heavy thrombus burden (TIMI 2+ thrombus grade)) were eligible if TIMI 3 coronary flow had been established by initial aspiration thrombectomy and/or balloon angioplasty. Randomisation was performed electronically to deferred stenting (4–16 h later) or usual care with immediate stenting. Deferred patients received intravenous tirofiban and subcutaneous enoxaparin during the period between randomisation and stenting. All patients received oral dual antiplatelet therapy. The primary end-point was the incidence of no-reflow, defined as the occurrence of TIMI 0/1 flow post stenting. Contrast-enhanced cardiac MRI was performed 2 days post-MI and all patients had prospective follow-up. The angiograms and clinical events were independently adjudicated.

Results Of 451 consecutive STEMI patients treated in our centre (11 March–22 November 2012), 101 patients (mean±SD age 60±12 years; 69% male, 13% diabetes, 7% previous MI) were randomised (n=52 to deferred stenting, n=49 immediate stenting). The clinical characteristics were similar in each group. In the deferred stent group, the median (IQR) time to deferred stenting was 8 (6, 11) hours. Compared with usual care with immediate stenting, no-reflow was significantly less frequent in the deferred stenting group: 0.0% versus 10% (p=0.005). Intra-procedural thrombotic events (IPTEs) were also less frequent with deferred stenting: 14% versus 41% (p=0.003). Contrast-enhanced MRI disclosed microvascular obstruction in 59% of patients in the immediate stenting group and 44% in the deferred stenting group (p=0.36). Killip class III heart failure occurred in two patients in the deferred stent group and in one patient in the immediately stented group. Recurrent MI <6h from randomisation occurred in two patients in the deferred group (1 culprit lesion and 1 non-culprit lesion) and no patients in the immediate stenting group.

Conclusions For the first time we have found that a strategy of deferred stenting in selected patients reduced no-reflow and IPTEs in primary PCI. Our intervention is pragmatic and potentially widely applicable. Our results support the rationale for a multicentre trial to assess the safety and cost-effectiveness of deferred stenting in primary PCI.