# Preventive PCI in Nonculprit Vessels Adds Benefit to PCI of Culprit Vessels in Patients With Acute STEMI

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Percutaneous coronary intervention (PCI) improves outcomes in patients with acute ST elevation myocardial infarction (STEMI). Nearly half of these patients have multivessel disease, however, and the benefit of concurrent preventive PCI in the non-infarct-related vessels has been uncertain. In fact, both the European [Steg PG et al. *Eur Heart J* 2012] (Class IIa; Level of Evidence B) and American [O'Gara PT et al. *Circulation* 2013] (Class III: Harm; Level of Evidence B) guidelines recommend PCI to the infarct artery only.

Keith G. Oldroyd, MBChB, MD, University of Glasgow, Glasgow, United Kingdom, presented the results of the Preventive Angioplasty in Acute Myocardial Infarction trial [PRAMI; Wald DS et al. *N Engl J Med* 2013], which was designed to determine whether performing preventive PCI in nonculprit vessels at the same time as primary PCI would reduce the combined incidence of death from cardiac causes, nonfatal myocardial infarction (MI), or refractory angina (RA).

PRAMI enrolled 465 patients (mean age, 62 years; 15% to 21% with diabetes; 33% to 39% with 3-vessel disease, with the remainder having 2-vessel disease) with acute STEMI and multivessel disease (defined as >50% stenosis in a noninfarct artery suitable for PCI). Following successful primary PCI of the infarct artery, participants were randomized to preventive PCI (n=234) or no preventive PCI (n=231). Follow-up occurred at 6 weeks and then annually. PRAMI was stopped early based on results indicating a clear benefit with preventive PCI.

Drug-eluting stent usage was ~60% in both groups. Either a glycoprotein IIb/IIIa inhibitor or bivalirudin was used in ~80% of subjects. All subjects received dual-antiplatelet therapy, and >90% were on statins. There was a high use of β-blockers (88% and 92%) and angiotensin-converting enzyme inhibitor or angiotensin receptor blockers (93% and 91%) in both groups.

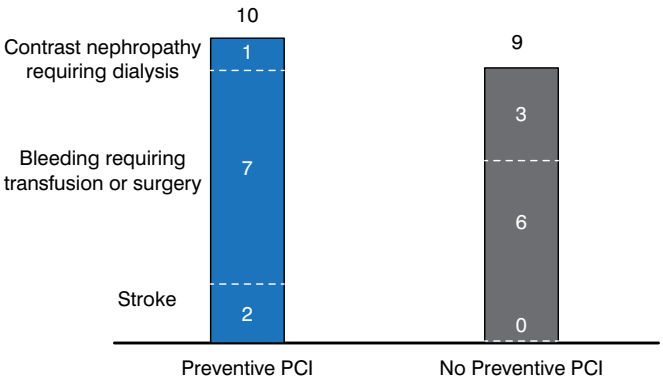
At a median follow-up of ~23 months, subjects undergoing preventive PCI in addition to PCI of the infarct artery had a 65% reduction of risk for the composite primary end point of cardiac death, nonfatal MI, or RA (21 vs 53 events; HR, 0.35; 95% CI, 0.21 to 0.58; p<.001). The results were similar when RA was removed as one of the composites of the primary end point (11 vs 27 events; HR, 0.36; 95% CI, 0.18 to 0.73; p=.004). Of note, all of the MIs included in the primary end point were spontaneous. Periprocedural MIs at the time of subsequent revascularization procedures were not counted. The benefit appeared early and was sustained despite a catch-up in repeat revascularizations in the no preventive PCI arm.

Procedural-related complications were similar in both groups (10 in the preventive PCI group vs 9 in the no preventive PCI group; Figure 1).

The level of stenosis in the nonculprit arteries in the no preventive PCI group was mostly in the range of 75% to 94% (n=130) or 50% to 74% (n=74), although there were a small number (n=27) with stenosis in the 95% to 99% range. There was an important relationship (p for trend <.01) between stenosis severity and event outcome (Table 1).

The results of PRAMI have not yet been accepted by the majority of the cardiology community; however, Prof. Oldroyd believes that the study has shown that preventive PCI in nonculprit vessels provides substantial additional benefit when performed along with PCI of culprit vessels in patients with acute STEMI.

Figure 1. Procedure-Related Complications




PCI=percutaneous coronary intervention.

Source: Wald DS et al. *N Engl J Med* 2013. Reproduced with permission from KG Oldroyd, MBChB, MD.

Table 1. Stenosis Severity and Outcomes

| Stenosis % | No Preventive PCI | Primary Outcome Event | % With Event |
|---|---|---|---|
| 50–74 | 74 | 10 | 14% (10/74)* |
| 75–94 | 130 | 32 | 23% (32/130)* |
| 95–99 | 27 | 11 | 47% (11/27)* |
| All | 231 | 53 | 23% (53/231) |

PCI=percutaneous coronary intervention. *p for trend <.01.

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