CABG versus PCI in people with type 2 diabetes and multivessel coronary disease: Has the dust finally settled?

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We are all well aware of the increasing prevalence of type 2 diabetes and the condition's negative impact on the cardiovascular system. Indeed, people with diabetes have up to four times greater risk of cardiovascular disease and up to three times increased risk of mortality when compared with people without the condition (Fox et al, 2004; Preis et al, 2009). Although myocardial events account for most deaths, the entire vascular system is subject to accelerated atherosclerosis.

To combat the diffuse atherosclerosis in the coronary tree, there are three different strategies – medical treatment, percutaneous coronary intervention (PCI) and coronary artery bypass grafting (CABG). For each individual, the treatment strategy will be determined by the degree of coronary artery disease in terms of the number of vessels affected, the number of clinically relevant lesions and, of course, comorbidity.

A previous lack of robust data

Until recently, decision-making regarding the optimal approach for complex coronary disease has been hindered by a lack of good randomised controlled trials, and the fact that much of the reported data have come from *post hoc* analyses of such studies. One example is a subgroup analysis from the COURAGE trial, which suggested that the addition of early PCI to optimal medical therapy did not reduce the rate of adverse events after a median follow-up of 4.6 years. In all subgroups the composite outcome of death or myocardial infarction (MI) was similar in participants who underwent PCI and those who did not (Maron et al, 2011).

However, the BARI trial reported a significant survival advantage in favour of CABG (54.5% versus 42.1% [P=0.025]) among people with diabetes, with a follow-up of 10 years (BARI Investigators, 2007).

A meta-analysis including patients from ten trials showed no advantage of coronary artery bypass graft over PCI in people without diabetes. However, in people with diabetes, CABG provided significantly better long-term survival (Hlatky et al, 2009).

Of course the early trials of angioplasty used only bare-metal stents, and techniques for PCI have improved considerably with the addition of drug-eluting stents.

Recent clarifying evidence

The matter has been further clarified by data from the FREEDOM trial (Farkouh et al, 2012). The investigators sought to discover whether aggressive medical therapy and the use of drug-eluting stents could alter the revascularisation approach for people with diabetes and multivessel coronary disease. They concluded that for people with diabetes and advanced coronary artery disease, CABG was superior to PCI in that, after 5 years of follow-up, it significantly reduced the rates of all-cause mortality (18.7% versus 26.6% [P=0.049]) and proven MI (6% versus 13.9% [P=0.001]), although with a negative effect of a higher risk of stroke (5.2% versus 2.4% [P=0.03]). Some 1900 participants were randomised. The trial was well conducted and has substantial implications.

The upshot

Of course, decisions will be down to the individual clinician together with the person with diabetes, but most cardiologists now accept that CABG has become the treatment of choice for those people with the condition who have complex multivessel coronary disease. This has become a class IIA recommendation (indicating that the "weight of evidence/opinion is in favour of usefulness/efficacy") in the European Society of Cardiology's *Diabetes, Pre-Diabetes and Cardiovascular Diseases* September 2013 guideline (available at: www.escardio.org/guidelines [accessed 24.09.13]). ■