

A Surgeon's View of Left Main Stenosis

How the SYNTAX data look from the other side.

BY DAVID TAGGART, MD

During the last 2 decades, coronary artery bypass grafting (CABG) had traditionally been considered the gold standard treatment for patients with significant left main stem stenosis. Indeed, the 2005 American College of Cardiology/American Heart Association guidelines for CABG promoted this viewpoint, whereas the guidelines for percutaneous coronary intervention (PCI) considered this a class III indication for patients with left main stem stenosis (ie, a procedure that may not be useful, but which may indeed be harmful). Nevertheless, interventional clinical practice is changing rapidly, and in a relatively recent survey of treatment of left main stem stenosis, up to 30% of European patients and 18% of North American patients received PCI rather than CABG.

Left main stem stenosis is a relatively common phenomenon that is present in up to 10% of patients undergoing coronary angiography and up to 30% of patients currently receiving CABG. The rationale for PCI in left main stenosis is that it is a relatively proximal target of good diameter. On the other hand, two potentially unattractive features for PCI¹ are that (1) in the majority of patients, the disease is distal or at the bifurcation, and these lesions are at a high risk of restenosis with PCI, and (2) up to 90% of patients with left main stenosis also have multivessel coronary artery disease

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with which there is a survival benefit with CABG (in comparison to PCI) with the presence of left main stem stenosis.²

RECENT DATA

Several registries have been published recently documenting treatment of left main stenosis initially with PCI using bare-metal stents, and more recently, with drug-eluting stents. The results of these studies are summarized elsewhere.¹ Although these studies have demonstrated low in-hospital mortality for most patients receiving stents, they have also demonstrated a significant increase in death within 2 years and a marked increase in the need for repeat intervention. A particularly worrisome feature is that restenosis in this critical location has frequently been asymptomatic.¹ However, the one situation in which the results of PCI appear to be very encouraging is in patients with ostial and mid-shaft lesions with low in-hospital mortality, rel-

actively low mortality at longer follow-up, and a reduction in the need for reintervention compared to distal lesions.

Recently, two randomized trials have been reported regarding PCI versus CABG in patients with left main stem stenosis. The more important is the SYNTAX trial,³ which recently reported 2-year outcomes for left main intervention at the 2009 Transcatheter Cardiovascular Therapeutics meeting.⁴ SYNTAX is a landmark trial because in addition to its randomized component involving 1,800 patients, it also maintained a parallel nested registry of patients who had been ineligible for randomization (1,077 CABG patients whose disease was considered too complex for randomization and 198 PCI patients who were considered ineligible for CABG).

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Accepting that the primary point of noninferiority was not reached for PCI versus CABG, and that therefore, any further comparison of subgroups is simply hypothesis generating, SYNTAX nevertheless reported⁴ that in left main stenosis patients with lower SYNTAX scores (under 33), 2-year mortality was lower ($P = .02$) in 221 PCI patients (2.7%) than in 196 CABG patients (7.9%), but there was no difference in overall major adverse cardiac and cerebrovascular events (MACCE) (18.3% vs 20.5%; $P = .48$). In contrast, in those left main stenosis patients with a higher SYNTAX score (above 32), there was a markedly lower mortality ($P = .04$) in 149 CABG patients (4.1%) than in 135 PCI patients (10.4%) allied to a significantly lower repeat revascularization (9% vs 22%; $P = .003$), but with an increased risk of stroke (3.7% vs 0.9%; $P = .01$). Taken together with 507 patients with left main stenosis in the CABG registry (ie, disease too complex for PCI), this means that approximately two-thirds of all patients with left main stenosis are, in effect, candidates only for surgery.

Distinct from left main stenosis, in the subset of 1,095 patients with three-vessel coronary artery disease (CABG = 549; PCI = 546),⁵ the overall respective rates of death (4.1% vs 6.5%; $P = .07$), cardiac death (2.3% vs 4.5%; $P = .05$), stroke (2.3% vs 1.7%; $P = .47$), myocardial infarction (2.8% vs 6.1%; $P = .009$), repeat revascularization (7.5% vs 17.4%; $P < .001$), and MACCE (14.4% vs 23.8%; $P < .001$) strongly favored CABG. Only in the tercile of patients with the lowest SYNTAX scores (< 23)

was there no significant difference in MACCE between the two groups. It must also be emphasized that many previous randomized controlled trials and registries have shown that the survival and other clinical benefits of CABG tend to accrue with time, often appearing at 2 to 3 years, and then persisting for up to 10 years.² Whether the same results will be maintained for the SYNTAX trial remains to be seen.

The excellent contemporary results of CABG should also be considered. In the United Kingdom, during the 5-year period from 2004 to 2008, approximately 78,000 elective patients underwent CABG with a mortality of 1.1%, and there were 33,000 urgent patients with a mortality of 2.6%. There were more than 30,000 patients with left main stem stenosis, with an in-hospital mortality of 2.5% (vs 1.5% in approximately 70,000 with no left main stenosis).

CONCLUSION

The results of the SYNTAX trial have certainly encouraged all clinicians to re-evaluate the scientific evidence. At this point, the surgical community must accept that, at least for patients with left main stem stenosis with lower SYNTAX scores, there are comparable results for PCI with CABG up to 2 years. On the other hand, the interventional community also needs to accept that for a significant proportion of left main stem stenosis, CABG was the best treatment in the SYNTAX trial. Taking 500 patients in the registry with left main stem stenosis (who were considered too complex for PCI) and the almost 300 patients with SYNTAX scores greater than 32 in the randomized component effectively means that at least two-thirds of all patients with left main stem stenosis are only candidates for CABG. ■

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