Stenting Is Becoming Option for Left Main Lesions

BY KERRI WACHTER
Senior Writer

ARLINGTON, VA. — Although the treatment of left main coronary artery lesions remains in the realm of cardiac surgery, some data suggest that there may be a role for drug-eluting stents, said Dr. Samin K. Sharma at a meeting sponsored by the Cardiovascular Research Institute at Washington Hospital Center.

Between 5% and 7% of patients undergoing cardiac catheterization have unprotected left main coronary artery (LMCA) lesions, and almost two-thirds of these patients have distal bifurcation lesions. "The key is that the distal bifurcation is the most common lesion of the left main," said Dr. Sharma, who is director of the cardiac catheterization laboratory at Mount Sinai Medical Center in New York.

Significant LMCA lesions have been considered primarily a surgical disease. Even the most recent update of percutaneous intervention guidelines (American College of Cardiology/American Heart Association/Society for Cardiovascular Angiography and Interventions 2005 Guideline Update for Percutaneous Intervention) categorized unprotected left main intervention as a class III indication.

Caution in using stents for LMCA is not without good reason, as there are several problems associated with stenting a left main lesion, compared with surgery, including lower rates of procedural success and higher rates of complications, stent thrombosis, restenosis and target lesion revascularization (TLR), and sudden death.

Several studies suggest a 10% rate of cardiac death at follow-up and a 22% restenosis rate for LMCA treated with bare metal stents. The patient's baseline clinical status and left ventricle function appear to be important predictors of outcome, on the basis of these trials, said Dr. Sharma.

However, results with drug-eluting stents (DESs) appear promising. In one study, patients with LMCA stenosis who were treated with the Cypher sirolimus-eluting stent had a 1-year major adverse cardiovascular event–free survival rate of 98%, compared with 81% for those treated with bare metal stents (J. Am. Coll. Cardiol. 2005;45:351-6).

In one analysis of data from Mount Sinai Medical Center, the TLR rate was 30% for 27 patients who received bare metal stents for unprotected LMCA bifurcation lesions, compared with 8% for 50 patients who received sirolimus-eluting stents, said Dr. Sharma, who is also codirector of the Cardiovascular Institute at Mount Sinai. In most of the procedures performed there, the simultaneous kissing stent technique was used. This technique involves advancing a stent to the side branch, followed by one to the main vessel. The two stents are then simultaneously pulled back to the bifurcation and then into the proximal part of the main vessel, configuring a Y (with the stem of the Y in the main vessel, completely covering the proximal end of the lesion, one arm in the distal main vessel, and one arm in the side branch).

The cutting balloon technique has also been used on the ostial circumflex for the majority of patients. Cutting balloon angioplasty uses atherotomes (microsurgical blades), which are attached to a balloon, expand radially, and cut longitudinal incisions in the plaque and vessel, relieving its hoop stress. The cutting balloon is engineered to protect the vessel from the edges of the atherotomes when it is deflated, minimizing the risk of trauma to the vessel as the balloon is passed to and from the target lesion.

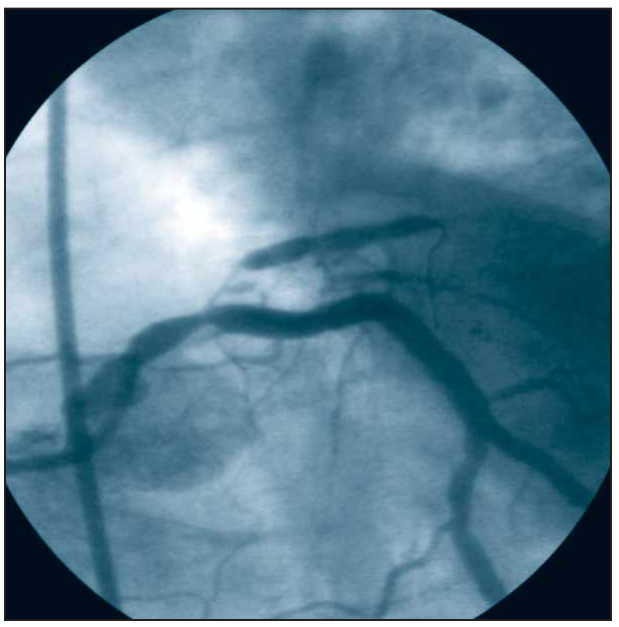
Every patient in the analysis had angiographic follow-up 4 months and 1 year after the procedure. None of the patients had delayed thrombosis, said Dr. Sharma.

Of the 180 patients treated with DESs for unprotected LMCA at Mount Sinai, the 78 patients with ostial lesions and the 38 patients with more distal lesions had no restenosis (0% TLR rate), but the 64 patients with bifurcations had a 9% TLR rate.

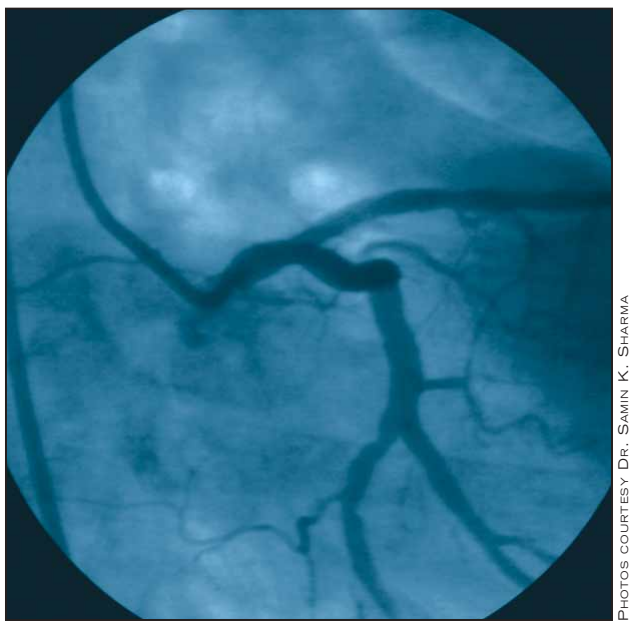
Dr. Sharma noted that in one recent study of patients with unprotected LMCA disease, mortality was greater at 1 year among the 123 patients who underwent coronary artery bypass grafting (CABG) (15%), compared with the 50 patients who received DESs (4%). However, tricuspid valve replacement at 1 year was more common in the percutaneous coronary intervention group: 13% for DES, compared with 5% for CABG (J. Am. Coll. Cardiol. 2006;47:864-70).

The SYNTAX (Synergy Between PCI With Taxus and Cardiac Surgery) trial, which began enrollment last year, will hopefully provide a clearer picture. The trial will compare the performance of DES with that of CABG in the most complex patient subsets: those with coronary artery disease in all three coronary arteries, in the LMCA, or both.

Dr. Sharma had no significant financial relationships to disclose, he said. ■



A coronary angiogram taken before stenting reveals occlusion of the left main coronary artery.



This angiogram, taken after stent placement, shows that flow in the LMCA was restored.

PHOTOS COURTESY DR. SAMIN K. SHARMA

Closed-Cell Carotid Stents Safer Than Open-Cell Models

BY MITCHEL L. ZOLER
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PHILADELPHIA — Closed-cell stents were more effective than open-cell stents for preventing periprocedural adverse events in patients with symptomatic carotid-artery disease from a registry of about 700 patients, Dr. Joseph P. Hart said at the Vascular Annual Meeting, sponsored by the Society for Vascular Surgery.

"We're not just trying to establish flow in the carotid. We're also trying to prevent current and future embolization, and the thought [behind] closed-cell stents is that they do a better job of keeping debris out of the flow channel and thus out of the brain," said Dr. Hart, a vascular surgeon at the University of Rochester (N.Y.).

"It's a very attractive hypothesis, but it's based on a relatively small number of events. An analysis of a larger series of patients would be valuable," commented Dr. Robert Hobson, a professor of vascular surgery at the University of Medicine and Dentistry of New Jersey in Newark.

The categorization of stents as open- or closed-cell refers to the pattern of metal wires that make up a stent's structure. Open-cell stents are made of parallel wire loops with few wires that cross these loops. The resulting pattern has lots of open spaces. Closed-cell stents have many crossing wires, which creates much smaller spaces between the wires. In theory, closed cells should do a better job of trapping plaque against the arterial wall and preventing pieces of plaque from protruding between the stent's struts and into the carotid lumen.

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The registry data analyzed by Dr. Hart and his associates came from two Belgian hospitals: St. Blasius in Dendermonde, and Imelda Hospital in Bonheiden. They reviewed the outcomes of 701 patients who had a carotid stent successfully placed during January 2001 through August 2005. The series included 304 patients with symptoms of carotid-artery stenosis, and 397 patients who were asymptomatic.

The incidence of death, stroke, or transient ischemic attack within 30 days of stent placement was 3.7% among all 701 patients.

Patients who received close- or open-cell stents had no significant difference in their periprocedural adverse-event rate for the entire patient series. But in an analysis that focused only on symptomatic patients, those who received open-cell stents were fourfold more likely to die or have a stroke or transient ischemic attack during the first 30 days, compared with patients who got closed-cell stents, Dr. Hart reported. This difference was statistically significant. A significant difference between the two stent designs was not seen in the asymptomatic patients.

Another analysis in the same patients looked at differences in 30-day outcomes relative to the type of embolic-protection device used. The devices were divided into two types: those that are placed eccentrically in the distal carotid artery, and those placed concentrically. Eccentrically placed devices are believed to work better for trapping emboli.

The analysis showed that concentrically-placed devices were associated with a threefold increased risk of adverse events, compared with devices that require eccentric placement in symptomatic patients, but this difference was not statistically significant, Dr. Hart said.

At the time of the meeting, two carotid stents were being marketed in the United States. The Acculink carotid stent, the first model sold in the United States, has an open-cell design. The Xact stent is a closed-cell model. ■

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