Side Vessel Drives Stent Choice for Bifurcations

**BY KERRI WACHTER**

Senior Writer

ARLINGTON, Va. — The approach to treating bifurcated lesions—using one stent or two—should depend on the size of the side branch, recommended Dr. Samir K. Sharma at a meeting sponsored by the Cardiovascular Research Institute at Washington Hospital Center.

About 15% of coronary interventions involve some type of bifurcation. These lesions are often complex and are associated with greater lumen loss and longer stents, said Dr. Sharma, director of the cardiac catheterization laboratory at Mount Sinai Medical Center in New York. He offered a treatment algorithm for bifurcations, based on side branch size:

- **Large.** If the side branch is greater than 2.5 mm, “we all believe that we should use two stents,” said Dr. Sharma. He noted that there are no data from randomized trials showing that this approach is better in terms of restenosis.
- **Medium.** With side branches of 2.25-2.5 mm diameter, stent the main vessel but avoid putting a stent in the side branch.
- **Small.** If the side branch is smaller than 2.25 mm, stent only the main branch and leave the wire in the side branch.

A number of stent techniques have been developed to deal with the special challenges of bifurcated lesions, Dr. Sharma said. The conventional technique for bifurcations—developed during the bare-metal stent era—is to stent the main vessel, with plaque modification of the side branch and provisional stenting of the side branch as necessary. “Even with a drug-eluting stent [this technique] seems to be the optimal treatment in the majority of bifurcation lesions,” said Dr. Sharma. If the result in the side branch is suboptimal, a stent will be required. However, if there is a dissection in the side branch prior to stenting the main vessel, then the side branch should be stented first, followed by the main vessel.

The crush technique involves advancing a stent into the side branch (without expansion) and advancing another stent into the main vessel (without expansion), fully covering the bifurcation. The side branch stent is retracted into the main vessel, then expanded. The main vessel stent is then expanded. The side branch stent is crushed against the main branch stent.

“The data have shown that you need to do a follow-up kissing balloon dilation. If you don’t, there is a high incidence in the event rate, in terms of restenosis and the major adverse cardiac events,” said Dr. Sharma, who is also director of the Cardiovascular Institute at Mount Sinai Medical Center.

The kissing balloon dilation is more important for the side branch than for the main vessel. The thrombosis rate with the crush technique is about 2%-3%. The simultaneous kissing stent 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). “This is very suitable for the distal left main bifurcation but also for left anterior descending coronary artery diagonals,” said Dr. Sharma. He recommends initial inflation of about 8-10 atmospheres (atm), then deflation, then expansion up to 18-20 atm and deflation. This should be followed up with simultaneous balloon inflation at 8-10 atm. The researchers compared the simultaneous kissing stent and the conventional technique: target lesion revascularization was 18% for the conventional technique and 5% for the kissing stent technique. There was no late thrombosis (Am J Cardiol 2004;94:913-7).

Drug-Eluting Stents Are as Safe as Bare Metal in MI Patients

**BY BRUCE JANCIN**

Denver Bureau

CHICAGO — The use of drug-eluting stents in patients with ST-segment elevation myocardial infarction was associated with similar cardiac event rates similar to those in patients treated with bare-metal stents, researchers reported here at the annual meeting of the Society for Cardiovascular Angiography and Interventions.

“We expected to demonstrate that drug-eluting stents were a safe strategy short-term for acute MI patients. I did also expect to see lower revascularization rates with drug-eluting stents over the next year. We were somewhat surprised to see there was no difference—and not even a trend—for a lower reintervention rate,” said Dr. Shapiro of Lankenau Institute for Medical Research, Wynnewood, Pa.

Nevertheless, he added, registry data such as these can’t be considered the final word on effectiveness since the bare-metal stent (BMS) and drug-eluting stent (DES) populations differed in key ways.

On the one hand, the DES group was at higher risk and had more noncardiac comorbid conditions. On the other hand, the group also received more aggressive adjunctive pharmacotherapy in line with changes in clinical practice between 2000-2001, when the BMS patients were enrolled, and 2004, when the DES patients entered the registry. This study demonstrates that there’s no apparent downside to using drug-eluting stents in MI patients, as some people fear,” said Dr. Shapiro.

“It appears from these registry data to be safe and reasonable to use drug-eluting stents. Whether they’re better than bare metal stents or not will be borne out as we do prospective randomized trials,” he said.

The NHLBI Dynamic Registry has been recruiting patients since 1997 to provide pictures of the shifting landscape of real-world percutaneous intervention free of industry sponsorship. The registry does not enroll a random sample of coronary artery disease patients. Instead, it features an enriched population of women and minorities, groups historically underrepresented in clinical trials.

Dr. Shapiro reported on 376 patients who received BMSs and 221 who got DESs for ST-segment elevation MI (STEMI). Many of the patients underwent primary PCI, but others received thrombolytic therapy first and then underwent urgent rescue or elective PCI. Sirolimus was the drug used in 65% of the DESs, with paclitaxel accounting for the remainder. The 1-year rate of the combined end point of death, repeat myocardial infarction, coronary artery bypass graft surgery, or PCI following hospital discharge was 20.7% in the BMS group and 19.3% in the DES cohort.

“The differences between the two groups in terms of any of the individual components of the composite end point also were nonsignificant. In terms of in-hospital complications and adverse events, the only significant differences between the two groups were in the rates of persistent flow reduction—1.1% in the BMS group and 3.4% with DESs—and prolonged chest pain, which occurred in 8.2% of patients in the BMS group and was half as common in those with a DES.

Twenty-six percent of the DES group had diabetes, compared with 19% of the BMS patients, a significant difference. Renal insufficiency also was significantly more common in the DES group.

There were marked differences in procedural anticoagulation. Of the DES patients, 87% were on a glycoprotein IIb/IIIa inhibitor, compared with 65% of the BMS group. The DES group also received less unfractonated heparin, more low-molecular-weight heparin, and more clopidogrel.

The use of ACE inhibitors, statins, and clopidogrel at hospital discharge was more common in the DES group, in keeping with national practice guidelines in place in 2004.