

One-Year Outcomes Better With Off-Pump CABG

BY SHARON WORCESTER

Southeast Bureau

TUCSON, ARIZ. — The graft failure rate was similar in on- and off-pump coronary artery bypass graft patients in a recent trial, but clinical outcomes at 1 year were better in the off-pump group, Dr. Mitchell J. Magee reported at the annual meeting of the Southern Thoracic Surgical Association.

The Project of Ex Vivo Vein Graft Engineering via Transfection (PREVENT) IV trial was a multicenter placebo-controlled trial of edifoligide to prevent vein graft failure from neointimal hyperplasia. A total of 3,014 patients undergoing primary isolated CABG with at least two planned saphenous vein grafts were enrolled, and the choice of surgical technique was at the surgeon's discretion. The reported study is a nonrandomized subgroup analysis of outcomes at 1 and 2 years in the on- vs. off-pump CABG patients.

A total of 2,377 patients underwent on-pump CABG, and 637 underwent off-pump CABG. One-year angiographic data in 1,920 patients who had a total of 4,736 grafts (representing 80% of the planned angiographic cohort) showed that vein graft failure, defined as 75% or greater stenosis or occlusion, was higher than expected, but similar in both groups at about 24%, said Dr. Magee.

One-year major adverse cardiac or cerebral events

(MACCE) follow-up in 99.4% of enrolled patients showed that death, myocardial infarction, and/or stroke occurred in 15.4% vs. 11.3% of on- and off-pump patients, respectively. The difference remained statistically significant after adjusting for significant predictors of MACCE, including age, gender, heart failure, atrial fibrillation, and smoking (adjusted hazard ratio of 1.33). At 2-year follow-up, however, no differences in MACCE were seen between the two groups.

The findings suggest the off-pump approach offers benefits unrelated to vein graft patency, said Dr. Magee, noting that patients in the on-pump group were significantly younger, and had more COPD, congestive heart failure, lower mean ejection fraction, worse target artery quality, and longer operating times. They also were more likely to have urgent vs. elective surgery and four- or five-vessel (vs. three-vessel) CABG.

However, the effects of poor target artery quality and endoscopic (vs. open) harvest technique, which both had an adverse effect on graft patency at 1 year in both on- and off-pump patients, were more pronounced in the off-pump group, noted Dr. Magee, of the Cardiopulmonary Research Science and Technology Institute, Dallas.

With poor vs. good target artery quality, the likelihood of graft failure was 1.9 times greater in off-pump than on-pump patients. And with endoscopic harvest technique, the likelihood of failure was 1.7 times greater in off-pump vs.

on-pump patients. This outcome may be the result of a propensity in off-pump patients to have a hypercoagulable condition, which when combined with the factors that had an impact on graft failure—since these factors might also aggravate endothelial injury—could adversely affect outcomes in off-pump vs. on-pump patients, he suggested.

The higher-than-expected graft failure rate seen in this large patient population (compared with others reported in the literature) likely reflects current practice with the challenging patient population and reduced target artery quality typically encountered when doing these procedures, he said.

As for the loss of overall benefit at 2 years in off- vs. on-pump CABG, he speculated that patient factors are to blame. "I can only suspect that the main benefits of off-pump surgery are primarily in the perioperative period, and that perhaps between 1 and 2 years, other patient factors, progression of comorbid disease, or development of comorbid disease, have an effect on MACCE ... and offset the benefit that we see in that early perioperative period."

In terms of how the findings will affect his management of CABG patients, Dr. Magee said that in the absence of other factors that would sway him to perform off-pump CABG he will have a lower threshold for performing on-pump CABG in patients with poor target artery quality, endoscopic harvest, and multiple targets also perceived to be of poor quality. ■

Off-Pump Coronary Bypass Boosts Women's Outcomes

BY MITCHEL L. ZOLER

Philadelphia Bureau

CHICAGO — Off-pump coronary bypass produced outcomes in women that closely tracked the off-pump results in men.

In other words, performing coronary artery bypass graft surgery (CABG) off pump "narrowed the gender-based disparity in outcomes" that occurs with conventional, on-pump bypass surgery, based on a review of more than 11,000 procedures done at Emory University in Atlanta since 1997, Dr. John D. Puskas said at the annual scientific sessions of the American Heart Association.

The finding that off-pump bypass was especially beneficial in women confirmed a previously reported result from an analysis of U.S. data on bypass outcomes collected by the Society of Thoracic Surgeons. The agreement of the two findings

means that cardiac surgeons can conclude with confidence that "we should do more off-pump bypass surgery, especially in women," said Dr. Puskas, associate chief of cardiothoracic surgery at Emory.

The Emory study involved 11,413 consecutive patients who underwent CABG surgery during January 1997–May 2005. The only patients excluded were those who had a redo bypass procedure, and those who had another type of concurrent surgery, such as valve replacement. The group included 3,248 women (28%) and 8,165 men (72%). Off-pump bypass was done in 4,492 patients (39%), of whom 1,381 were women.

Overall, off-pump surgery resulted in reduced rates of death, 1.4%, compared with a 2.4% rate with conventional bypass surgery; stroke, 1.2%, compared with 2.0%; and total major adverse events, 2.9%, compared with 4.8%

Among women, actual mortality following off-pump bypass was cut by 54%, compared with expected mortality. This substantial beneficial effect of off-pump surgery contrasted with conventional bypass, which was linked to a 38% increase in the actual rate of death among women, compared with the expected rate (see box). Men also showed a benefit from off-pump surgery, but the drop in expected deaths was not nearly as dramatic as it was in women.

Women who underwent off-pump bypass had a risk-adjusted 29% reduced risk for death, compared with men, and a 4% reduced risk for all major adverse coronary events. Statistically, the rate of these and all other complications was no different in women and men.

In contrast, women treated with con-

ventional bypass had a risk-adjusted 60% higher rate of death, and a 71% higher rate of all major adverse events, compared with men, documenting the statistically significant difference in the rate of bad outcomes in women, compared with men.

Off-pump bypass has now become routine at Emory, but nationally in the United States it remains underused, said Dr. Puskas. In 1997, when off-pump bypass began at Emory, 10%-20% of CABG surgeries were done off pump. But off-pump use gradually rose, and by 2005, the most recent year with full data available, 80% of all bypass surgeries at Emory were done off pump, he said in an interview. But nationwide, 22% of all bypass surgery in 2005 was done off pump, according to the data collected by the Society of Thoracic Surgeons, Dr. Puskas said. ■



The findings confirm that 'we should do more off-pump bypass surgery, especially in women.'

DR. PUSKAS

Effect of Off-Pump CABG Surgery on Mortality

Mortality

Treatment Group	Observed (O)	Expected (E)	O/E Ratio
Women			
Off-pump bypass	1.52%	3.33%	0.46
Conventional bypass	4.07%	2.95%	1.38
Men			
Off-pump bypass	1.29%	1.86%	0.69
Conventional bypass	1.80%	1.73%	1.04

Note: Based on findings from a total of 11,413 CABG surgeries at Emory University, 1997-2005.

Source: Dr. Puskas

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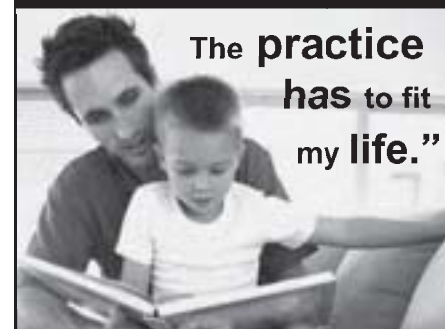
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