

black vs 121 mm Hg white; $p=0.308$). Office systolic BP was a significant predictor of CIMT ($p=0.009$).

The correlation between CIMT and systolic BP was significant ($r=0.239$; $p=0.012$), but there was no significant correlation with any lipid subfraction. The ethnic difference in CIMT between blacks and whites (0.477 mm black vs 0.425 mm white; $p=0.001$) was significant.

The present study showed significant ethnic differences in BMI, 24-hour ambulatory BP (systolic), and fasting glucose when using traditional markers of metabolic syndrome. No significant correlation between any CIMT and lipid subfractions was observed, but there was a statistically significant correlation with office systolic BP. Indeed, office rather than ambulatory BP was the most significant predictor of CIMT.

These data suggest that the main difference observed in CIMT between blacks and whites may not be related to traditional markers of metabolic syndrome. Given the low but statistically significant correlation with BP, there may be additional factors that play a role in the genesis of atherosclerosis in different ethnic groups.

CIMT has been suggested as a surrogate marker for coronary and peripheral artery disease because it is easily obtained by a noninvasive test, and is therefore recommended by guidelines for CV risk stratification, particularly in patients at intermediate risk [Stein JH et al. *J Am Soc Echocardiography* 2008]. Whether it should replace traditional metabolic syndrome markers in predicting the risk of CVD events and mortality has yet to be determined.

Multi-arterial Grafting Is Effective but Underused

Written by Rita Buckley

Edward B. Savage, MD, Cleveland Clinic Florida, Weston, Florida, USA, reviewed the facts that support multiarterial bypass grafting, discussed complications, and reviewed circumstances for favorable outcomes.

The left internal thoracic artery (LITA) is universally accepted as the best conduit for the left anterior descending artery in coronary artery bypass graft surgery (CABG) and is routinely used in over 90% of CABG procedures [Tatoulis J et al. *Ann Thorac Surg* 2011]. It reduces morbidity and mortality compared with the use of saphenous vein grafts (SVGs) [Slaughter MS. *Circulation* 2011].

To date, only the benefit of the single internal thoracic artery (SITA) has been proven by randomized trials.

However, observational studies on the use of bilateral ITA (BITA) have shown similar improved outcomes when compared with LITA and SVG. Likewise, a recent propensity score-matched trial of concomitant radial artery (RA) versus second ITA in 1001 CABG patients found significant overall survival ($p=0.022$) and major cardiac and cerebrovascular event-free survival ($p<0.001$) using the ITA rather than RA grafts [Ruttman E et al. *Circulation* 2011].

Even more recently, Galbut et al. [*J Thorac Cardiovasc Surg* 2012] demonstrated that broadly applied BITA compared with SITA grafting in propensity-matched patients provides enhanced long-term survival with no increase in operative mortality or morbidity for patients with normal and reduced ejection fraction.

Still, multiple arterial revascularization is performed in <13% of CABG procedures, with the RA most commonly used as the second conduit of choice [Ruttman E et al. *Circulation* 2011]. According to Slaughter [*Circulation* 2011], this is of concern given the known limitations of the RA, including susceptibility to vasospasm, potential calcification and poor quality in elderly patients, and the need for a proximal anastomosis with a small diameter conduit.

The right ITA (RITA), though biologically identical to the LITA, has been used less often [Tatoulis J et al. *Ann Thorac Surg* 2011]. Many institutions and cardiac surgeons either never or infrequently use the RITA in CABG. Reasons that RITA is used less frequently may include additional time to harvest, concerns over deep sternal wound infection, myocardial hypoperfusion, unfamiliarity, lack of randomized trials, and insufficient patency data [Tatoulis J et al. *Ann Thorac Surg* 2011].

After a study of 5766 patients and 991 angiograms, Tatoulis et al. [*Ann Thorac Surg* 2011] found evidence to reconsider RITA. Late patencies of RITA were excellent, equivalent to LITA for identical territories, always better than RAs ($p<0.01$) and SVGs ($p<0.001$), and remained free of atheroma. Use of RITA in addition to LITA was associated with excellent survival in triple vessel coronary disease (10-year survival, 89%).

According to Dr. Savage, impediments to the use of multiarterial grafting include higher incidence of sternal wound infection; longer duration of surgery; and increased technical difficulty, especially with branched grafts. However, each additional ITA used improves survival and freedom from major adverse cardiac and cerebrovascular events, and skeletonization of the ITA reduces risk of wound infection. He reported that for most patients, multiarterial grafting improves long-term outcomes without significantly increasing perioperative risk.