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TOTAL ARTERIAL REVASCULARIZATION OF

TRIPLE VESSEL CORONARY DISEASE BASED ON COMBINED INTERNAL THORACIC AND RADIAL ARTERY GRAFTS

To the Editor:

We read with great interest the article by Buxton and colleagues.¹ The study rightly focuses the spotlight on the topic of total arterial revascularization (TAR). Indeed, given the continuously improving and expanding application of newer drug-eluting percutaneous coronary stents, TAR likely represents the future of coronary artery bypass graft surgery. We wish to make a few comments on this important study.

The authors' finding that radial and internal thoracic artery (ITA)-based TAR is associated with a substantial 15-year survival benefit compared with traditional left ITA plus additional vein grafts operation confirm the findings previously reported in a 2009 study.² That study, not discussed by Buxton and colleagues,¹ also found that the benefits of TAR manifest particularly in triple-vessel disease and are less prominent in cases of double-vessel disease.² However, the fact that the series by Buxton and colleagues¹ includes patients who were substantially older (mean age 70 years vs 61 years) complements previous data and supports a potential claim that the TAR benefit is present across age groups.

Another observation implied in the study by Zacharias and colleagues² is that the benefits of TAR depend on the extent of

completeness of revascularization—more complete revascularization leads to greater TAR benefit. This issue was not directly addressed in the analysis.¹ Indeed, both studies had a comparable (10%-12%) portion of their arterial-only grafting triple-vessel patients receiving fewer than 3 grafts (ie, were incompletely revascularized). Accordingly, because of this complete revascularization effect, we suggest that the TAR benefit reported by Buxton and colleagues (hazard ratio, 0.79) may underestimate the true late survival effect.¹ The corresponding TAR effect reported by Zacharias and colleagues² had a hazard ratio of 0.58. It is perhaps ideal to reserve the term TAR for cases of complete revascularization only.

The triple-vessel coronary artery disease surgical series analyzed by Buxton and colleagues¹ is truly remarkable, with arterial-only grafting used in an exemplary 79% compared with a low 21% left ITA/additional vein graft use, with the latter seemingly reserved mostly for older patients.¹ This multicenter experience is in sharp contrast to the prevailing coronary artery bypass graft practice in the United States (~90% left ITA/saphenous vein graft) and reflects the enviable progress of coronary artery bypass graft surgery in Australia. As good as this all-arterial use rate is, current data suggest it can potentially be even higher based on evidence that left ITA with radial artery-based multiarterial coronary artery bypass graft in elderly persons (ie, older than age 70 years) is associated with equivalent or better survival benefit to that achieved in younger patients.³

We hope this excellent study will provide impetus for the cardiac surgery community to embrace multiarterial—indeed TAR—coronary artery bypass graft surgery.

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