Re: The effect of patient sex on survival in patients undergoing isolated coronary artery bypass surgery receiving a radial artery

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The effect of gender on outcomes of coronary artery bypass surgery (CABG) is complex and contradictory results have been reported. Some studies document minimal differences in perioperative mortality among the genders [1], while others note superior outcomes in males [2] while still others report better outcomes in females [3]. Although subject to extensive speculation as to the potential mechanisms behind these findings, the true causes of gender-based CABG outcome differences, if indeed present, remain obscure. What seems indisputable, however, is that females present for CABG at an older age, require more urgent interventions, often have an unfavourable risk profile compared with their male counter parts and receive less total coronary grafts, with a higher percentage of venous versus arterial grafts [4]. We have previously argued that females’ smaller size (more haemodilution and transfusions) may contribute to their worse acute outcomes [5]. Even less is known about the gender-specific differences in long-term survival.

Within this context, Pullan et al. [6] present in this issue their extensive experience with multiple arterial CABG and the impact of this grafting strategy on the acute and long-term survival among women and men. Their series was composed of 13 369 patients undergoing isolated first-time CABG between 1997 and 2012. Among other methodologies, univariate and multivariate analyses were performed to assess the differential impact of the use of the radial artery (RA) on long-term survival among male and female patients. Subsequent separate 1:2 propensity matching between RA patients and non-RA patients within each gender was performed. Based on such multiple risk adjustments between the markedly different RA and non-RA cohorts, the authors conclude that the use of the RA did not affect acute perioperative mortality either in males or in females. Importantly, however, the authors note that, with a median follow-up period of 7 years, the use of RA conferred a consistent significant survival advantage exclusive-ly among male patients across the multiple statistical techniques. Alternatively, the authors report no long-term survival effect for RA versus no RA grafts in females. This conclusion is in stark contrast to other studies evaluating the gender-specific impact of RA grafts. Using propensity scoring in 588 female RA patients, Lawton et al. [7] reported a significantly improved 5-year survival in females despite the observation that their radial arteries were smaller, and demonstrated lower flow rates compared with males. In a similar-sized cohort, Dimitrova et al. [8] reported significantly improved long-term survival in 566 propensity-matched female CABG patients. Similar to Pullan’s report, neither of these studies found any impact on 30-day outcomes with RA use. In a larger CABG cohort anchored around the traditional left internal artery to left anterior descending coronary artery (LIMA-LAD), we identi-fied a consistent long-term survival advantage with the RA as a second arterial conduit in both males and females [9], albeit with different gender-specific magnitude and chronology. The discrep-ant results between the authors’ results in females, compared with the near-consensus by others [7–9] may be due in part to the unorthodox application of analytic methods. In addition, there are substantial differences in the specific elements entered by the authors into the models and techniques used to minimize the confounding effects of a retrospective analysis of two very different study populations. Specifically, the current study was not controlled for the extent of coronary atherosclerosis, the completeness of revascularization and perhaps most importantly, for the number of arterial grafts, each of which is known to impact on long-term survival. Furthermore, the propensity matching was relatively loose with a caliper of only 0.2. Conversely, there is consensus among all four studies on the lack of appreciable impact of RA use on acute perioperative mortality. This should not be surprising if the basis for the long-term benefits of RA is presumed to reflect improved long-term RA patency compared with venous conduits.

The obvious take home message of this study is that it adds to the growing body of data showing RA use to be safe and translates into improved long-term survival after CABG, albeit in this study, in selected patient population. Although the authors could not document improved long-term survival with RA use in females, neither did they document a superiority of outcomes with non-RA grafts in females. Thus, at worst, the RA is no worse than venous conduits and, at best, it is an easily available resource to significantly improve the patient’s long-term survival, at least in men based on this study. Given the essential consensus on RA survival advantage in men, its equipoise in females in the current study and its documented benefit in females in other RA analyses [7–9] as well as that
of other arterial conduits in females [10], it seems reasonable to adopt a more aggressive use of RA in CABG regardless of the patient’s gender especially given its ease of use and absence of any appreciable wound healing or infectious complications.

Pullan’s study once again forces us to ask why in this age of evidence-based medicine and value-based purchasing is such a potentially powerful tool as the RA so woefully underutilized.

REFERENCES