Bilateral internal mammary arteries: a new trick for coronary artery bypass grafting

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I read with interest the article in the April 2012 edition by Grau et al. I congratulate Grau et al. [1] for an excellent study. It will be interesting to know how both internal mammary arteries were used—either in situ or as y graft. In spite of the established superiority of left internal mammary artery graft, the use of the bilateral internal mammary artery has not gained popularity.

In recent trials, stroke after coronary artery bypass grafting (CABG) was reported as one of the major complications that reduces the superiority of CABG over percutaneous coronary intervention. It is also evident that avoiding cardiopulmonary bypass is probably not enough to prevent stroke as aortic clamping can lead to stroke after off-pump CABG (OPCAB). OPCAB with aortic-no-touch can reduce the incidence of stroke to the lowest [2].

CABG with aortic-no-touch has become synonymous with left internal mammary artery-right internal mammary artery or left internal mammary artery–radial artery y graft with single inflow. The use of both internal mammary arteries has become synonymous with y graft which has only single left internal mammary artery inflow.

We presented an alternative technique of using both internal mammary arteries during OPCAB [3], in which one internal mammary artery is used to graft the left anterior descending artery and the other internal mammary artery is used for composite graft. We suggest that this technique of using both internal mammary artery in situ can be easily adopted by younger surgeons in newer centres. There is no fear of damaging one in situ internal mammary artery while creating a composite graft.

I congratulate Dr Taggart for a timely editorial comment highlighting the importance of using both internal mammary arteries in the era of percutaneous coronary intervention.

REFERENCES


I want to thank Dr Saha for his kind remarks regarding our recent study [1, 2]. His observations are relevant, since there are varying philosophies regarding the configuration of the internal mammary arteries (IMAs) in coronary artery bypass graft surgery (CABG).

Our study represents the experience of four different surgeons over 17 years (1994–10). In response to whether the IMAs were used ‘in situ’ or as a ‘Y’-graft, practitioners favoured different IMA configurations. Generally, the right IMA (RIMA) was used as an ‘in situ’ conduit when grafting the ramus intermedius or a very proximal obtuse marginal branch. When grafts were necessary in more distant territories off the left circumflex artery, the RIMA was either anastomosed to the ascending aorta (AA) or to the hood of a vein graft on the AA when the IMA was of small caliber. The majority of RIMAs were used to graft the circumflex territory. The ‘Y’-configuration represented a minority of cases in our series.

In Table 5 of our study, the stroke rate for the off-pump left IMA (LIMA)-saphenous vein graft and bilateral IMA (BIMA) groups was 0%. We use a true no-touch technique of the aorta when the AA appears to harbour significant atherosclerotic disease by transesophageal echocardiography (TEE). Intraoperative TEE was in routine use at the beginning of our study. When significant disease was found on the AA, the RIMA was either anastomosed to the LIMA in a ‘Y’-type construct or anastomosed to the AA using a non-clamping occluder type of device. Propensity matching was performed using the preoperative characteristics of both groups; no pre-screening for stroke was undertaken in the construction of the different cohorts. Several techniques can be used to avoid stroke, but none of them appears to be infallible [3]. As we all know, stroke is multifactorial and can rarely be attributable to one aetiology. The most successful approach appears to be careful pre-operative screening of CABG patients, so that all the different sources of embolic disease can be evaluated and different intraoperative strategies can be utilized to prevent them.

I read the technique described by Dr Saha et al. [4] of their in situ IMA graft construct, and it appears to be easy to implement. Nevertheless, a technique should be tailored to the surgeon performing the procedure, so he/she feels comfortable with it. I am not sure any particular strategy has been conclusively proven to be superior to another, as it is related to the experience the group has developed in that particular approach.

Finally, I agree with Dr Taggart [5] that there exists robust published data debunking the old theory that the use of BIMA carries a higher rate of early mortality and/or significant morbidity. Obviously, clinical judgment must be exercised when deciding to use these conduits, particularly in such patients like the morbidly obese and poorly controlled diabetics. However, this cannot justify the low use of BIMA in USA (4%) and Europe (10%) [6]. The LIMA use became the standard of care through three decades of evidence-based research. I believe that we have reached a point where BIMA use should become a quality metric to assess the performances of different surgical units undertaking CABG.

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REFERENCES


Is partial decalcification of posterior mitral annular bed logical in all mitral valve replacement procedures?

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