Reduction of Sternal Infection in Off-pump CABG by Modified Pedicle Harvesting

To the Editor:

We read with interest the systematic review and meta-analysis by Deo and colleagues [1] on bilateral internal thoracic artery (BITA) harvest and its effects on the incidence of deep sternal wound infections (DSWIs) in patients with diabetes [1]. This review addressed the important clinical questions of whether BITA harvest increases the risk of DSWI in diabetics and whether the risk of DSWI is minimized by skeletonized approach. The authors have concluded that the excess risk of DSWI with BITA is attributable to the use of pedicled approach.

We have published the incidence of DSWI in our retrospective cohort study of 3072 patients undergoing off-pump coronary artery bypass grafting and receiving single and bilateral ITAs. There were 1211 diabetic patients (181 patients received BITA grafts [group 1] and 1030 received single ITA grafts [group 2]) and 1861 non diabetic patients (161 patients received BITA grafts [group 3] and 1700 patients received single ITA grafts [group 4]).

There was no significant difference in the incidence of DSWI among the groups: 0.55%, 0.48%, 0.62%, 0.82%, respectively (p = 0.835). We used a modification of the pedicle BITA harvest technique with sparing of the communicating bifurcation of ITA to the chest wall and preservation of pericardiacophrenic artery and sternal intercostal trunks [2]. The incidence of DSWI in diabetic patients who received BITA grafts was reduced from 4% to 0.55% and was comparable to that of diabetic patients receiving single ITAs and nondiabetics receiving either BITA or single ITAs when the above modification of pedicle ITA harvest technique was used. This modified pedicle technique possibly promotes the collateral circulation to the sternum and prestenral tissues following BITA harvest and thereby reduces the incidence of sternal wound infection. Although we have not prospectively compared the incidence of DSWI between the skeletonized ITA harvest group and the modified pedicle BITA harvest group, the incidence of DSWI in our BITA group is comparable to the incidence of DSWI reported by other investigators using skeletonized harvest technique [3]. Moreover, the pedicle ITA harvest is associated with less frequent injury to the conduit and less duration for BITA harvest compared with skeletonized BITA harvest.

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References


Reply

To the Editor:

We thank Drs Sajja and Mannam [1] for their critical review and appreciation of our efforts [2]. Our metaanalysis essentially compared the incidence of deep sternal wound infection (DSWI) in diabetic patients undergoing single left internal thoracic artery and bilateral internal thoracic artery (BITA) harvest with a subgroup analysis focused on BITA harvest as a pedicled or skeletonized technique.

Although a metaanalysis allows us to apply inverse variance weighting to obtain statistically significant results from indeterminate studies with small individual events rates, it limits us with the availability of study-level data. The internal thoracic artery is harvested using two standard methods: either as a pedicle containing periarterial tissue and its vena comitantes or in a skeletonized fashion with preservation of collateral branches and the vein attached to the chest wall. We chose to combine and compare these two methods in our systematic review. Minor variations in harvest technique are inevitable when combining data from multiple institutions or even from multiple surgeons within a single center. However, our results clearly demonstrate that, compared with the skeletonized technique, pedicled harvest is associated with a significantly higher incidence of DSWI. We believe that our results are more significant given recently published data underlining the advantage of BITA use for long-term survival [3]. Unfortunately, a recent multiinstitutional survey from Canada demonstrated that BITA use is still low among many surgeons [4].

We congratulate Dr. Sajja and colleagues for implementing BITA use in 15% of their diabetic patients, and we appreciate their modified pedicled technique. Berdajs and colleagues [5] have demonstrated that the lower aspect of the sternum is undersupplied and potentially more vulnerable to infection. Hence, the preservation of the lower communicating bifurcation would greatly improve sternal blood flow. Although the learning curve and time taken for the skeletonized harvesting technique may be longer than for the pedicled technique, we believe that...