Truly minimally invasive coronary artery bypass: The TRUCAB

To the Editor:

We were very pleased to see the article on the “H” graft by Cohn and associates in the Journal recently. We are writing to enthusiastically endorse this approach. Starting in September 1997, we have used radial artery grafts from in situ internal thoracic arteries (ITAs) that have not been dissected or mobilized in any way. We developed our technique independently of Cohn and colleagues and without knowledge of their work. A report on our early series is in press, and a bigger series was presented at the New Era Cardiac Care Conference on Minimally Invasive Techniques on January 9, 1998, at Rancho Mirage, California. Currently, our series has been expanded to a total of 10 patients. We have successfully revascularized the right coronary artery, posterior descending branch of the right coronary artery, left anterior descending, and the diagonal coronary arteries in this manner.

Leaving the ITA in situ was part of a strategy to revascularize a cohort of very sick patients while minimizing operative stress by not retracting the chest wall in any way. To minimize postoperative pain, we placed no retraction on the ribs or the cartilages constituting the operative window during the procedure, and we secured the stabilizing platform (Estech, Danville, Calif.) to a rail on the operating table. Portions of the intercostal nerves were also removed during the operation, and an indwelling bupivacaine pain catheter was used after the operation. In distinction to the technique described by Cohn and coworkers, we used segments of radial artery as conduits from the in situ ITA to coronary artery targets. The average age of our patients was 73 years. The Parsonnet system was used to assess the risk factors of the patients before the operation. Their average score was 33. On this basis, their predicted mortality was in the range of 30% to 40%. Our results were similar to those of Cohn’s group. There was no operative mortality, and all the patients were relieved of angina. The intraoperative flows averaged 136 ml/min. Postoperative angiograms have demonstrated excellent graft patency.

We found it possible to rule out the theoretic possibility of steal by measuring the pressure in the ITA and radial artery grafts simultaneously before anastomosis. The pressure in the ITA is consistently higher than that in the radial artery graft.

Leaving the ITA in situ has a large number of advantages over the conventional minimally invasive coronary artery bypass (MIDCAB) technique. It is quicker and technically easier and avoids dissection of the ITA. This is important, because dissection of the ITA in a confined space is not always uneventful.

Sick patients often have an enlarged heart with a greater distance from the ITA bed to the target on the coronary artery. In addition, they often have associated chronic obstructive pulmonary disease with enlarged lungs. As a result, the dissected ITA may not readily reach the target site, especially the posterior descending artery. If the ITA is stretched, there is a risk of poor flows after the operation and even the risk of avulsion in the postoperative period, because there may not be sufficient length to accommodate for displacement of the heart with deep coughing. This may amount to as much as 4 cm.

The modified technique addresses these concerns, as the length of the radial artery graft can be readily adjusted to compensate for cardiomegaly, the patient’s habitus, and also for the projected downward movement of the heart with deep coughing. The technique also avoids the use of the terminal portion of the ITA, which is more prone to spasm.

The modified technique described by Cohn and associates and by us simplifies MIDCAB surgery and makes it more of a truly minimal approach. For this reason, we have proposed the acronym TRUCAB for “Truly Minimally Invasive Coronary Artery Bypass Surgery.” It appears to be a promising surgical approach for high-risk patients.

A. S. Coulson, MD, PhD
S. A. Bakhshay, MD
P. Spohn, BS
M. Borges, MD
420 W. Acacia St., Suite 12
Stockton, CA 95203

REFERENCES