regarding our technique for repair of aortopulmonary window, which is described in the article entitled ''Single-Stage Repair of Aortopulmonary Window With Interrupted Aortic Arch by Transection of the Aorta and Direct Reconstruction.''[1]

With regard to the question concerning the origin of the right pulmonary artery in our last case, this artery arose from just behind the ascending aorta, as demonstrated in the 3-dimensional computed tomography scan (Figure 2 in our article). In the other cases, the right pulmonary artery could have arisen from the right posterolateral aspect of the ascending aorta from the operative findings. However, no computed tomography scan was obtained for these cases for us to show.

As we have described in this article, in our cases there was a large defect extending from the main pulmonary artery trunk to the right pulmonary artery, thus classes I and II by Richardson's classification. That is the greatest difference between our case and that described by Kitagawa and associates.[2] To avoid right pulmonary arterial stenosis, it was necessary to expose the right pulmonary artery as distally as possible during mobilization. The posterior division line between the aorta and pulmonary trunk was designed to enter the pulmonary arterial wall 2 to 3 mm in width, superiorly and inferiorly, apart from a presumptive borderline intending to reserve sufficient tissue for the reconstruction of posterior aortic wall without tension.

We completely agree with Kitagawa's concept that our techniques allow not only sufficient enlargement but also growth of reconstructed arteries. To achieve this purpose, our technique is similar to his technique. We find Kitagawa's results encouraging that our patients will also have good long-term results.

We believe that our method is one of the best methods to repair aortopulmonary window with a large defect with interrupted aortic arch. We understand that further follow-up is necessary for comparison to other techniques. Thanks again to Dr Kitagawa for drawing our attention to his article and for his informative comments.

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SAPHENOUS VEIN HARVEST WITH THE MAYO EXTRALUMINAL DISSECTOR: IS ENDOTHELIAL FUNCTION PRESERVED?

To the Editor:

The recent brief communication in this *Journal* by Narayan and associates[1] describes potential benefits of using the Mayo extraluminal dissector to harvest the saphenous vein in patients undergoing coronary artery bypass grafting (CABG). Biochemical studies suggest that endothelial function is preserved. Inasmuch as there is no difference in baseline characteristics or cyclic guanosine monophosphate production between conventional harvesting and veins prepared with the Mayo vein stripper, the authors consider ''the use of this underused surgical aid…a very attractive option.'' In the same issue we provide histologic evidence that saphenous veins harvested using a ''no-touch'' technique retain a normal structure, an intact endothelium, and preserved endothelial nitric oxide synthase (eNOS) and NOS activity,[2] factors contributing to improved patency in patients undergoing CABG.[3]

The Mayo vein stripper, introduced as an alternative means of harvesting the saphenous vein, has been the subject of numerous publications. A recent review describes potential benefits of endoscopic harvesting, including improved wound healing and cosmetic outcome and reduced infection. The authors cite functional studies showing no difference in vasoreactivity between conventional and endoscopically prepared veins, stating macroscopic comparison of these conduits to be only ''fair.'' However, a recently published secondary analysis from the PREVENT IV investigators strongly suggests that vein graft patency is inferior and late cardiac events increased with endoscopic compared with conventionally harvested saphenous veins.[5]

Although many studies focus on the preserved luminal endothelium of endoscopically prepared veins, the effect of the Mayo stripper on the outer layers of the veins is generally neglected. In a recent study on 200 patients, significant endothelial denudation and reduced eNOS immunostaining of medial and adventitial vasa vasorum were reported in conventionally prepared saphenous veins compared with those harvested using the Mayo stripper.[6] There is evidence that many perivascular structures that are damaged or removed when vein is harvested by conventional techniques affect graft performance (Figure 1). For example, the outermost vessel layer, the adventitia, contains the vasa vasorum, microvessels providing oxygen and nutrients to the vessel wall. In addition, the perivascular fat surrounding various blood vessels is a potential source of vasodilators or anticontractile factors (adipocyte-derived relaxing factors), one of which is nitric oxide.[7] The main benefits of using the Mayo stripper for saphenous vein harvesting in patients undergoing CABG are reduced

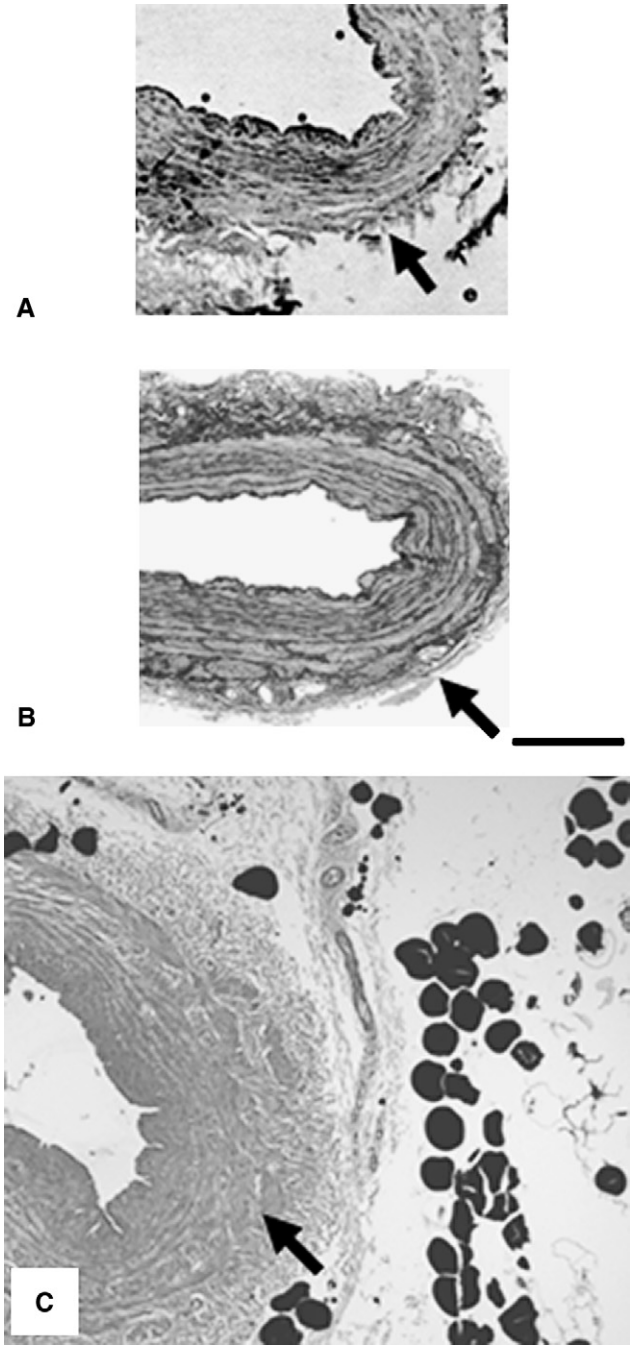

FIGURE 1. Histology of saphenous veins in patients undergoing CABG. Transverse sections of saphenous vein harvested using the Mayo stripper (A), conventional preparation (B), and by the ''no-touch'' technique (C). The adventitia is damaged or removed using conventional methods and the Mayo stripper, whereas this layer remains intact using the ''no-touch'' technique (C). Also, the ''no-touch'' vein is surrounded by a cushion of fat *(black staining)*. The *arrows* indicate the external elastic lamina, the media/adventitia border. *Scale bar* = 0.5 mm. (Part A was modified from Nowicki M, Buczkowski P, Miskowiak B, Konwerska B, Ostalsk-Nowiska D, Dyszkiewicz W. Immunocytochemical Study on Endothelial Integrity of Saphenous Vein Grafts Harvested by Minimally Invasive Surgery with the Use of Vascular Mayo Strippers. A Randomized Controlled Trial. *Eur J Vasc Endovasc Surg*. 2004;27:244-50. Published with permission.)

wound infection and improved wound healing and appearance, yet there is no compelling evidence that this method results in an improved graft patency. In our opinion, the outermost layers of the saphenous vein play a crucial role in the improved performance of the ''no-touch'' technique. These layers not only provide mechanical support to the vein once subjected to arterial hemodynamics[2] but also contain the vasa vasorum, eNOS, messenger RNA, and protein and possesses NOS activity.[2,7] ''No-touch'' vein harvesting provides long-term patency comparable with the left internal thoracic artery,[3] has been adopted by a number of other centers, and is to be investigated in a forthcoming multicenter trial. We believe that future efforts are now required to improve wound healing and attain better cosmesis in patients in whom the saphenous vein is harvested by the ''no-touch'' technique.

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Reply to the Editor:

We read with interest the letter from Dashwood and colleagues. Although the authors have highlighted some important issues with regard to vein harvesting, we are a little disappointed they have misunderstood the essence of our article.

Our study was merely a comparison of veins harvested with the Mayo dissector and the conventional technique. We have not compared the Mayo dissector with any other harvesting technique, either endoscopic or no-touch pedicled, which the authors allude to. Nor have we made any claims about the Mayo dissector producing the most superior results. We have modestly concluded that ''the Mayo extraluminal vein stripper preserves endothelium in a similar fashion as conventional vein harvest.''

The authors refer to the PREVENT IV trial to suggest that harvesting veins with the Mayo dissector results in inferior graft patency and increased late cardiac events.[1] This is highly misleading because the PREVENT IV trial compared endoscopic vein harvesting and *not* the Mayo dissector with the conventional technique. In fact, this lends further justification for us to have published a picture of the Mayo dissector because evidently it is easy to confuse the Mayo dissector, which is an instrument from the past, with the more modern endoscopic techniques currently in vogue.

However, we agree with Dashwood and colleagues that the pedicled no-touch technique for vein harvesting is promising. The pedicled technique has been shown to preserve wall architecture and endothelial function.[2] In addition, veins harvested using the pedicled technique demonstrated superior patency compared with veins harvested conventionally at 8.5 years of angiographic follow-up.[3] However, leg wound morbidity is an important limitation of this technique, as reported by the authors themselves.[4] Nevertheless, we congratulate the authors for their work on the ''no-touch technique,'' and we believe that it may have a significant impact on future clinical practice. To further assess the no-touch technique, we have designed a randomized controlled trial (the HArVeST Trial) to compare the technique described by Souza[3] with the conventional harvesting method and another technique previously described by our group.[5] The effect of these 3 techniques will be assessed on the degree of medial-intimal proliferation and lumen encroachment with intravascular ultrasound 12 months after grafting. This will no doubt provide us with further insight into these promising techniques.

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