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Reply to the Editor:

We thank Piacentini and associates for their interest in our article¹ and for their expert opinion on the topic. We would like to focus on three things.

The authors have discussed three new pedigrees of discrete subaortic stenosis (DSS), only one of which actually has true familial recurrence of DSS. The other two have family members affected by other forms of congenital heart defects, which may or may not have the same genetic basis. Their discussion, however, reiterates our conclusions that no single inheritance pattern can be pinpointed by reviewing the currently available evidence. Genetic heterogeneity and incomplete penetrance could also be important players. We agree with the authors concerning the autosomal recessive inheritance, and we think that given the currently available evidence there is a greater probability of autosomal recessive inheritance being at play in the familial causation. At the same time, most families with multiple affected members do not have consanguineous marriages, and this argues against involvement of recessive alleles. Hence no conclusion can be reached.

Second, as seen in acquired cardiovascular diseases, there may be differences in the relative contributions of the involved genes toward causing the phenotype in the various ethnic groups. Therefore, the pooling and comparison of data from different population subgroups may actually be misleading. However, owing to the scarcity of familial DSS patients at any one center, we still recommend a multicenter approach to get enough sample size for efficient genetic screening.

Last, it is important to reinforce the fact that screening of family members of appar-

ently sporadic cases can lead to timely diagnosis and better follow-up of familial cases.

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Bovine jugular vein as aortic enlargement patch in the Norwood procedure

To the Editor:

We have read with interest the brief communication by Healy and colleagues,¹ in which they describe a new and innovative technique, never before published, concerning use of a bovine jugular vein as an augmentation patch in the Norwood procedure.

The original technique described by Norwood, Lang, and Hansen² involved the use of a homograft to enlarge the aorta. The lack of availability, its high cost, and the risk of infection induced some surgeons to use alternative patches. In fact, in 1999 Gargiulo and associates³ described aortic augmentation with a bovine pericardial patch.

We were very enthusiastic about the Healy report in the *Journal*, both for its contribution to the research toward new alternative materials with respect to homografts in the Norwood procedure and because this technique is similar to our recent surgical strategy.

In 23 Norwood cases, we have used a Contegra patch (Medtronic, Inc, St Paul, Minn) to enlarge the aorta. Technically, we remove the jugular vein with the valve in it and we open the Contegra patch to perform aortic enlargement. The operative technique is not more complex than the original technique with the homograft. Our results were very fulfilling and were similar to

these described in the literature with the classic Norwood operation. We prefer to use this conduit to reduce the risk of viral transmission and especially to reduce the risk of immunologic sensitization, as been described by Meyer and associates.⁴ Besides these benefits, the cost is lower.

We hope that our positive experience can bring a little support to the Healy experience and technique.

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Improved saphenous vein graft patency for coronary artery bypass grafting: "No-touch" harvesting or "dissection without touching"?

To the Editor:

A recent article in the *Journal* described the beneficial effect of penicillamine in a widely established porcine saphenous vein—carotid artery interposition model.¹ This, and previous porcine vein graft studies use a "no-touch" technique of preparing saphenous veins that was described 30 years ago by Gottlob.² This technique was developed using saphenous vein segments obtained from bypass operations or cadavers and canine femoral veins. The aim of this preparation of "dissection without touching" (the term "no-touch" seems to have crept into the literature) was to preserve the vein's endothelium by a rather unwieldy method in which "the venous

Figure 1. Gottlob's method of "dissection without touching." A, The saphenous vein is kept under tension by "holding sutures" that are attached to a piece of bent rubber before isolation of the segment to be grafted. B, The severed ends of the vein remain under tension while the anastomosis is being sutured during insertion into the artery. (Modified from Gottlob R. The preservation of the venous endothelium by "dissection without touching" and by an atraumatic technique of vascular anastomosis. *Minerva Chir.* 1977;32:693-700.)

graft is fixed by holding sutures to a bent rod of rubber" (Figure 1). Although the endothelium is protected by this method, other regions of the vein are damaged inasmuch as the instructions continue: "For dissection only the connective tissue surrounding the vessel was grasped by forceps and sharply severed away from the vein." We believe it important to stress that this technique is very different from Souza and associates³ "no-touch" technique of harvesting the human saphenous vein that has recently been shown to provide a long-term patency comparable with that of the internal thoracic artery. Here, the vein is removed with minimal damage, complete with its surrounding cushion of tissue. Importantly, there is no distension-induced endothelial damage to these veins because harvesting with surrounding tissue prevents spasm. Furthermore, this substantial perivascular cushion would be expected to protect the vein once implanted and exposed to arterial hemodynamics. Other important structures are preserved with Souza's tech-

nique. Until recently, the adventitia and its surrounding fat were regarded as merely providing mechanical support whereas their role as modulators of blood vessel structure and function are now recognized.⁴ In addition, the vasa vasorum plays an important role in the maintenance of "healthy" blood vessels, and preservation of this microvascular network will restore the supply of oxygen and nutrients to the vein graft wall on removal of vascular clamps at completion of surgery.⁵

Gottlob's method of preparing the saphenous vein as a bypass graft is often cited, including its use in patients undergoing coronary artery bypass grafting.⁶ The practicalities of doing so in an operating theater/sterile environment are intriguing. Although this technique may preserve the endothelium, the outer vessel regions are often damaged. Paradoxically, in an attempt to restore the blood supply to ischemic myocardium, the microvascular network of the vein is damaged and the graft wall rendered ischemic. Many studies into potential methods of reducing vein graft occlusion may be seen as attempts to repair the effects of surgical damage or examine ways of replacing, restoring, or inhibiting factors released by vascular trauma during harvesting. Such strategies range from adventitial delivery of drugs and gene transfer to pharmacologic interventions and methods of providing mechanical support.

In light of recent long-term results using Souza's "no-touch" technique, we believe that more precise details are required when describing surgical methods of vein harvesting. The difference between "dissection without touching" and "no-touch" may not be just in the wording, but in the graft's long-term performance.

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Reply to the Editor:

In our pig model for studying vein graft thickening, we did not remove the adventitia¹ nor did we use the Gottlob method.¹ We agree, however, that the terminology relating to methods for harvesting saphenous veins for coronary artery bypass graft surgery has become misleading, both experimentally and clinically. Because it is impossible to employ a purely "no-touch" technique, the term "minimal touch" is more appropriate. Perhaps, "the Souza minimal-touch method" should be used in the future. Certainly, we fully accept the clinical data indicating that this latter method of harvesting saphenous veins improves vein graft patency.

Loesch and associates also stated that "preservation of this microvascular network will restore the supply of oxygen and nutrients." However, there are no empirical data to support this assertion. Furthermore, even though the vasa vasorum may be undamaged, it is still "disconnected" from the circulation by surgical removal, which may promote graft hypoxia.² Vein grafts also thicken adaptively and rapidly, increasing oxygen demand and ischemia even further.^{2,3} We⁴ recently found that oxygen tension in porcine vein grafts is markedly