patients. A medical team updates the anticoagulation therapy for each patient following a uniform protocol of anticoagulation. In our experience, the use of anticoagulation in elderly people is safe, and quality of life is not negatively influenced by check of international normalized ratio.

On this basis, we have reported our results in terms of impact of PPM (moderate, severe, or absent) on survival in elderly people receiving mechanical prostheses implants. In our series, the incidence of severe PPM during the follow-up was very low. The presence of severe or moderate PPM did not influence long-term outcome, left ventricular mass regression, and quality of life in a population of septuagenarians. On the basis of our experience, we use isolated aortic valve replacement with a mechanical prosthesis, which represents a judicious alternative in elderly people to bioprosthesis implant.

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Reply to the Editor:

I would like to thank the groups from Naples and Pittsburgh for their interest in our recent study examining the impact of prosthesis-patient mismatch (PPM) on long-term survival in patients greater than 70 years of age. It is important to note that we did not specifically investigate the role of PPM on tissue valve degeneration, but it is likely to play a role given the potential impact of pressure gradients on leaflet durability. However, as demonstrated by Fann and associates from Stanford,¹ age clearly impacts the rate of structural valve degeneration, such that even with first- and second-generation prostheses, freedom from structural failure at 15 years exceeds 90% in patients over 70 years of age. It is our hope that newer prostheses with anticalcification treatments, low pressure fixation, and better flow characteristics yielding lower transvalvular gradients will demonstrate increased long-term durability, but only time will tell.

I think we all agree that the population is growing older and living longer across the globe. For example, in the United States, life expectancy has increased from 67 years for men and 75 years for women in 1970 to 75 years for men and 80 years for women in 2005,² a change that would, in and of itself, shift the crossover age rightward for recommending a mechanical over biologic valve during aortic valve replacement (AVR). At the same time, however, lifestyle issues, at least among my patient population, have become increasingly important with the desire to avoid lifelong warfarin more appealing than a potential one-time "AVR-for-life." This has led to an increasing percentage of well-educated patients in their 50s, 40s, and even

30s and 20s, selecting bioprosthetic over mechanical valves, at least in the aortic position. We do agree that, although a redo AVR in a 40- or 50-year-old patient carries little risk, a redo in an 85- or 90-year-old patient is a much less desirable proposition. Vicchio and colleagues³ have developed a well-structured algorithm for selecting biologic versus mechanical prostheses in elderly patients, facilitated, no doubt, by their institution's outpatient anticoagulation monitoring program, which boasts (appropriately so) a very low incidence of bleeding complications in elderly patients.

An additional shortcoming of our study is that it did not assess the impact of PPM on functional status or quality of life. In a previous study from our unit, we found that quality of life following AVR in octogenarians, quantified using the Medical Outcomes Study Short Form-36, was similar to the age-matched general population, but we did not assess the independent impact of PPM.⁴ Clearly, there are patients who will benefit from the presence of a diminished gradient over time. However, it remains my contention that, although it is important to avoid PPM in younger patients by either enlarging the root or implanting a prosthesis with favorable flow characteristics, elderly patients with limited preoperative functional status or significant comorbidities are better served with a "get in and get out" approach during AVR.

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PROXIMAL BRACHIOCEPHALIC ARTERY ACCESS FOR ARTERIAL CANNULATION: VALUE AND TECHNICAL ISSUES

To the Editor:

I read with great interest the report by Roy and colleagues¹ on the rapid resuscitation of an infant with rescue extracorporeal life support (ECLS) with simple access through the innominate artery. In their case, the stump of a 3.0-mm polytetrafluoroethylene (PTFE) graft anastomosed to the innominate artery during the initial stage I Norwood (Sano) procedure was rapidly recannulated to provide arterial access for ECLS. This case provides yet another good example of the utility, simplicity, and safety of proximal brachiocephalic artery access for arterial cannulation. At my institution, we have used the same strategy for arterial cannulation during the Norwood procedure for a number of years and have found it similarly useful in a number of ways. Importantly, there have been no technical complications related to the use of this technique. Specifically, there have been no early or late innominate artery stenoses or occlusions. In fact, the technique has been so useful that it has been adopted for many types of cases requiring aortic work, such as interrupted aortic arch, Damus-Kaye-Stansel, coarctation and ventricular septal defect.

I also suspect that this technique may be of further use in cases in which transverse aortic size is borderline and coronary perfusion could be compromised by direct aortic cannulation. At our institution, we have had

a single case of d-transposition of the great arteries with particularly complicated coronary anatomy in which the switch from direct aortic cannulation to innominate artery cannulation through a PTFE conduit resulted in rapid hemodynamic recovery and separation from ECLS. In fact, this method of arterial cannulation has since been used for nearly all arterial switch procedures, with no mortality and no use of ECLS in a small series of patients. I and my colleagues have recently set out to investigate scientifically whether there is some benefit to this method of cannulation in neonates with regard to coronary perfusion.

I have a few technical questions for Roy and colleagues regarding the use of this technique. First, what is the ultimate fate of the PTFE when the chest is closed? How long a segment do you ultimately leave in the chest when it is closed? Do you allow the PTFE to lie on top of the innominate vein or tuck it in underneath the vein, next to the aorta? At my institution, we have been concerned about the possibility of creating a scissoring effect on the vein between the PTFE and the aorta and thus have tucked it beneath the vein but still worry about vein occlusion. Additionally, what steps do you take to clear the PTFE of clot and debris before rapid cannulation? We attempt to avoid the formation of clot by multiply clipping the graft proximally and distally. Finally, has your group ever considered using a slightly larger PTFE graft and reusing it later for the Glenn procedure if cardiopulmonary bypass is necessary?

I greatly appreciate this short report by Roy and colleagues¹ regarding this extremely useful technique. I not only congratulate them on the survival of their patient but also applaud the dissemination of information with so much practical importance.

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Reply to the Editor:

We appreciate your comments and agree that innominate artery cannulation facilitates aortic arch surgery in the newborn and may be useful with other neonatal cardiac repairs, especially when the ascending aorta is diminutive.

We typically use delayed sternal closure after stage 1 repair of the hypoplastic left heart and trim the graft to about 4 cm in length after clipping the proximal end immediately adjacent to the innominate artery (see Figure 1 in our article¹). The graft is anastomosed to the innominate artery cephalad to the innominate vein and sits in the upper mediastinum, well above the vein. At the time of delayed sternal closure, the graft is trimmed to within several millimeters of the occluding clips.

If emergency cannulation for extracorporeal life support is required, the shunt is stripped with forceps and then flushed with heparinized saline with the proximal clips in place. The clips are then removed and retrograde flow through the shunt established. An 8F BioMedicus cannula (Medtronic BioMedicus, Eden Prairie, Minn) is then inserted in the graft and secured with 2-0 silk, before connection to the extracorporeal life support circuit.

We have not used the same graft for cannulation at the time of the cavopulmonary shunt and prefer direct aortic cannulation.