The addition of dobutamine echocardiography as a functional diagnostic method for identification of recoverable myocardium, as suggested by Drs Ancona and Pilato, could aid in better understanding this complex disease and should be considered as part of a comprehensive diagnostic workup of patients with ischemic cardiomyopathy. This diagnostic algorithm represents a welcome and long-needed shift from “valvulo-centric” to “ventriculo-centric” focus in management of patients with ischemic cardiomyopathy and functional ischemic regurgitation.³

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SAFETY OF AXILLARY ARTERY CANNULATION

To the Editor:

We read the report of Takayama and colleagues¹ about the successful management of aortic root replacement with axillary artery cannulation and open distal anastomosis technique. For ascending and aortic arch repair, we use a similar cannulation site, the right brachial artery. We previously published our results of 104 arch repair cases that we performed with low-flow antegrade cerebral perfusion through the right brachial artery and with an open distal anastomosis technique during moderate

hypothermia.² We congratulate the authors for their excellent results, but we would like to remind them that neither axillary nor brachial artery cannulation is totally safe and reliable.

There are literature reports about the pitfalls of axillary artery cannulation, including arterial injury, new aortic dissection, compartment syndrome/arm ischemia, brachial plexus injury, inadequate cardiopulmonary bypass flow, and malperfusion.³ In a patient with acute type I aortic dissection, we recently experienced a complication of axillary artery cannulation that we could not have realized initially. The patient's brachial artery diameter was very small, and therefore we preferred axillary artery cannulation with a side-graft anastomosis. The axillary arterial wall looked normal, and its flow seemed to be adequate. As soon as we started cardiopulmonary bypass, the pressure in the arterial lines exceeded normal ranges, and bleeding occurred around the axillary artery cannula. We decided that our cannula was in the false lumen. We quickly switched the inflow cannula to the innominate artery. The patient did wake up without any neurological deficit. For aortic dissections extending into the axillary artery, it is possible for the surgeon not to realize this situation, and he or she might end up cannulating the false lumen. One should be very cautious about the line pressure at the initiation of cardiopulmonary bypass and should be ready for alternative techniques, if necessary.

We would like to remind the authors of another condition in which axillary artery cannulation is not safe or even contraindicated. An aberrant right subclavian artery is an anatomic variation that is more common than we think, with a prevalence of 0.4% to 2%. The aberrant right subclavian artery originates from the proximal descending aorta, and patients with this anomaly are typically asymptomatic.^{4,5} It is clear that the inflow will route to the descending aorta with right axillary artery cannulation in such a patient, and therefore alternative cannulation sites are to be

used. Direct cannulation of the right, the left, or both carotid arteries can be used in this situation. We would like to underline that the existence of an aberrant right subclavian artery is not that rare and must be kept in mind.

We conclude that in these complex surgical approaches, the ideal method of arterial access is not identical and changes individually. Perfusion, neuroprotection, and open graft replacement techniques depend on anatomic considerations and prudential judgments.

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Reply to the Editor:

We have read the article by Dr Küçüker and his colleagues with great interest. They should be congratulated on their excellent clinical outcome of arch repair using right brachial artery cannulation.¹ Their technique achieves the same goal as the axillary artery cannulation technique. Although the brachial artery might be easier to access, its size might occasionally prevent it from

being used. Monitoring of the antegrade selective perfusion pressure, which we believe to be a critical component of assessment of the cerebral perfusion, might be easier with axillary cannulation with an arterial pressure line placed in the right radial artery. Also, axillary artery cannulation itself is not very complicated and is usually done within 30 minutes. Therefore, we still prefer using the axillary artery as a cannulation site.

Dr Küçük and his colleagues have suggested an excellent and very important point: that surgeons should be aware of those patients whose aortic dissection extends into those arteries or whose right axillary artery takes off aberrantly from the descending aorta. Careful review of preoperative imaging will reliably identify an aberrant artery and extension of dissection into the innominate artery. A dissected axillary artery should be apparent at the time of direct examination. If the artery is dissected, we agree that alternative cannulation is required. A well performed side graft anastomosis should not lead to a pressurized false lumen, even if the arch is dissected. Careful clamping of the innominate artery, after examination of the vessel, will prevent clamping off of the true lumen.

Since the publication of the article, our aortic surgery practice has continued to expand. The axillary artery cannulation technique remains a reproducible and reliable method of arterial outflow in our hands as well as others²⁻⁴ and will continue to be our choice. However, it is crucially important to be aware of the pitfalls suggested by Dr. Küçük and others and to use judicious clinical judgment for each case for its safe and successful use.^{1,5}

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THEY ALSO SERVE WHO ONLY STAND AND WAIT

To the Editor:

I read with great interest, and a degree of nostalgia, Dr Kumar's editorial¹ on the second assistant.

It brought back memories of a time long ago, when I was young and thirsty for learning. I spent 18 months as a Senior House Officer (the most junior member of the surgical team) in Southampton, UK, where my only role in theaters was to harvest a length of vein and then stand next to the surgeon as a second assistant.

Dr Kumar offers great advice on how to make the most of this time.

As he suggests, I developed my habit of making notes with illustrations during that time. I still have that habit and have a large collection of these handwritten notes and drawings, to which I refer at times even now.

I would often get bored with the repetitive nature of my job of harvesting vein and closing the leg. During one such period of boredom, I started using my left hand (I am right-handed) to do parts of the procedure. I soon became adept at using my left hand as well, a skill that I use on many occasions now with great advantage.

Being a second assistant for a long time can, however, be a source of despair, especially if the opportunities to open or close the chest or do a top-end anastomosis do not materialize. "They also serve who only stand and wait."² I would think of Milton.

Being a second assistant also allows the mind to drift without anybody noticing (at times). Daydreaming can be a wonderful experience (at times). I had chosen cardiac surgery to be a top-notch cardiac surgeon, nothing less. When I was 20-something, just holding the retractor as a second assistant did not make the goal seem nearer. Was it possible that the dream could go sour?

I had the opportunity to work as a second assistant with some great surgeons, and some not so fantastic. As Dr Kumar says, it is a very impressionable part of one's life and can have a profound bearing on one's later career.

But alas, the days of the second assistant are numbered. The European Union's working time directive³ has cursed the current and future generations of trainees with only 48 hours of work per week. This has resulted in severe manpower shortages in hospitals across the United Kingdom, and almost all our surgical procedures are now done with a single assistant. We have learned to adapt to this and now do not find the need for second assistants except for the most complex cases. The loss, however, will be that of the trainees who will miss out on such a wonderful training opportunity.

And for those lucky enough to have this chance, make the most of it. Look at it as an opportunity that has knocked on your door...and if you don't answer soon, it will go away forever.

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