

tively, and although the issue of left ventricular volume as a predictor of late outcome is intriguing, our data do not allow us to answer this question. Thus further studies are need to be performed to address the important questions of when and how to treat MR in similar patients.

In deciding on the appropriate management of ischemic MR, we believe it is important to address both valve-related factors, such as regurgitant fraction, volume of regurgitation, and pattern of regurgitation, as well as left ventricular factors.² These factors include not only the left ventricular end-diastolic volume but also the presence of any significant left ventricular regional wall-motion abnormalities.³ We also agree with Steven Bolling that "ischemic mitral regurgitation is a ventricular disease." It will be necessary to understand how these factors might change over time, especially when subjected to various medical or surgical treatments, to determine the appropriate point at which one should intervene with these patients. Specifically, is surgical revascularization of the inferior wall sufficient for patients with mild-to-moderate MR? Can preoperative factors, such as myocardial viability and left ventricular volume, help in predicting who will need a repair and who will not? Future studies are clearly needed, especially those investigating the mechanism of ischemic MR, that will hopefully yield useful information with respect to the role of these factors on the outcomes of patients with ischemic MR.

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Guidelines for coronary revascularization revisited?

A note of caution

To the Editor:

We read with interest the somewhat novel strategy for coronary bypass described by Dr Nežić and associates.¹ The authors suggest that in the case of a localized stenosis in the mid-to-distal left anterior descending (LAD) coronary artery, the lesion can be bypassed with a coronary-coronary graft by using the distal portion of the left internal thoracic artery (LITA), thus reducing the length of conduit used; they also speculate that this attitude might be particularly useful in younger patients to preserve graft material for future reoperations. More specifically, the patient described (41 years old) underwent LAD-LAD grafting by using the free distal LITA segment, LITA-ramus intermedius grafting with the pedicled proximal LITA, and saphenous vein grafting to the posterior descending artery. Although the immediate postoperative angiographic result is neat, we are quite skeptical toward this approach for several reasons.

First, standard LITA-LAD bypass represents a milestone not only in cardiac surgery but also in medicine in general and has clearly been shown to improve survival and reduce the incidence of adverse events after coronary operations.^{2,3} Favor toward bilateral and, more rarely, sequential internal thoracic artery (ITA) grafting, especially to the left coronary system in younger patients, has also increased for similar reasons.⁴

Second, coronary-coronary bypass implies 2 arteriotomies and 2 anastomoses to revascularize the diseased branch. Furthermore, the technique refers to the use of the distal portion of the LITA to construct the graft. Not only the caliber is reduced but also the properties of the distal ITA are different (more muscular and less elastic media).⁵ All these aspects are likely to increase technical hazards of an otherwise standardized procedure. Also, crossclamp and bypass times are increased.

Third, if arteriosclerosis involves the mid-to-distal LAD in a young patient, the disease is by definition aggressive. It is thus incorrect to revascularize the distal LAD depending on its proximal course as an inflow, because disease is likely to progress with time. This is clearly exemplified by the natural history of bypass

grafts to the main course of the right coronary artery, which often becomes diseased, especially at the crux.⁴ In other words anastomoses should ideally be constructed to bypass the most distal lesions. Also, the arteriotomy and manipulation of the LAD proximal to the stenosis might accelerate or promote medial reactivity and thickening in coronary arteries prone to arteriosclerosis, whereas the resistance of the ITA to the development of future stenoses is well known.

Fourth, the unsuitability of the patient for percutaneous coronary angioplasty, as stated by the authors, is questionable. The patient showed multivessel disease, but the presence of an isolated stenosis in the mid-to-distal LAD might make this option appealing, if not preferable, especially for first-time revascularization in younger patients.

In conclusion, although coronary-coronary bypass might at times be useful, we advocate caution toward its application to the LAD. Among the current guidelines for coronary revascularization, the pedicled LITA-LAD graft represents a gold standard, and there must be strong reasons (eg, deep intramyocardial LAD and some ventricular aneurysm resections or reoperations) not to construct this graft in coronary operations.

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Reply to the Editor:

We read with great interest the comments of Dr Pocar and colleagues about the article we recently published in *The Journal of Thoracic and Cardiovascular Surgery*.¹

It is mandatory for everyone involved in cardiac surgery to know everything about the reasons that have been mentioned in the first and second paragraphs of their comments. We have previously reported and underlined our policy regarding internal thoracic artery (ITA) harvesting [. . . In order to optimize the internal thoracic artery length, and avoid the use of the most distal part of internal thoracic artery (often small in diameter and prone to spasm), we try to make the internal thoracic artery graft as short as possible. . .].² According to this policy, it was not a very distal part of the ITA that was used for coronary-coronary bypass grafting (CCBG). A crossclamp time of 41 minutes to perform 4 anastomoses on coronary arteries is not too much, and for the current level of myocardial protection, 10 minutes more means nothing.

As to the third reason, let us suppose that ITA has been used to revascularize the distal third of the left anterior descending coronary artery (LAD), although it did not have enough length as a pedicled graft to reach the anastomotic site. An aggressive form of atherosclerotic disease would progress with time, no matter that the coronary artery was grafted with the ITA, because coronary artery disease progress even if the targeted artery was grafted with an arterial graft (although to a lesser extent than if it was grafted with vein graft).³ A new proximal lesion on the LAD great enough to jeopardize distal flow (through a coronary-coronary bypass graft) would probably be the reason to attempt the revascularization (percutaneous coronary intervention or redo coronary artery by-

pass grafting), even in the absence of a coronary-coronary graft on the LAD, as well as in the case that the ITA (eg, in skeletonized fashion) was used in the first operation.

I absolutely agree with Dr Pocar and associates that anastomoses should ideally be constructed to bypass the most distal lesion, but it is obvious that with CCBG over distal and single stenosis on the LAD, we have done exactly what they have underlined. Free ITA grafts yield excellent patency rates of approximately 90% at 5 years,⁴ as well as at 7 years.⁵ We know that a major problem influencing early free ITA graft patency was related to construction of a proximal anastomosis on the ascending aorta. In the case of CCBG, we have a situation that a segment of the free ITA graft at the site of proximal anastomosis matches better with the lower dp/dt of the LAD artery than the ascending aorta. That is the reason that we can expect an even better patency rate over the years. There have been only 2 cases of late angiography in patients with coronary-coronary free ITA grafts on the LAD (3 and 8 years after surgical intervention) recording patent coronary-coronary grafts.⁶

I agree with Dr Pocar and associates that CCBG might at times be useful, and that was in the reported case. We have performed more than 25,000 cardiac procedures at our institution over 25 years. I was the attending surgeon in more than 2500 cardiac procedures. Of more than 1600 procedures performed per year (70% being coronary artery operations), we have selected only 2 patients for CCBG of a single distal lesion of the large LAD (in the patients with multiple-vessel disease). The other patient's single distal LAD lesion was grafted with a short segment of the radial artery in CCBG fashion.⁷ It means that our candidates for CCBG procedure were selected very carefully.

As to the fourth reason, when you have to perform coronary surgery because of multivessel disease, it does not make sense to increase cost with implantation of a drug-eluting stent, even in the countries with great economic potential.

Finally, our intention was not to challenge the guidelines for coronary revascularization but to underline that once in a

blue moon we can meet the patient who does not fit in a guideline frame.

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Repair of the Ebstein anomaly To the Editor:

I read with great interest the article by Chen and colleagues¹ “Early and Medium-Term Results for Repair of Ebstein Anomaly.” The results are superb, without hospital mortality and with improvement of the functional condition. The technique proved to be reproducible.

It seems from previous studies² that the Ebstein anomaly is a combination of ventricular and valvular disease. This concept has led my group to develop the use of an associated bidirectional cavopulmonary shunt in severe cases.³

I was surprised by the preoperative right ventricular ejection function, which was normal in all cases except 1 in Dr Chen's series, without quantified data.

My first concern is to know what is meant by the right ventricle. Is it the effec-