Authors have nothing to disclose with regard to commercial support.

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REPLY: ATTENTION TO DETAIL...AND COLLATERAL FLOW

Reply to the Editor:

In a previous report, Bosse and colleagues¹ described the use of bypass grafting from the ascending aorta to the femoral arteries concomitant with coronary artery bypass grafting to treat patients with combined coronary artery disease and severe aortoiliac occlusive disease. In the Letter to the Editor in this issue of the *Journal*, Meric and colleagues pose a highly relevant concern relating to the use of such an approach in treating these patients; that is, one must consider the collateral flow to the lower extremities, specifically its reliance on the internal thoracic arteries. Pursuant to recommendations in treating coronary artery disease, using an internal thoracic artery as a bypass conduit in this patient cohort may lead to disruption of critical collateral perfusion. With this in mind, what can one expect in the setting of a concomitant ascending aorto-femoral bypass procedure as described by Bosse and colleagues? Would the impact of

disrupting antegrade collateral flow (by using an internal thoracic graft to treat the coronary artery disease) be mitigated if an aorto-femoral bypass is also performed leading to predominantly retrograde flow to lower abdominal and pelvic vessels? On first pass, one would expect that there would not be significant ischemia or compromised perfusion to these vessels with this combined approach. On the other hand, disruption of antegrade collateral flow does not always have predictable consequences. Perhaps, one can propose that saphenous vein bypass grafting of coronary arteries may be a better compromise, accepting its diminished durability and acknowledging the potential need for lower-extremity revascularization. Or one can consider the use of the radial artery as a conduit, recognizing that any existing renal dysfunction may require later use of this artery for hemodialysis access. Clearly, further discussion in the treatment of these patients will require detailed follow-up. Bosse and colleagues¹ thus are positioned to provide much needed counsel based on their current experience and are encouraged to provide additional guidance in the upcoming years.

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REPLY FROM THE AUTHORS: LIMB ISCHEMIA AFTER INTERNAL THORACIC ARTERY HARVESTING FOR CORONARY ARTERY BYPASS

GRAFTING IS PREVENTED BY BYPASS FROM THE ASCENDING AORTA TO BILATERAL FEMORAL ARTERIES IN PATIENTS WITH LERICHE SYNDROME

Reply to the Editor:

Dr Meric and colleagues emphasize the need for concomitant lower-limb revascularization in patients with Leriche syndrome associated with severe coronary artery

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disease who require coronary artery bypass grafting (CABG). The authors underscore the importance of the internal thoracic artery (ITA) flow to perfuse lower limbs in case of chronic aorto-iliac occlusion. To the best of our knowledge, Dr Remi Nottin, a cardiac surgeon in our institution from 1981 to 2018, was the first to combine a cardiac surgery with a bypass from the ascending aorta to the femoral artery in 1979 at Broussais Hospital in Paris. He operated on a 70-year-old man who had a left main coronary artery stenosis combined with complete aorto-iliac occlusion. This patient already had a left transfemoral amputation and presented with acute chest pain and critical ischemia of the right lower limb. Dr Nottin performed 3 emergency CABGs using the left ITA and saphenous grafts. He realized after weaning the patients from the heart-lung machine that it was possible to revascularize the right lower limb with a bypass from the ascending aorta to the right femoral artery using a Dacron graft. The patients had favorable outcomes and were able to walk again few weeks later with a prosthetic device. During the following 3 decades, Dr Nottin continued to perform this approach and taught us his ingenious technique.

Consistent with Dr Meric and colleagues' comment, we believe that ITA flow for the lower limbs should not be underestimated in case of complete aorto-iliac occlusion. Likewise, we recently observed irreversible paraplegia after CABG using bilateral ITAs in a patient with a history of thoracic endovascular aneurysm repair covering all the intercostal arteries.¹ We strongly support the need for preoperative assessment of spinal cord vascularization in this particular, but not so rare, condition. The role of ITAs for perfusion of the lower limb could be investigated in patients with Leriche syndrome who require CABG.

However, in our concomitant approach, we chose to systematically reperfuse the lower limbs during the same surgical procedure, especially in symptomatic patients (all cases in our series).

Among the 8 patients in our series, 6 underwent CABG (5 bilateral ITAs and 1 left ITA graft). All ITAs were of good quality, with a diameter ranging from 2 to 3 mm, and no other conduits were used. The flow of these ITAs were not quantified at the time of the surgery. However, lower-limb perfusion was systematically assessed before preoperatively using Doppler imaging and aortography. Dr Meric and colleagues further suggest using alternative grafts for CABG, especially saphenous veins. However, the mean age of patients was 63 years in our study, supporting the use of grafts with the best long-term patency.² We performed Y-grafting with bilateral ITAs with an average of 3.1 distal anastomoses per patient (range, 2-5). Last, the authors raise the fact that ITAs might have larger diameters in patients with Leriche syndrome. We never had a major diameter discrepancy between ITAs and coronary arteries. This condition is more frequently observed with saphenous grafts.

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