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Reply

We thank Drs Morini, Cozzi, and Pacilli for their comments related to our article “Pseudoaneurysm of the lateral plantar artery after foot laceration” (J Vasc Surg 2003;37:672-5). They raise a number of issues concerning management of lateral plantar pseudoaneurysm to which we will respond. First, conservative management with ultrasound-guided compression was not done in either of our patients. To our knowledge, there are no reports of use of ultrasound-guided compression of a plantar pseudoaneurysm. All of the reports cited by Morini and colleagues involve either pseudoaneurysm related to catheterization injury or radial artery pseudoaneurysm. We submit that plantar artery pseudoaneurysm is quite different in that it is located on the weight-bearing surface of the foot. Just the simple act of walking submits this injured artery to continuous trauma. Thus, even if compression therapy were initially successful, we would be concerned that the pseudoaneurysm would recur. Figure 1 in our article demonstrates that continued trauma to the area of injury is unavoidable with walking, because of the size and location of the lesion. If compression therapy were used, we believe the patient would need to be non-weight-bearing for some time, to enable complete healing. As an alternative, surgical intervention should enable more expeditious resumption of normal activity and confidence that the problem will not recur. For these reasons, we continue to believe and recommend that prompt operative intervention is the best treatment option and provides the best outcome.

The second issue that Morini and colleagues raise is concern about the recommendation to treat with proximal and distal ligation, rather than interposition grafting. They suggest that ligation has the potential to induce forefoot ischemia in patients in whom the lateral plantar artery provides the predominant blood supply to the foot. We recognize that revascularization should be considered in selected patients. It is for this reason that we did not categorically recommend ligation in all patients, but concluded the case report with the statement, “Treatment does not usually [italics added] require revascularization and can be simply accomplished with ligation of the injured vessel.” Our decision to ligate the artery in our patients, and subsequently our general recommendations, was made on the basis of a number of factors. First, physical examination is helpful in that the posterior tibial artery can easily be compressed at the ankle. With this maneuver we were able to document loss of pulsation in the pseudoaneurysm, and were also able to assess perfusion to the forefoot. We used the equivalent of the Allen test in the foot, and found rapid and complete filling of the forefoot and toes when compression of the dorsalis pedis artery was released while maintaining compression on the posterior tibial artery. In the operating room, the foot was also evaluated for adequacy of perfusion after ligation. We were prepared to revascularize if there was evidence of forefoot ischemia. The second factor in our recommendations is that it is standard practice to revascularize to one tibial vessel in patients with critical forefoot ischemia (rest pain or tissue loss), even if there is no direct continuity to the plantar arch, as in the case of the peroneal artery.1,2 It is well-documented that these operations are successful in relieving critical ischemia and achieving wound healing. We expect that in most patients forefoot ischemia will not develop if the anterior tibial, dorsalis pedis, and peroneal arteries are intact. Finally, revascularization, especially in children, raises significant technical concerns. To gain access to the normal proximal and distal arteries, dissection of the lateral plantar artery would necessitate a substantially larger incision in the foot, perhaps on the weight-bearing surface. In addition, this artery, especially in children, is small, which makes revascularization challenging and long-term patency suspect.

The final concern raised by Morini and colleagues is lack of long-term follow-up in our study. They are correct that we do not have information about long-term sequelae that could result from ligation, such as growth retardation or ulceration. We know that our patients have not experienced any immediate problems and that their feet are clinically well-perfused. We believe that collateral vessels are more likely to develop in children, and as a result pediatric patients may tolerate ligation better than adults. As noted, in the absence of other vascular disease, we believe that the anterior tibial and peroneal arteries will provide adequate foot perfusion and that long-term untoward effects are highly unlikely in these patients. Certainly, if faced with a similar problem in an adult, especially if there is other arterial occlusive disease, strong consideration would be given to proximal revascularization and perhaps repair of the pseudoaneurysm with an interposition graft.

Eric D. Endean, MD
University of Kentucky Medical Center
Lexington, Ky

REFERENCES

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