

Selective LIMA Injection Via the Right Radial Approach

How this state-of-the-art approach may assist transradial operators.

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Transradial access is a well-established approach for diagnostic and interventional procedures, in part because of increased patient comfort and reduced bleeding complications. It is most often performed via the right radial approach for operator comfort, probable reduced radiation exposure, and because it obviates the need to reach across the patient or stand on the left side of the table. There is a learning curve associated with transradial access, and certain subsets of patients, such as those with a history of bypass, may prove to be more challenging, particularly from the right radial approach. The long-term benefit of internal mammary artery (IMA) patency to the left

anterior descending artery has been proven and is considered state of the art for surgical revascularization. As a result, many operators will either use a left radial approach or femoral approach in such cases to facilitate cannulation. The right radial approach is considered by some to be a relative contraindication in the presence of previous bypass with use of the left internal mammary artery (LIMA), although feasibility and safety of the right radial approach has been demonstrated with the use of specialty catheters.^{1,2}

This article describes a technique that has been successfully used in consecutive patients during a 4-month period using the right radial artery as the default

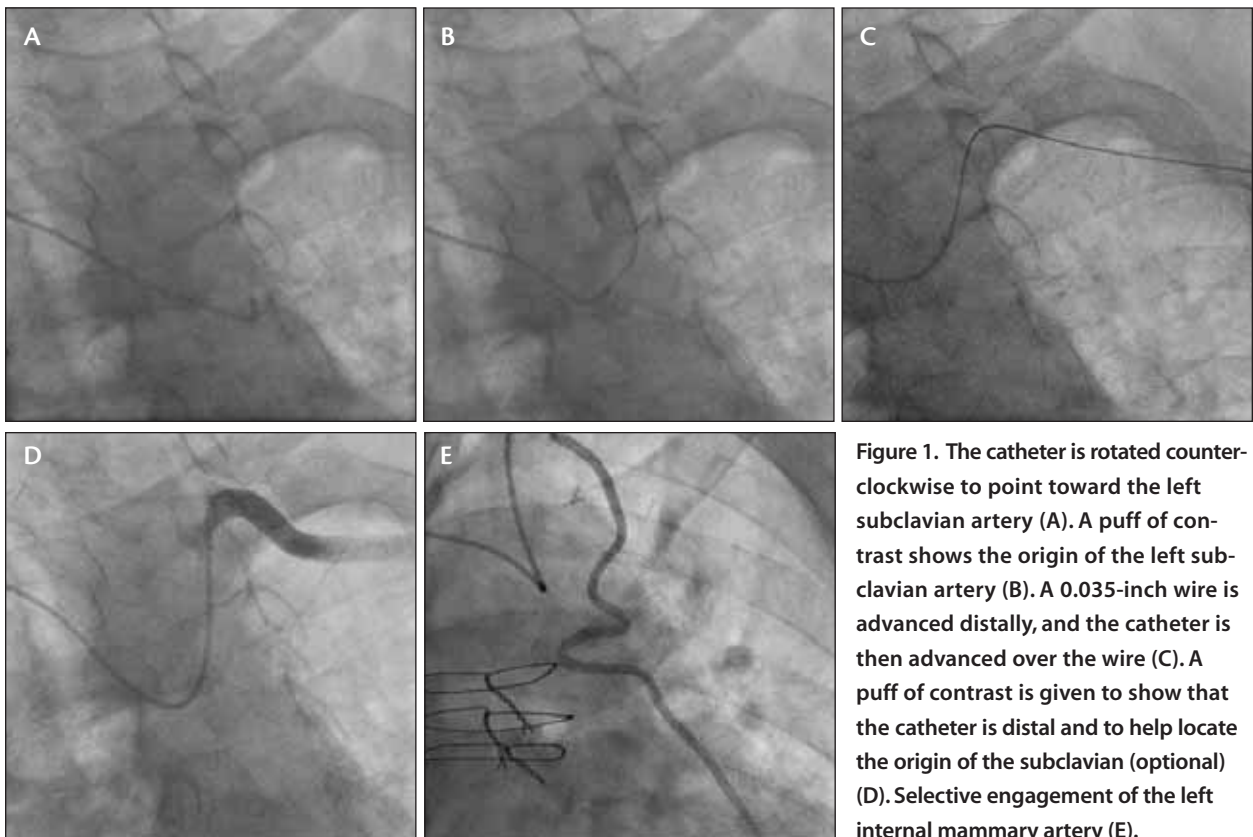


Figure 1. The catheter is rotated counter-clockwise to point toward the left subclavian artery (A). A puff of contrast shows the origin of the left subclavian artery (B). A 0.035-inch wire is advanced distally, and the catheter is then advanced over the wire (C). A puff of contrast is given to show that the catheter is distal and to help locate the origin of the subclavian (optional) (D). Selective engagement of the left internal mammary artery (E).

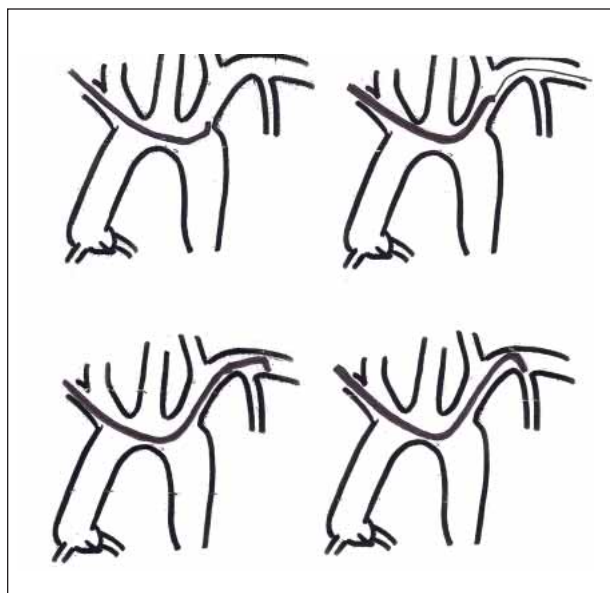


Figure 2. The catheter is rotated counterclockwise and pointed toward the left subclavian. The wire is advanced distally and then the catheter. The wire is removed, and the catheter is pulled back to selectively engage the left internal mammary.

approach in patients without a contraindication (ie, arteriovenous fistula, abnormal Allen's test, harvested radial artery).

TECHNIQUE

A 0.035-inch wire is advanced into the descending aorta. The left coronary bypass catheter is then advanced over the wire distal to the origin of the great vessels. The wire is removed, and the catheter is pulled back and rotated counterclockwise to get it to point toward the origin of the left subclavian (Figure 1A and 1B). A hydrophilic 0.035-inch wire is then advanced into the left subclavian and placed distally. The catheter is advanced beyond the vertebral artery, and the hydrophilic wire is removed. A puff of contrast is then administered to locate the origin of the IMA (Figure 1C and 1D). The catheter is pulled back and torqued into the IMA for selective angiography (Figure 1E). See Figure 2 for an illustration of this technique.

DISCUSSION

Opacification of the IMA is performed either in a selective or nonselective manner. In the latter, the IMA is not engaged, but contrast is injected into the subclavian artery to either determine the location of the IMA or to determine patency. Opacification can be enhanced by placing a blood pressure cuff on the ipsilateral arm and inflating to suprasystolic pressure to

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minimize contrast washout. This may be adequate for evaluating intermediate stenosis.

Selective angiography is usually performed via the femoral approach or the ipsilateral radial or brachial artery. Previous techniques of LIMA injection via the right radial approach have been reported and include use of either a mammary-shaped catheter (JL 1) or specialty catheters such as the Yukimo and Simmons types.³ These techniques often require reshaping of the catheter in the aorta or catheter exchanges.

CONCLUSION

This technique demonstrates the use of a standard left coronary bypass catheter to selectively engage the LIMA via the right radial artery. This is not a randomized trial but a series of consecutive patients in which this technique has been attempted and has been successful. Selective engagement may not be feasible in all patients, but the shape of the catheter seems to allow engagement of the contralateral subclavian artery and, in this limited series, selective engagement of the LIMA without reshaping or exchanging the catheter. This may serve as a reasonable alternative to the femoral approach or left radial approach. Limitations of engaging the LIMA via the right radial artery may include subclavian tortuosity, a vertical aorta, and patients with known severe atherosclerotic disease of the aortic arch. ■

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