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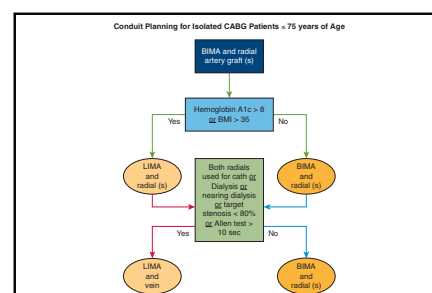


Commentary: One artery does not fit all: Tailoring the operation to the patient

Jennifer S. Lawton, MD

In their invited expert review, Gillmore and colleagues¹ nicely summarize the benefits and data supporting the use of bilateral internal mammary arteries (BIMA) and the radial artery as additional bypass conduits to the left internal mammary artery (IMA) for coronary artery bypass grafting (CABG). They provide evidence to help surgeons determine which second or third arterial conduits to use.

The use of multiple arterial grafts for CABG has not been widely adopted, reported in 9% to 27% of cases in North America and 3% to 34% of cases in Europe.² Barriers to the use of multiarterial grafting may include surgeon experience, increased complexity and technical challenge, time limitation, lack of desire to teach trainees, concern for spasm, lack of qualified assistants to harvest, concern for sternal wound infection, and concern for hand complications. For our surgical community and our patients to receive the tremendous benefits offered by multiple arterial grafting, we must be willing to consider the use of multiple arterial grafts in all our patients. We should strive to begin every patient assessment with the hope of providing all arterial grafting with BIMA and radial grafts. A practical, simple, and useful bedside assessment can be done at the time of the preoperative meeting (Figure 1). Poorly controlled diabetes and obesity should discourage the use of BIMA due to the increased risk of sternal wound



Algorithm to aid multiple arterial grafting in CABG patients age ≤ 75 years. CABG, Coronary artery bypass grafting; BIMA, bilateral internal mammary artery; BMI, body mass index; LIMA, left internal mammary artery.

CENTRAL MESSAGE

Despite supportive guidelines and a plethora of data, multiple arterial grafting has not been widely adopted by cardiac surgeons. A simple, practical algorithm provides a process for its adoption.

infection. Some caveats: a history of chest radiation or subclavian stenosis does not deter IMA use. An IMA can be used as free graft, and depending on the radiation field, the IMA bed may be spared. The surgeon can always evaluate its flow before making a decision regarding its use. When using BIMA grafts, skeletonizing at least one of them should be planned.

The use of a radial artery is deferred if coronary angiography was performed in the arm, if the patient may need the arm for a future arteriovenous fistula, if the Allen test demonstrates poor ulnar compensation after 10 seconds, or if the planned target vessel has a noncritical stenosis. Only the nondominant radial or both radials can be used, depending on the need for a conduit and the patient's preference and livelihood. Use of a radial artery is avoided if the artery is calcified, there is evidence of spasm, it is tiny in size, or there is history of Raynaud's disease. The radial artery is large, versatile, easy to harvest; readily lends itself to sequential grafting; and is rarely associated with wound complications. In addition, unlike the saphenous vein or BIMA, the radial artery can be used with impunity in patients with peripheral arterial disease, lower extremity varicosities, obesity, diabetes, or chronic obstructive pulmonary disease.

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Conduit Planning for Isolated CABG Patients ≤ 75 years of Age

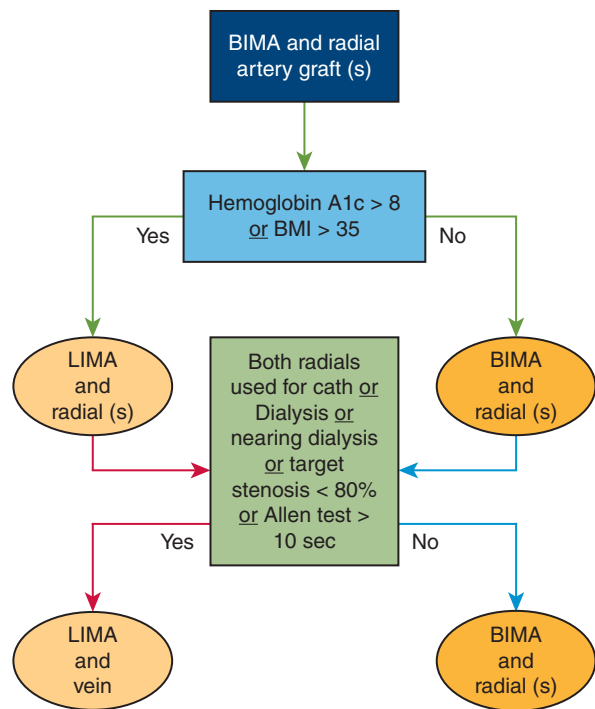


FIGURE 1. Algorithm to aid multiple arterial grafting in CABG patients age ≤75 years. CABG, Coronary artery bypass grafting; BIMA, bilateral internal mammary artery; BMI, body mass index; LIMA, left internal mammary artery.

We all evolve and adopt new techniques over the course of our careers, which is vital for our specialty. If you are not a multiarterial graft user, step out of your comfort zone and try one new additional arterial graft today.

Hopefully the future will bring additional high-level evidence to support multiarterial grafting for CABG patients, because the use of only one artery cannot fit all patients. Ultimately, widespread adoption may require making multiarterial grafting a publicly reported quality measure, similar to that of the left IMA in the United States. The data summarized by Gillmore and colleagues will help surgeons weigh the benefits and tailor the operation to each patient to provide superior patency and associated prolonged survival.

References

1. Gillmore T, Rocha RV, Fremes SE. Evidence-based selection of the second and third arterial conduit. *J Thorac Cardiovasc Surg Open*. 2021;5:66-9.
2. Gaudino M, Chikwe J, Falk V, Lawton JS, Puskas JD, Taggart DP. Transatlantic editorial: the use of multiple arterial grafts for coronary revascularization in Europe and North America. *Eur J Cardiothorac Surg*. 2020;57:1032-7.