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Commentary: “Do or do not. There is no try”: Which role for minimally invasive direct coronary artery bypass?

Arnaldo Dimagli, MD, and
Umberto Benedetto, MD, PhD

Equipoise between coronary artery bypass grafting (CABG) and percutaneous coronary artery intervention (PCI) exists regarding the outcomes following revascularization of isolated left anterior descending (LAD) artery; as, such both strategies are recommended by the latest guidelines on myocardial revascularization.¹ PCI is usually preferred by the patients, and it is easy to understand why: it would be hard to opt for a full sternotomy, potential cardiopulmonary bypass-related complications, and tougher and longer recovery when an arterial puncture is the alternative choice on the shelf.

Innovations have radically changed the treatment of heart valve disease; still today most of CABG cases are performed with median sternotomy and on-pump.² Minimally invasive direct coronary artery bypass (MIDCAB) represents an attractive alternative to the conventional approach in patients with isolated LAD lesions with the advantage of avoiding full sternotomy and achieving a faster recovery. Although the safety of MIDCAB has been widely demonstrated, data on its long-term efficacy are still limited.

The series by Davierwala and colleagues³ reported on the outcomes of the more than 20-year experience of MIDCAB via left small anterior thoracotomy using the left internal

Arnaldo Dimagli, MD (left), and Umberto Benedetto, MD, PhD (right)

CENTRAL MESSAGE

Minimally invasive coronary artery bypass for isolated LAD disease can be safely performed and it is associated with excellent long-term outcomes when performed by experienced surgeons.

mammary artery to bypass the LAD. The number of MIDCABs performed in the authors' center remained stable over the time, with a median of 84 procedures/year, and in-hospital mortality did not change (overall 0.9%). More importantly, authors set an important clinical benchmark for long-term survival, with a survival rate of 66% and 55% at 15 years and 20 years, respectively.

This encouraging report must be interpreted considering that this is a single-center experience with robust familiarity with the surgical skills required for this technique. Indeed, the proficiency of this group had been previously shown in off-pump CABG with bilateral internal mammary arteries⁴ and in MIDCAB.⁵ In the current study, the authors demonstrate that they are well past their learning curve, which represents one of the difficulties when adopting a new, unfamiliar technique. As a consequence of this, the incidence of technical errors (ie, dissection of left internal mammary artery) and rate of conversion to sternotomy decreased over the years. This center also kept a constant caseload, and this is paramount to maintain MIDCAB skills and therefore assure good clinical outcomes. So, the results presented may not be generalizable to most surgeons and centers.

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Moreover, authors attempted to prove an improvement of their center performance due to the use of MIDCAB, and logistic EuroSCORE (European System for Cardiac Operative Risk Evaluation) is used for benchmarking. Unfortunately, the EuroSCORE tends to overestimate the risk, and this can have partially influenced the authors' conclusions.⁶

Finally, authors chose not to report on a control group of patients undergoing PCI. PCI represents the gold standard for the treatment of isolated LAD disease. Evidence from a recent meta-analysis showed a superimposable safety profile between MIDCAB and PCI,⁷ but further high-quality direct comparisons between the 2 revascularization strategies are needed to draw final conclusions on MIDCAB efficacy and safety.

To conclude, the authors should be congratulated for their excellent long-term results and their experience should stimulate other centers to emulate it and encourage a wider adoption of this technique.

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Commentary: Sometimes less is more. Should minimally invasive direct coronary artery bypass become the new standard for revascularization of the left anterior descending artery?

Vivek Patel, MD, and Ravi K. Ghanta, MD

Vivek Patel, MD, and Ravi K. Ghanta, MD

CENTRAL MESSAGE

Minimally invasive direct coronary artery bypass appears to be a durable minimally invasive technique in low-risk patients with outcomes similar to those of conventional revascularization with sternotomy and cardiopulmonary bypass.

The left internal mammary artery (LIMA)-to-left anterior descending artery (LAD) bypass is the gold standard bypass for coronary revascularization, with >90% long-term patency and proven survival advantages.¹ The minimally invasive direct coronary artery bypass (MIDCAB) offers

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