

Open heart surgery outperforms stents in patients with multivessel disease

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KEY POINTS

- CABG should be considered carefully as an option among all patients with multivessel coronary disease, not just in patients with diabetes and weaker ventricles.
- Patients with several narrowed arteries who received CABG experienced better outcomes and fewer complications than those who had percutaneous coronary intervention.
- A multidisciplinary heart team approach should be used to assist patients with making informed decisions about their treatment.

Key points describing why open heart surgery outperforms stents in patients with multivessel disease Credit: Elsevier

Coronary artery bypass grafting (CABG) surgery may be the best treatment option for most patients with more than one blocked heart artery, according to research published today in *The Annals of Thoracic Surgery*, published by Elsevier.

"Our data demonstrate a significant mortality benefit with CABG over [percutaneous coronary intervention](#) (PCI), and this benefit is consistent across virtually all major patient groups, suggesting that CABG should be considered in broader patient populations, not just in cases of [patients](#) with diabetes and left ventricular dysfunction, which is what is commonly practiced," said lead author Suresh R. Mulukutla, MD, from the University of Pittsburgh Medical Center (UPMC) in Pennsylvania, PA, USA.

Dr. Mulukutla and colleagues examined data from two major clinical outcomes registries for [heart patients](#)—The Society of Thoracic Surgeons (STS) National Database, and the American College of Cardiology Foundation National Cardiovascular Data Registry (NCDR). The researchers identified patients with multivessel [coronary artery disease](#) who underwent CABG or PCI between 2010 and 2018 at UPMC. Those who met the eligibility criteria were separated into two groups—CABG and PCI—each including 844 patients. The analyses focused on outcomes for mortality, readmission and revascularization.

The researchers found that the estimated one-year mortality for patients in the CABG group was 7.2 percent, as compared to 11.5 percent the PCI group. The CABG group also experienced lower risk of hospital readmission (28.1 percent vs. 38.4 percent) and revascularization (1.0

percent vs. 6.7 percent) than the PCI group.

"A major point in the study is the focus on the current era of revascularization with the most currently available stents," said Dr. Mulukutla. "This research is really a modern, 'real-world' experience. While randomized clinical trials are clearly important, real-world analyses also can be very instructive because they provide insights on how we are making clinical decisions. For instance, the last several years have seen a shift toward more PCI over CABG. While there may be valid reasons for this, our data—which show CABG outperforming PCI in almost every patient group—should push us to further discuss all of the options."

PCI, often referred to as angioplasty, is a nonsurgical procedure that uses a thin, flexible catheter placed into an artery in the groin or arm. A balloon on the end of the catheter is positioned in the narrowed coronary artery and inflated to open-up the blockage. A stent is a metal mesh tube that is left behind to help keep the artery from collapsing. Drugs attached to the stent help prevent the body from reacting to the stent and shutting down the artery again.

CABG, the most commonly performed [heart](#) operation in the United States, is designed to bypass the blockages in the coronary arteries in order to create a new path for [blood flow](#) to the heart. The surgeon removes a healthy blood vessel, usually from the leg, arm, chest, or abdomen, and connects it to the other arteries (usually the aorta) in the heart. This enables blood flow to "bypass" or go around the diseased or blocked portion of the coronary artery.

The decision between open heart surgery and PCI for treatment of patients with multiple narrowed [arteries](#) is not always straightforward, according to Dr. Mulukutla. Thus, these more complex treatment decisions should be made with the guidance of a heart care team.

"Both cardiac surgery and stenting have roles among patients with coronary artery disease," said Dr. Mulukutla. "Because of this, it is important to deliberate carefully with the help of a heart team. The team can ensure that a [multidisciplinary approach](#) is used when offering recommendations to patients and assisting them in making informed decisions."

A heart care team generally includes cardiothoracic surgeons and cardiologists. Other [health care providers](#) such as [primary care physicians](#), physician assistants, nurse practitioners, imaging specialists, and anesthesiologists also may be part of the team. This approach leverages the expertise of these advanced practice providers in an effort to improve the efficiency and advance the quality of care for patients.

With revascularization, heart team input is often limited because PCI can be completed at the time of a patient's diagnostic procedure. When this happens, the physicians do not have the opportunity to discuss the spectrum of possible treatment options. As a result, the practical and consistent use of the heart team for decision-making in the treatment of patients with complex coronary artery diseases is lacking, Dr. Mulukutla explained.

"We are working to better facilitate a heart team approach and overcome some of the limitations given the current infrastructure of how these decisions are made," said Dr. Mulukutla. "We also are continuing to identify specific patient populations that may benefit from either CABG or PCI so that we can best advocate for our patients."

More information: Suresh R. Mulukutla et al, Coronary Bypass Versus Percutaneous Revascularization in Multivessel Coronary Artery Disease, *The Annals of Thoracic Surgery* (2019). [DOI: 10.1016/j.athoracsur.2019.02.064](https://doi.org/10.1016/j.athoracsur.2019.02.064)

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