Revascularization options: One size does not fit all

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See related research article by Tu and colleagues at www.cmaj.ca/lookup/doi/10.1503/cmaj.111072

Variations in medical care have assumed centre stage as the quality and economics of health care delivery become more important. Such variations have been documented in diverse situations, including antibiotic use, diagnostic testing, adherence to guideline-based care and, in a recent research article, choices of revascularization for coronary artery disease.[1]

Defining the optimal scope of variation in medical care in general and in revascularization specifically is difficult. Should it be a bell-shaped curve, and if so, what are the boundaries? Or should it reflect a prism distribution or some other mathematical shape and contour? Other questions need to be addressed as well. Is the variation harmful to patients? Does it have adverse consequences for society as a whole in terms of comparative effectiveness or cost-effectiveness? Studying the causes of such variation, particularly in revascularization, is also very problematic. To begin to understand these issues, the range of variation needs to be documented.

The current article by Tu and colleagues documents the scope of variation in the ratio of percutaneous coronary interventions to coronary artery bypass graft surgeries (PCI:CABG ratio) across 17 cardiac centres in Ontario, Canada's most populous province.[1] A central finding was a threefold variation in the PCI:CABG ratio across four hospital categories (centres were grouped by low, low–medium, medium–high and high ratios) in a sample of 8972 patients who underwent index cardiac catheterization between April 2006 and March 2007. Angiographic findings were a key determinant of PCI being chosen over CABG surgery. Among the patients with single-vessel disease, the mode of revascularization was typically PCI, which makes intuitive sense and is consistent with guidelines.[2–4] Most of the variation in the PCI:CABG ratio was among patients with multivessel disease or left main artery disease.[1] This variation reflects practice patterns observed in many studies involving these patient subgroups.[5–8] An additional group includes patients with a history of CABG surgery who required repeat revascularization; for these patients, PCI was preferred because of the risks associated with a second surgical procedure.

The reasons for variation in the PCI:CABG ratio are multifactorial. Tu and colleagues report one of the factors to be the treatment preferences of physicians performing the diagnostic angiography in patients with multivessel disease or left main artery disease. Recent guidelines for the appropriate use of revascularization have a category of "uncertain," in which the relative merits of the specific approach to revascularization can be debated.[3] Moreover, there are legitimate differences of opinion based on published data. For example, using the SYNTAX (Synergy between Percutaneous Coronary Intervention with TAXUS and Cardiac Surgery) Score or the Global Risk Classification, selected patients with multivessel disease or left main artery disease could be recommended for either PCI or CABG surgery.[2,9] In this regard, the experience and training of the physician performing the angiography plays an important role. For example, an experienced interventional cardiologist trained in procedures to treat chronic total occlusion may recommend PCI, whereas a less experienced interventional cardiologist may favour surgical referral. Alternatively, a surgeon who sees a patient with left main artery disease or multivessel disease may be of the opinion that all patients with these conditions should have surgery.

Criteria have been developed for selecting appropriate modes of revascularization.[3] In addition to these, larger studies are underway to develop and compare the effectiveness of more specific prediction models for outcome assessment.

Key points

- Patterns of use of revascularization strategies vary considerably across cardiac centres.
- Factors responsible for this variation are complex and often relate to physician and patient preferences.
- Patient-centred care with full disclosure of relevant information about the benefits and harms associated with specific modes of revascularization is essential.

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The striking variation in the PCI:CABG ratio that Tu and colleagues identify may also reflect differences in patients' expectations. All patients would like to undergo revascularization procedures that are 100% successful and risk free. Given that the world is not perfect, that seems a stretch. Instead, patients need to develop their own hierarchy of important components of the risk–benefit ratio. For some patients, prolonging life is most crucial; for others, avoiding surgery is paramount. One size does not fit all. Because expectations vary, the medical care team needs to identify the specific hierarchy of outcomes for each patient.

Ultimately, medicine is a traditional profession, and decision-making still relies on patient preference and the patient–physician relationship. Counterbalancing this is the need for patients to be fully informed about their options. The physician must facilitate the transfer of information in a way that can be understood by the patient about the different therapeutic possibilities — medical treatment alone or in combination with either PCI or CABG surgery — and their advantages and disadvantages. Whether the information is relayed by a cardiac team or a primary cardiologist without bias for CABG surgery or PCI will vary from place to place. For patients with clinically stable multivessel disease, a decision to proceed with PCI should be fully discussed with the patient and family.

At the end of the day, in any examination room where there are two individuals — a doctor and a patient — only one of them will be receiving the treatment.

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