Once a diagnosis is confirmed, intervention can occur in the catheterization lab or, after discussion with the surgeon, the patient can return to the OR.

In the end, the decision to intervene is typically made by the cardiac surgeon after accounting for preoperative, intraoperative, and postoperative factors and close consultation with intensivists and cardiologists. Such a rare (our institution reports an incidence of <1%) complex clinical scenario requires contemplation of numerous factors before choosing the optimal clinical path for a specific patient.

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Commentary: Myocardial infarction after cardiac surgery: Putting it all together

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In their expert opinion, Nicolas and colleagues¹ discuss the difficult clinical scenario of postcardiac surgery (PCS) myocardial infarction (MI). Diagnosing active ischemia early is critical to mitigating the negative sequelae of PCS-MIs,¹ namely reducing infarct size to preserve ventricular function. In acknowledging the dilemma we all face, the authors summarize the limitations in the data available to us in the immediate postoperative phase of care, eg, patients who are intubated or sedated and unable to give a clinical history, poststernotomy chest pain as a common postoperative

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CENTRAL MESSAGE

Early identification of patients with MI after cardiac surgery is difficult, but this well-presented algorithm can make the choice of watchful waiting or immediate action an easier one to make.

complaint, worrisome ST-segment changes, which can be normal findings after cardiac surgery, troponin elevations, which are nonspecific and seen in more than 90% of PCS to some degree,² and suboptimal echocardiogram windows for the evaluation of wall motion abnormalities. Aiming to overcome these difficulties, the authors propose an algorithm to simplify the diagnostic approach to PCS-MI.

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The algorithm's foundation rests on assessment of hemodynamic parameters, findings on the electrocardiogram (ECG), and cardiac biomarkers. Whenever 1 or more of these tests is abnormal, the authors suggest obtaining an echocardiogram, and if wall motion abnormalities are seen in a coronary territory, then prompt transfer to either a cardiac catheterization laboratory or back to the operating room (OR) if the patient is hemodynamically unstable. If the echocardiogram does not suggest ischemia and the patient is in a stable condition, watchful waiting is preferred.

The algorithm includes but de-emphasizes the role that the ECG plays in the evaluation, downgrading the importance of ST-segment elevations. We would argue that more emphasis on traditional ECG analysis (ST elevation vs non-ST elevation) is essential and belongs at the top of this diagnostic approach. These findings have been the hallmark of acute myocardial infarction (AMI) diagnostic algorithms for decades, aimed at early detection and emergent reperfusion (door-to-balloon times <90 minutes). In medical patients, these strategies have dramatically reduced 30-day mortality³ from 20% to less than 5% in the current era.

Unmentioned by the authors are additional intensive care unit (ICU) practices that could aid in the diagnosis of a PCS-MI, including OR-to-ICU hand-offs, intraoperative transesophageal echocardiogram handoffs, early extubation protocols, point-of-care ultrasound training, and multidisciplinary AMI activation teams. Standardized, well-performed OR-to-ICU handoffs have demonstrated the ability to reduce preventable PCS complications, do not increase resource use, and represent an opportunity for the early detection of ischemia.⁴ Inclusion of the optimal preload (central venous or pulmonary artery diastolic pressure), baseline hemodynamics (cardiac output with the level of inotropic support after bypass), and any specific concerns of the surgeon regarding graft or target vessel quality all provide significant information above and beyond that which was emphasized by Nicolas and coauthors.

A thorough discussion of the pre- and postbypass transesophageal echocardiogram findings, routinely available in virtually all cardiac surgery procedures,⁵ allows for a comparative assessment of PCS echocardiographic findings, increasing their sensitivity. As OR

extubations occur more frequently, less sedation offers an opportunity to discuss symptoms with the patient, helping to inform other signs of ischemia.⁶⁻⁸ Although postoperative pain is expected, recognition of angina by the experienced bedside clinician is essential in the workup of the patient with suspected PCS-MI. Finally, using the efficiencies of a multidisciplinary institutional AMI team, one that rapidly disseminates information about patients and coordinates their transfer to a catheterization suite or estuasions, is important. It should be used if it exists, or a case for its development should be made if it does not.

Nicolas and coauthors¹ offer a thoughtful diagnostic approach to the evaluation of the patient with PCS-MI and should be commended on their efforts. We would add that an emphasis on more traditional electrocardiogram analysis, information gained directly from the patient, and a well-organized and complete OR-to-ICU handoff all provide substantive information, which could further improve our ability in making what is for all of us a difficult diagnosis.

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