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Are we protecting the patient or ourselves? Mechanical circulatory support in complex percutaneous coronary intervention

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Mechanical circulatory support is increasingly used during complex, high-risk percutaneous coronary intervention, particularly in patients with reduced left ventricular ejection fraction, extensive coronary disease or unprotected left main stem disease who are considered unsuitable for cardiac surgery.[1] The aim is to maintain hemodynamic stability during balloon inflation, stent deployment and calcium modification, and to allow complete revascularization. However, support devices require large-bore arterial access and therapeutic anticoagulation, which raises the question of whether they are used for the benefit of the patient or, at times, mainly to reassure the operator.

For years, use of microaxial flow pumps in elective high-risk intervention rested on registry data, in which the decision to use support was driven by factors beyond defined clinical indications, and on a single early randomized trial against intra-aortic balloon counterpulsation, which was stopped for futility. In 2026, the first randomized trial comparing elective microaxial flow pump support with standard care was published. It included 300 patients with severe left ventricular dysfunction and extensive coronary disease undergoing complex intervention. Routine support did not improve the primary composite of major adverse clinical outcomes. Periprocedural myocardial injury was more frequent with support, and both cardiovascular and all-cause mortality, as secondary outcomes, were higher. Bleeding and vascular complications, recognized risks of large-bore support, did not differ significantly between groups. A second large randomized trial is still awaited.

These findings challenge the assumption that routine support protects the patient. Whether selected patients, particularly those with clear hemodynamic instability, still benefit remains uncertain, so the decision should remain individual. We propose a structured Heart Team assessment before the procedure, including the amount of myocardium at risk and anatomical complexity, left ventricular function, baseline hemodynamic status, suitability of vascular access and the planned revascularization strategy.

Routine elective mechanical circulatory support in complex percutaneous coronary intervention is not supported by current randomized evidence and should be reserved for carefully selected patients. Asking before each procedure whether support serves the patient or the operator helps keep the decision evidence based.

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LITERATURE

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