

Surgeon's View to Treat Myocardial Infarction

Name: Young-Nam Youn, MD, PhD

Division of Cardiovascular Surgery, Severance Cardiovascular Hospital,
Yonsei University College of Medicine, Seoul, Korea

The role of surgical revascularization in the treatment of acute myocardial infarction (MI) has changed considerably over the last 30 years as along with the improvement in intraoperative management, the techniques of myocardial protection and the development of heart positioner for off-pump coronary artery bypass grafting (CABG). Moreover, the clinical affirmation of thrombolysis and PTCA in the same period also had the effect of progressively relegating surgical revascularization, for practical, logistic, and economic reasons, to a role of a therapeutic option of second or, third choice. Early studies reported increased morbidity and mortality for patients undergoing surgical revascularization within 30 days of MI. A concern arose over a high risk of extension and hemorrhage into infarction after CABG of acute MI. During 1980s, reports appeared recommending surgical revascularization in preference to medical therapy for acute MI. Mortality rates under 5% were reported. There continue to be several scenarios that requires emergent or urgent surgical revascularization. Failure of thrombolytics, PTCA, with acute occlusion may require surgical intervention. Additionally, CABG for postinfarction angina has become a critical step in the pathway of treating acute MI. Finally, CABG may indicated in patients with multivessel disease or left main CAOD developing cardiogenic shock after MI. In terms of timing after infarction, one large volume study revealed that CABG within 6 hours for the NSTEMI group and 3 days for the STEMI group were independently associated in-hospital mortality. Optimal timing of CABG in patient with acute MI is controversial subject. Early surgical intervention has the advantage of limiting the infarct expansion and ventricular remodeling that may result in possible ventricular aneurysm and rupture. However, there is the theoretical risk of reperfusion injury, which may lead to hemorrhagic infarction resulting extension of infarct size, poor infarct healing, and scar development. Some authors have advocated the use of mechanical support to stabilize and allow elective rather than emergent surgery. If revascularization cannot be delayed, aggressive mechanical support such as IABP, ECMO, and LVAD must be available since mortality is most likely due to pump failure. In many studies, trends favoring CABG for multivessel disease were seen after 2 years in composite cardiac event endpoints, rate of reinfarction, and mortality; revascularization was significantly higher than stenting. CABG has potential advantages. First, surgical revascularization is the most definitive form of treatment of occlusion and arterial grafts showed excellent patency. Second, CABG also offers more complete revascularization. Third, difficult distal obstruction can be reached. Forth, there is controlled reperfusion to reverse ischemic injury and reduce reperfusion injury. In summary, surgical revascularization following acute MI can be performed with excellent results when the timing and patient cohort are appropriate. The appropriate selection of treatment modalities among thrombolytic therapy, PTCA, mechanical treatment, and CABG for acute MI might be essential to improve outcomes.