

Postoperative stroke after off-pump versus on-pump coronary artery bypass surgery

Biancari F, Mosorin M, Rasinaho E, et al. *J Thorac Cardiovasc Surg.* 2007;133:169-73.

Objective:

The value of off-pump over conventional coronary artery bypass surgery in reducing the risk of postoperative stroke is controversial. This issue has been evaluated in light of our recent clinical experience.

Study Design:

Off-pump coronary artery bypass surgery was performed in 557 patients, and conventional coronary artery bypass surgery was performed in 445 patients. Preoperative stroke risk was calculated according to the Northern New England Cardiovascular Disease Study Group stroke risk scoring method.

Results:

Off-pump coronary artery bypass surgery was associated with a lower but not significant rate of postoperative stroke in the overall series (1.8% vs. 2.5%, $P = 0.45$), a difference that slightly increased in the highest tertile of the Northern New England Cardiovascular Disease Study Group score (2.8% vs. 4.2%, $P = 0.75$). The postoperative stroke rate was significantly lower when the operation was performed by off-pump coronary artery bypass surgeons using routinely epiaortic ultrasonographic scanning compared with conventional coronary artery bypass surgeons not using epiaortic ultrasonographic scanning (0.4% vs. 3.9%, $P = 0.015$). The Northern New England Cardiovascular Disease Study Group score (mean, 4.6 +/- 2.1 vs. 4.9 +/- 2.2; $P = 0.189$) was similar in these groups. Logistic regression showed that when adjusted for Northern New England

Cardiovascular Disease Study Group stroke risk score and critical preoperative status, the treatment approach (off-pump coronary artery bypass surgery and routine epiaortic ultrasonographic scanning) was an independent predictor of postoperative stroke ($P = 0.012$; odds ratio, 34.1; 95% confidence interval, 2.2-533.7).

Conclusion:

The neuroprotective efficacy of off-pump coronary artery bypass surgery is marginal compared with that of conventional coronary artery bypass surgery. A decreased risk of postoperative stroke after off-pump coronary artery bypass surgery is expected, mostly in high-risk patients and when epiaortic ultrasonographic examination is routinely used for better planning of operative strategy, aiming to minimize the risk of intraoperative embolism.

