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THE VALUE OF CORONARY REVASCLARIZATION BEFORE VASCULAR SURGERY FOR LONG-TERM SURVIVAL BENEFITS: A COST-EFFECTIVENESS ANALYSISMantha, S¹, Roizen MF², Fleisher, LA³*Anesthesiology & Intensive Care, Hyderabad, AP¹; SUNY, Syracuse, NY²; Johns Hopkins University, Baltimore, MD³*

Introduction: The American College of Cardiology/American Heart Association (ACC/AHA) Task Force for perioperative cardiovascular evaluation for noncardiac surgery has recommended that patients at intermediate clinical risk as opposed to patients at low and high clinical risk categories should undergo noninvasive cardiac testing before vascular surgery as a part of risk stratification for coronary artery disease (CAD).¹ But cost-effectiveness of various coronary revascularization interventions after risk stratification is not clear especially when long-term outcomes are considered.

Methods: We designed a Markov based decision analysis model to determine the cost-effectiveness of two strategies for coronary revascularization after initial screening with dobutamine stress echocardiography (DSE). The strategies were “selective-revascularization” i.e. coronary artery bypass graft (CABG) for triple-vessel disease states alone and “revascularization-all” i.e. CABG for triple-vessel disease and Percutaneous transluminal coronary angioplasty (PTCA) for one- and two-vessel disease states. Base-case strategy was “no-revascularization” but administration of perioperative betablocker therapy for all patients. The time horizon was 16 years and the target population being individuals aged 65 years undergoing elective vascular surgery. Survival benefits were captured by intention-to-treat 16-year survival curves in a cohort of vascular surgery patients with different sets of CAD.² Medicare reimbursement cost data was used to reflect societal perspective for analysis. Future costs and quality adjusted life years (QALYs) were discounted at a yearly

rate of 3%. Sensitivity analysis also included multivariate second order Monte Carlo simulation.

Results: Baseline analysis for incremental cost-effectiveness ratio (ICER) is listed below.

Discussion: In the intermediate cardiac risk group of patients presenting for vascular surgery and screened initially by DSE, “selective-revascularization” with CABG for only three-vessel CAD states is a cost-effective strategy while “revascularization-all” is not cost-effective. These results support the guidelines proposed by ACC/AHA Task Force even when long-term survival benefits are considered in a subset of patients undergoing vascular surgery.

Reference.

1. Eagle KA, Berger PG, Calkins H et al. ACC/AHA guideline update for perioperative cardiovascular evaluation for noncardiac surgery-executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1996 Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery. *J Am Coll Cardiol* 2002; 39: 542-53.
2. Rihal CS, Eagle KA, Mickel MC, Foster ED, Sopko G, Gersh BJ. Surgical therapy for coronary artery disease among patients with patients with combined coronary artery and peripheral vascular disease. *Circulation* 1995; 91:46-53.

Strategy	Costs (\$)	QALYs	ICER Cost/QALY
No-revascularization	\$45,770	7.0389	
Selective-revascularization	\$50,176	8.2029	\$3,785/QALY
Revascularization-all	\$51,081	8.2179	\$60.213/QALY

The median (2.5% and 97.5%) ICER (cost/QALY) values for “selective-revascularization” and “revascularization-all” strategies with Monte Carlo simulation were 1,222 (3,645 and 5,931) and 55,284 (13,209 and 128,198) respectively.