Supplemental Digital Content 1

Supplemental Methods

Protocol development

The study was originally designed to evaluate patients having coronary artery bypass grafting with left ventricular dysfunction. Before patient accrual began, the enrollment criteria was modified by restricting enrollment to patients with aortic stenosis having aortic valve replacement. Similarly, the primary outcome was modified after approximately 30% of the patients were enrolled. The single primary outcome of left ventricular strain was changed to co-primary outcomes consisting of left ventricular strain and strain rate, with statistical compensation. This modification was made without unblinding of the outcome data.

Subject selection

Patients who fulfilled inclusion and exclusion criteria, as described in the Methods, were approached for consent during their preoperative surgical and anesthetic assessment by research personnel on one or more days prior to cardiac surgery.

Blinding

Echocardiographic examinations were blinded by removal of patient identifiers and replacement with a code linked to patient data/randomization group. The code was maintained by the statisticians and was inaccessible to research personnel until data analysis was complete.