Publication Summary Document

Transit-time flow predicts outcomes in coronary artery bypass graft patients: a series of 1000 consecutive arterial grafts

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Objective

This study was undertaken to evaluate transit-time flow (TTF) as a tool to detect technical errors in arterial bypass grafts intraoperatively and predict outcomes.

Study

TTF's three parameters, pulsatility index (PI, index of resistance), flow (cc min1) and diastolic filling (DF, proportion of diastole with coronary flow), were measured in 990/1000 (99%) of arterial grafts in 336 consecutive patients, prospectively enrolled in a database. Grafts were revised when TTF findings supported the otherwise suspected graft malfunction. If no other signs/suspicion of graft malfunction existed (normal electrocardiogram (EKG), stable haemodynamics and unchanged ventricular function on trans-oesophageal echocardiography (TEE), and the PI was >5, grafts were not revised. TTF was done with a Medistim flowmeter.

Results

A flow value <15 cc min1 and a DF value of <45 did not predict MACE, including cardiac death, with the possible exception of a mortality difference using DF to assess graft function only after emergency cases were excluded . The variables PI >5, age (per 10 years) and admission status were all significant predictor variables of MACE at $p < 0.05$.

17% of patients with PI>5 were observed with MACE 17% and 5% of patients with PI≤ 5.

Conclusion

The PI, obtained by TTF measurement, is a valuable tool to assess adequacy of arterial grafts and predict outcomes. Postoperative adverse events, especially operative mortality, are significantly higher in patients with grafts with a high PI.

Medistim Comments

The study is done with retrospective analysis of data from consecutive patients of a single surgeon. This means that one of the major factors that could influence on the clinical outcome of the patients, the surgeon, has been the same for all patients and this is strengthening the anticipated correlation between a PI value >5 and the incidence of MACE.

Reference

Transit-time flow predicts outcomes in coronary artery bypass graft patients: a series of 1000 consecutive arterial grafts, Kieser et al. / European Journal of Cardio-thoracic Surgery 38 (2010) 155—162