Effects of Off-Pump Versus On-Pump Coronary Surgery

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Results: Table I demonstrates that PS for TL is significantly higher than MIBI for all the STs. The correlation between mean ST flow and mean PS suggests PS dependence on Q. Additional estimates of PS in narrow Q bands shows similar influence of Q in PS under each of the three STs.

Conclusion: The current study using delayed contrast enhanced MRI and steady state cine MRI demonstrated that the severity of myocardial fibrosis revealed by delayed contrast enhanced MRI has a strong relation with diastolic dysfunction in patients with HC.

Effects of Off-Pump Versus On-Pump Coronary Surgery on Early and Late Postoperative Left Ventricular Function: A Randomized Trial Using Cardiovascular Magnetic Resonance Imaging

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Introduction: There is biochemical evidence that off pump coronary artery bypass grafting (OPCABG) reduces myocardial injury when compared to the use of cardiopulmonary bypass (ONCABG), but the functional significance of this is uncertain. We hypothesized that OPCABG surgery would result in improved early and late left ventricular function compared with ONCABG surgery.

Methods: In a single centre randomised trial, 30 patients undergoing multi-vessel total arterial revascularization were randomly assigned to OPCABG and 30 patients to ONCABG surgery. Patients underwent pre-operative, early (day 6) and late (6 months) post-operative cine MRI for global left ventricular function and regional wall motion assessment.

Results: The two surgical groups were well matched in terms of pre-operative (age, cardiopulmonary risk factors, pre-operative medication use) and peri-operative (number of distal anastomoses, inotropic requirements) factors. The mean pre-operative cardiac index was similar in the two surgical groups (2.9 +/- 0.7 ONCABG; 2.9 +/- 0.8 OPCABG; p = 0.9). Early post-operatively, the cardiac index was significantly higher in the OPCABG group (2.7 +/- 0.6 ONCABG; 3.2 +/- 0.8 OPCABG; p = 0.04). The mean pre-operative ejection fraction was 62% +/- 12% in the OPCABG group and 62% +/- 11% in the ONCABG group (p = 0.9). In the early post-operative period this decreased to 59% +/- 11% in the OPCABG group and increased to 65% +/- 12% in the ONCABG group (p = 0.03 for the change in EF). When assessed at 6 months, the mean cardiac index was 3.1 +/- 0.6 in the ONCABG group and 3.1 +/- 0.8 in the OPCABG group (p = 0.7). Ejection fraction at 6 months was significantly improved with pre-operative measurements for both groups (P < 0.05 for each), but not significantly different between the two surgical groups (p = 0.5).

Conclusion: In patients undergoing isolated coronary artery grafting, OPCABG surgery results in significantly better left ventricular function early after surgery, but at 6 months both surgical groups showed a similar benefit in left ventricular function from revascularization.

Correlation Between Hyphenation on Delayed Contrast Enhanced Magnetic Resonance Imaging (MRI) and Diastolic Function Assessed by Steady State Cine MRI in Hypertrophic Cardiomyopathy

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Backgrounds: Diastolic dysfunction is common in patients with overt hypertrophic cardiomyopathy (HCM). Steady state cine magnetic resonance imaging (MRI) can provide accurate measurement of diastolic function of the left ventricle (LV), and delayed contrast enhanced MRI can delineate the presence and extent of fibrosis in HCM. The purpose of this study was to determine if altered diastolic function in HCM is related to the extent of myocardial fibrosis demonstrated by contrast enhanced MRI.

Methods: Seventeen patients (13 men, 4 women, mean age 57.7 +/- 9.8 years) with hypertrophic cardiomyopathy were studied. The severity index of hyperenhancement on delayed contrast enhanced MRI was determined by scoring the extent of hyperenhanced tissue in 30 myocardial segments. The peak filling rate (PFR), LV ejection fraction (EF) and LV mass were determined by steady state cine MRI.

Results: Del-contrast enhanced MRI demonstrated hyperenhancement in 97 of the 910 segments (15%) and 13 of the 17 patients (77%). The severity index determined by delayed enhanced MRI demonstrated a significant negative correlation with the PFR (r = -0.86, p < 0.01) and with the LVEF (r = -0.59, p < 0.05). No significant correlation was observed between the severity index of hyperenhancement and LV mass (r = 0.23, p = 0.30). Conclusion: The current study using delayed contrast enhanced MRI and steady state cine MRI demonstrated that the severity of myocardial fibrosis revealed by delayed contrast enhanced MRI has a strong relation with diastolic dysfunction in patients with HC.