SURGICAL VENTRICULAR RECONSTRUCTIUON (DOR OPERATION): INDICATION AND BEST TIMING FOR SURGERY

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Indication

Surgical Ventricular Reconstruction (SVR) or Dor operation is indicated for the patients with large (Asynergy Index more than 50%) akinetic or dyskinetic post-infarction aneurysms. This operation is indicated when left ventricular end-diastolic volume index (LV EDVI) is more than 100 ml/m2 but less than 200 ml/m2; left ventricular end-systolic volume index (LV ESVI) is more than 60 ml/m2 but less than 150 ml/m2; left ventricular end-diastolic dimension (LV EDD) is more than 6,0 cm but less than 8,0 cm; left ventricular ejection fraction (LV EF) is more than 20% but less than 40%; pulmonary artery mean pressure is less than 25 mm. Hg. and brain natriuretic peptide (BNP) is less than 2000 pg/ml.

Adequately performed operation

The Dor operation is considered to be performed adequately if LV ESVI decreased more than 30% of its preoperative value and postoperative LV ESVI is less than 60 ml/m2. The hospital mortality after Dor operation is increased up to 6,25% if preoperative LV ESVI is more than 100 ml/m2.

Survival rate

The recently concluded study of the newer arm of the STICH trial showed that in patients undergoing coronary artery bypass grafting plus surgical ventricular reconstruction (SVR), a significant benefit was realized compared to bypass alone, with the achievement of the postoperative ESVI of less than 60 – 70 ml/m2 and more than 30% ESVI reduction after surgery. 5-year survival rate after isolated coronary artery bypass grafting (CABG) was 54% in patients with preoperative ESVI more than 100 ml/m2 and LV EF less than 30% and 85% in patients with preoperative ESVI less than 100 ml/m2. 5-year survival rate after Dor operation was 70% in patients with preoperative ESVI more than 120 ml/m2 and postoperative ESVI more than 60 ml/m2 and 80 - 90% in patients with postoperative ESVI less than 60 ml/m2.

Late postoperative remodeling

Late postoperative remodeling (4 months after surgery) was defined as an increase in LV ESVI of more than 25% following an early decrease after SVR. Late postoperative remodeling may occur if preoperative LV ESVI is more than 100 ml/m2; LV EDD is more than 6,5 cm and Systolic Sphericity Index (SSI) is more than 0,75. Patients with baseline (preoperative) SSI less than 0,75 showed a much lower probability of late LV remodeling and never achieved a late ESVI of 50 ml/m2. Extensive ventricular remodeling at baseline (preoperative) ESVI more than 94 ml/m2 might limit the ability of surgical ventricular reconstruction (Dor operation) to achieve a sufficient reduction in volume and a clinical benefit (better NYHA class and survival).

Best timing for surgery

According to professor Vincent Dor personal data 10-year survival rate after Dor operation is 80% in patients with preoperative ESVI less than 90 ml/m2. This is considered as a proper time for surgery whereas 10-year survival rate after this operation is only 50% in patients with preoperative ESVI more than 120 ml/m2 and this is considered as too late for surgery. According to the literature data the best time for Dor operation providing better survival rate is when LV EDVI is more than 100 ml/m2 but less than 150 ml/m2; LV ESVI is more than 60 ml/m2 but less than 100 ml/m2; LV EDD is more than 6,0 cm but less than 6,5 cm; SSI is less than 0,7 and proBNP is less than 900 pg/ml.

Conclusion The Dor operation can be a real alternative to the heart transplantation for the patients with large post-infarction aneurysms if performed in proper time and adequately.