Evidence of Decreasing LV Size and Volume After Cardiac Support Device (CSD) Implantation

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Objective
CSD is a novel device to be wrapped around the heart to prevent further cardiac enlargement in patients with dilative cardiomyopathy.

Methods
Among 17 patients receiving the CSD ± mitral valve repair between April 1999 and January 2000 nine had preoperative and 6 months postoperative computed electron beam tomography (EBT) together with their follow up. Patients age ranged from 34 to 69 years, median 59 years, all were male.

Results
NYHA class improved in all patients. Preoperatively mean NYHA class was 2.8 ± 0.3 and 6 months postoperatively 1.5 ± 0.3. 6 patients improved 1 class, 3 patients 2 classes. On EBT 1 non-compliant patient deteriorated, 2 patients were unchanged and 6 improved. Overall LVEDV decreased from 400 ml to 343 ml (14%). In patients that improved from 355 ± 138 ml to 278 ± 134 ml, in the unchanged patients from 559 ± 30 ml to 463 ± 20 ml and in the deteriorating patient LV-volume increased from 360 ml to 490 ml. LVEF changed from 20 ± 10% preoperatively to 26 ± 20% after 6 months. In improved patients from 23 ± 6% to 33 ± 9% and from 15 to 12% in the unchanged or deteriorating patients. LVEDD increased in 3 patients during follow up and decreased in 6, RVEDD was unchanged in the deteriorating patient and decreased in all other patients from 50 mm to 43 mm. Age, duration of the heart failure, and associated mitral valve repair seemed to have no influence on outcome. Preoperative LVEDV > 450 ml seems to be a risk factor for no or slow recovery. At 6 months NYHA class I patients presented with LVEF > 30%, grade 0 to 1 mitral regurgitation, RVEDD normal or near normal, and LVEDV of 210 ± 80 ml, which is significantly smaller than in the NYHA class II patients. Also NYHA class I patients decreased their LVEDV 27% during follow up as compared with the remaining patients which decreased only 9%.

Conclusions
6 months after CSD implantation all patients improved at least 1 NYHA class. The most improved patients returned to NYHA class I within 6 months after surgery. Smaller heartsize and less advanced heart failure symptoms seem to be predictors of good recovery. The CSD has potential to improve heart failure patients and decrease their heartsize.

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