Factors predicting the time until atrial fibrillation recurrence after concomitant left atrial ablation

Grubitzsch H, Grabow C, Orawa H, Konertz W

Objective
Treatment of atrial fibrillation, a risk factor for morbidity and mortality, by left atrial ablation is a less complex procedure which is increasingly performed in conjunction with surgery for various heart diseases. Although restoration of sinus rhythm is effective initially, atrial fibrillation may recur. We investigated factors predicting the time until its recurrence.

Methods
Between January 2003 and December 2005, 162 consecutive patients (52.5% male, age 69+/−8.7 years) with permanent atrial fibrillation underwent concomitant left atrial ablation and isolated or combined mitral valve surgery (42.6%), isolated or combined aortic valve surgery (32.1%), and isolated or combined coronary artery bypass grafting (24.1%). Ablation was performed by microwave (n=93, 57.4%) or radiofrequency (n=69, 42.6%) technology. Follow-up was after 3, 6, 12 months and yearly thereafter. Predictive values of variables for postoperative atrial fibrillation were examined using techniques of univariate and multivariate survival analysis (proportional hazards regression).

Results
Eight patients died perioperatively and 13 during follow-up (not ablation related). Two patients were lost to follow-up. At last follow-up (19+/−11.3 months), 86 patients (62%) were in stable sinus rhythm, 73 (52%) without antiarrhythmic drugs, and 43 (31%) were in atrial fibrillation. Predictors for the time until recurrence of atrial fibrillation in a multivariate model were preoperative atrial fibrillation duration (hazard ratio 1.005, 95% confidence interval 1.003-1.007, p<0.001) and left atrial diameter (hazard ratio 1.056, 95% confidence interval 1.020-1.093, p=0.002). Overall, sinus rhythm conversion rate was 75% when preoperative atrial fibrillation duration was less than 2 years, but 42% in longer lasting atrial fibrillation with left atrial dilatation (>50mm). Age, gender, primary heart disease, history of thromboembolism or cardioversion, presence of concomitant diseases, EuroScore, left ventricular size and function, aortic cross-clamp time, ablation technology, and treatment with antiarrhythmic drugs did not predict rhythm outcome.

Conclusions
Preoperative atrial fibrillation duration and left atrial diameter predict the time until atrial fibrillation recurrence after concomitant left atrial ablation, whereas age, type of primary cardiac surgery, ablation technology and antiarrhythmic therapy do not.