IMPEIATS OF ATRIAL FIBRILLATION SURGERY AND ADVERSE ATRIAL REMODELING ON TISSUE DOPPLER INDICES OF ATRIAL MECHANICAL TRANSPORT

ACC Moderated Poster Contributions
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Background: Controversy surrounds the issue of atrial transport following the conversion of atrial fibrillation (AF) to sinus rhythm (SR). AF surgery isolates atria into segments that are too small to maintain reentrant activity. Spontaneous postoperative conversion to SR occurs in some patients with AF. We aimed to determine whether postoperative conversion of AF to SR leads to restoration of atrial contractility, and whether radiofrequency (RF) induced injury independently compromised atrial function. The effect of adverse atrial remodeling on the atrial transport function was assessed.

Methods: We evaluated 29 patients with permanent AF and 11 patients in SR (65±10 yrs) undergoing elective cardiac surgery. 13 AF patients (64±9 yrs) underwent a MAZE procedure. 16 AF patients with AF (69±8 yrs) who spontaneously converted to SR intraoperatively, but did not undergo AF surgery, comprised the non-RF group. Tissue velocity (TVI) and strain rate (SRI) data were acquired by TEE at the left atrial lateral wall pre- and postprocedurally. Left atrial wall specimens were obtained for quantification of apoptosis, fibrosis and myocytolysis.

Results: Postprocedural atrial contraction was restored in both groups with preoperative AF. The late diastolic postprocedural SRI was higher in the RF group than the non-RF group (-1.5±1.1 vs -0.6±0.5, P=0.01). Observed SRI values in both AF groups were lower than in the SR group (-3.8±2.5, P<0.01 for both comparisons). A reduction in postprocedural TVI values in atrial diastole was seen in the RF group (-4±2.1 to -1.9±2.1, P=0.03). The severity of atrial remodeling was not predictive of worse Tissue Doppler indices of atrial transport (P>0.05 for all analyses).

Conclusion: Coordinated atrial electrical activation after conversion from AF results in a contraction with only low SRI deformation. RF does not reduce atrial contractile capacity. Conversely, among AF patients those in the RF group had superior late diastolic strain rate profiles. Impairment in post-RF atrial reservoir function, likely due to RF induced reduction in compliance, was shown. We found no correlation between the histological amplitude of atrial remodeling and the strength of atrial contraction.