Introduction: Atrial fibrillation (AF) induces atrial functional mitral and tricuspid regurgitation. However, the contribution of mitral and tricuspid regurgitation to the biatrial substrate or remodeling in AF with normal ejection function is unclear.

Methods: Consecutive patients with AF and normal left ventricular ejection fraction (LVEF >50%) undergoing AF ablation were enrolled. The patients with reduced LVEF were excluded. Atrial functional mitral and tricuspid regurgitation, left and right atrial volume were evaluated. During AF procedure, voltage and conduction velocity were assessed by biatrial electroanatomic mapping.

Result: A total of 98 patients were enrolled. Moderate or greater degree of functional MR and of TR was seen in 4 (4.0%) and in 11 (11.2%) patients. The severity of MR and TR significant correlated with eGFR, NT-pro BNP, high sense troponin T, LV and RA volume. Moreover, TR was associated with significantly more the average of bi atrial voltage (RA; r = -0.42, LA; r=-0.35) and RA conduction velocity time (r = 0.33). Multiple regression analysis showed that NT-pro BNP were independent variables of increased atrial functional MR and TR On the recurrence, the presence of both significant functional MR and TR (n=13) was associated with high early recurrence rate to compare to no MR and TR at 3 month after procedure (38% vs 16% p<0.05)

Conclusion: The functional TR is associated with significantly reduced biatrial tissue voltage, which have implications for the intensive progression of remodeling. These functional MR and TR combination may predict early recurrence after AF ablation.