

Effect of Right Ventricular Lead Placement on Tricuspid Valve: Added Value of Post-procedural Fluoroscopy to Three Dimensional Echocardiography in a Prospective Cohort Study

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Abstract

Introduction. Use of implantable endocardial electronic devices is widely increasing due to pro-longed life span of the community. Several studies evaluated the effect of right ventricular (RV) leads on tricuspid valve by three-dimensional transthoracic echocardiography (3D-TTE); however, this affect has not yet been assessed by post-procedural fluoroscopy. Hence, the purpose of the current study was to evaluate the effect of RV lead placement on tricuspid valve, utilizing fluoroscopy in combination with 3D-TEE. **Methods.** We prospectively enrolled 59 patients who underwent clinically indicated pacemaker or implantable cardioverter defibrillator (ICD) implantation. Vena contracta (VC) and tricuspid regurgitation (TR) severity were measured using two-dimensional transthoracic echocardiography (2D-TTE) at baseline. Follow up 3D-TTE was performed six months after device implantation to assess TR severity and RV lead location. **Results.** TR VC was increased after the lead placement, compared to the baseline study (VC: 3.86 ± 2.32 vs 3.18 ± 2.39 ; $p = 0.005$). The mean changes in VC levels were 1.14 ± 0.67 mm (Range: -0.4-2.5 mm) after inserting the lead. Among all investigated parameters, VC changes were predicted based on lead placement position only in 3D-TTE ($p < 0.001$) while the other variables including fluoroscopy parameters were not predictive. **Conclusion.** The RV Lead location examined by 3D-TTE seems to be a valuable parameter to predict the changes in the severity of the tricuspid regurgitation. Fluoroscopy findings did not improve the predictive performance, at least in short term follow up.

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