Objective: Tricuspid annuloplasty (TAP) alone is insufficient for repairing functional tricuspid regurgitation associated with severe right ventricular dilatation and leaflet tethering. We have used right ventricle papillary muscle approximation (RVPMA) for severe TR with a tethering height greater than 8 mm or right ventricular diastolic dimension over 45mm. When significant septal leaflet tethering is appreciated as well, leaflet augmentation using autologous pericardial patch is performed along with RVPMA.

Case video summary: 75-year-old man with 25-year history of chronic atrial fibrillation presented with shortness of breath and lower limb edema. Transthoracic echocardiography showed severe tricuspid valve regurgitation, RVDd of 62 mm, right ventricle fraction area change of 33.1 %, TAPSE of 17 mm, LV EF of 57 % and mild mitral valve regurgitation. The patient underwent TAP, RVPMA, septal leaflet augmentation, mitral annuloplasty, and left atrial appendage closure. The operation was performed under cardioplegic cardiac arrest. At first, annuloplasty sutures were placed around the annulus, and then the septal leaflet was augmented with a semilunar autologous pericardial patch using 5-0 polypropylene continuous interlocking suture. Through the tricuspid annulus, two sets of horizontal pledgetted mattress sutures are placed semi-circumferentially with multiple bites on the subendocardium of the right ventricle. The sutures are tied down to approximate the anterior and posterior papillary muscles in a side-by-side position. Tricuspid annuloplasty was performed using a 32 mm MC3 ring. The postoperative echocardiography showed trivial tricuspid regurgitation. Heart failure symptoms improved, and the patient discharged on postoperative day 34. Three years after the operation, the patient remained in NYHA class 1, and transthoracic echocardiography showed mild tricuspid valve regurgitation, RVDd of 44 mm, tethering height of 5mm, TAPSE of 13 mm, and right ventricle fraction area change of 20 %.

Conclusion: Tricuspid valve repair with RVPMA and septal leaflet augmentation can be a useful surgical option to correct severe functional TR associated with severe leaflet tethering and right ventricular dilatation.