

# EP News: Heart Rhythm Case Reports

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## **Ectopic atrial tachycardia originating from right atrial appendage aneurysms in children: Three case reports**

In comparison to adults, the most common origins for ectopic atrial tachycardia (EAT) in children are the appendages. The difference in EAT location between children and adults raises the possibility of a discrete substrate in children. As EATs in children often display automaticity, the mechanistic possibility of residual arrhythmogenic tissue in the right atrial appendage as it developed from the primitive atrium has been raised. This is in contrast to adults in whom disease substrate often provokes EAT. In an interesting case series of 3 children (ages 4, 5, 11 years), Kanaya et al (DOI: <http://10.1016/j.hrct.2017.10.010>) described the characteristics and treatment outcomes of 3 children with EAT originating from right atrial appendage aneurysms. Right atrial appendage aneurysms can be acquired from disease states that result in elevated right atrial pressures or congenital from right atrial dysplasia. In all cases, the aneurysms were complex and multilobar and antiarrhythmic drug therapies were not effective. Catheter ablation was attempted in each child. In 2 cases, the anticipated arrhythmogenic aneurysm lobe was not accessible. In the third case, ablation of the earliest exit site resulted in altering the exit site only. In all cases, children ultimately required surgical removal of the aneurysm that resulted in long-term restoration of sinus rhythm. These cases highlight a structural mechanism associated with EAT in the right atrial appendage and demonstrate the refractory nature of these arrhythmias to both pharmacological and nonpharmacological interventions.

## **Unconventional warfare: Successful ablation of ventricular tachycardia by direct ventricular puncture in a patient with double mechanical heart valves**

Ventricular tachycardia (VT) ablation in patients with structural heart disease and moderate-severe left ventricular dysfunction can lower risk of arrhythmia recurrence and improve mortality risk compared to antiarrhythmic drug therapy. Patients with valvular heart disease represent a group in which ablation is much less effective because of arrhythmogenic substrate often

from the septal and basal segments that is less amenable to catheter ablation coupled with often limited endo- and/or epicardial access due to prior cardiac surgery. Menon et al (DOI: <http://10.1016/j.hrct.2017.10.007>) reported a case of a 63-year-old man with a biventricular implantable cardioverter-defibrillator and 4 prior cardiac surgeries due to bicuspid aortic valve and multiple episodes of endocarditis ultimately resulting in mechanical aortic and mitral valves. After partial pericardiectomy and manual removal of dense adhesions, the earliest epicardial focus was mapped and cryoablation applied unsuccessfully. Transcoronary ethanol ablation was considered, but not possible because of unfavorable anatomy. After mini-thoracotomy, a 17-G Tuohy needle was used to puncture the left ventricular lateral wall to access the endocardium. Activation mapping was performed and ablation performed at the earliest site, followed by additional substrate modification of the posterolateral scar. This case highlights the challenges of VT ablation in patients with valvular heart disease. The case also shows how approaches commonly used in hybrid suites for transapical valve replacements can be used to obtain access in these complex patients.

## **Lengthening the atrioventricular delay reduces large left atrial V waves and dyspnea after atrial fibrillation and tachycardia ablation**

Catheter ablation for atrial fibrillation is an increasingly used therapeutic approach. In patients with more advanced subtypes, ablation strategies of extra-pulmonary vein drivers and substrate are often advocated. This additional ablation in isolation or combined with preexisting fibrosis can significantly impact atrial compliance and systolic function. Management of “stiff left atrial syndrome” can be challenging, and patients often suffer from refractory dyspnea. Mitra (DOI: <http://10.1016/j.hrct.2017.09.007>) shared 2 cases of a unique approach to management. In both cases, patients had preexisting pacemakers and had significant dyspnea despite persistence of sinus rhythm. Mitra assessed the timing of left atrial appendage activation and noted that it occurred after the QRS complex during ventricular systole. Prolonging the atrioventricular delay resulted in ventricular systole after complete right and left atrial emptying and significantly improved heart failure symptoms in both patients. In patients in sinus rhythm with stiff left atrial syndrome and a pacemaker for significant atrioventricular conduction disease, this approach may improve symptoms, particularly in those with anterior linear ablation in which significant right and left atrial electrical dyssynchrony can develop.

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