

Catheter ablation of multiple accessory pathways in Ebstein anomaly guided by intracardiac echocardiography

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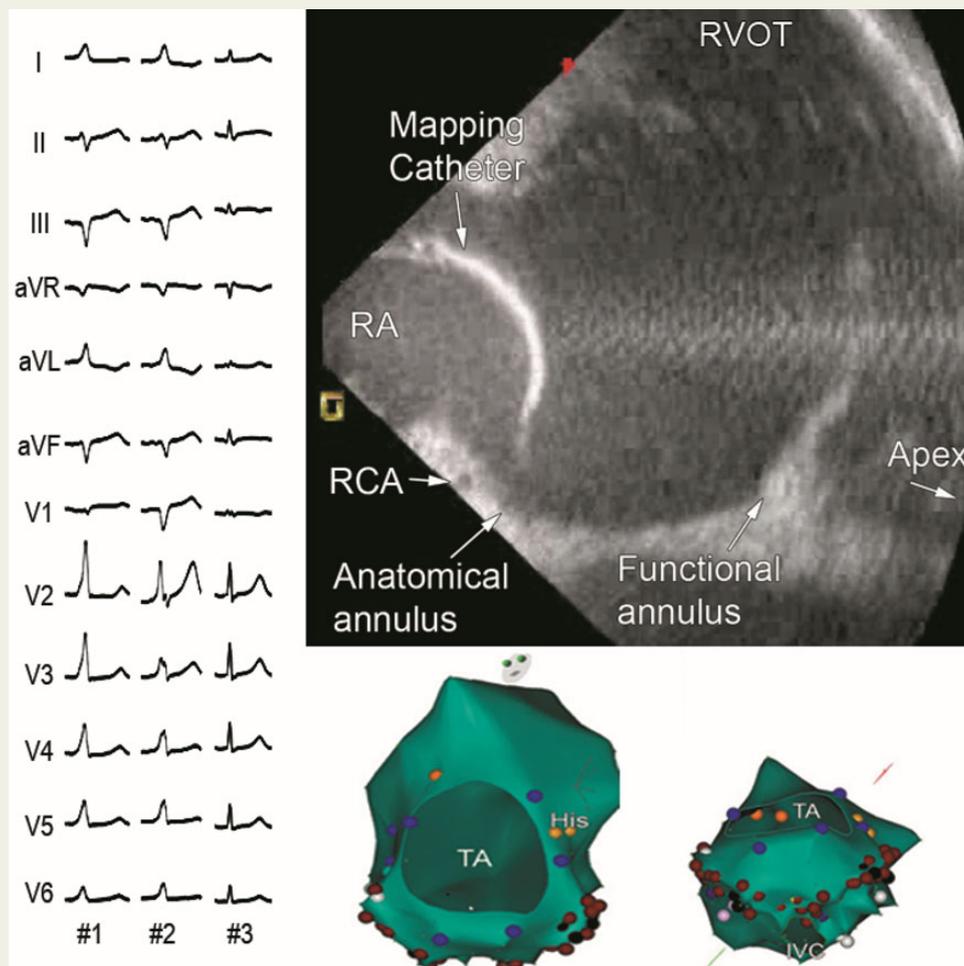
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We present a case of successful radiofrequency ablation of right-sided accessory pathways (APs) in Ebstein anomaly performed with a guidance of intracardiac echocardiography (ICE). Despite complex cardiac anatomy, the use of ICE enabled precise allocation and tagging of the anatomical tricuspid annulus which then served as ablation target for multiple APs.

A 24-year-old-female with Ebstein anomaly, pre-excitation (ECG#1), and history of syncope was referred for catheter ablation. The procedure was guided by fluoroscopy, electro-anatomical mapping system (CARTO 3™, Biosense-Webster), and intracardiac echocardiography (ICE) (Acunav, Siemens). At first, ICE (upper Panel) was used to define the true location of tricuspid annulus (TA) by course of the right coronary artery (RCA). Both anatomical and functional insertions of the tricuspid valve were then annotated (lower Panel shows right atrium in left anterior oblique and caudal view). Subsequently, the earliest ventricular activity during sinus rhythm was mapped to the posterolateral portion of TA. After delivery of radiofrequency (RF) current at that site, a small change in pre-excitation pattern (ECG#2) was noted and the earliest ventricular activation shifted more septally. Further RF lesions were deployed along the posterior and subsequently towards posteroseptal part of the TA, leading to gradual elimination (ECG#3) of conduction via the accessory pathways (APs) (dark red points in lower Panel). This observation is consistent with very broad width of the APs or with the presence of several APs located in close vicinity to each other. During follow-up of 1 year, the patient was without any symptoms and her ECG did not reveal any signs of pre-excitation.

In general, overall long-term success rate in RF ablation of right-sided APs in patients with Ebstein anomaly is lower when compared with subjects without this anomaly.^{1,2} Poorer outcomes are mostly attributed to the presence of broad/ multiple APs caused by faulty



formation of the insulating tissues at the atrioventricular junctions located around the orifice of the malformed tricuspid valve.³ Moreover, complex fragmented electrograms can commonly be recorded over atrialized portion of the ventricular musculature, making recognition of atrial, and/or ventricular APs insertion difficult.

It has been recognized that catheter ablation should optimally target anatomical and not functional TA. Previously, right atrial angiography and/or right coronary angiography have been proposed to define the location of true TA.² To the best of our knowledge, this is the first report describing the use of ICE for mapping and ablation of APs in Ebstein anomaly. In this case, ICE enabled easy identification of the true TA by displaying the course of RCA and also served as a tool for monitoring of catheter contact and stability.

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References

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