

Catheter ablation of idiopathic ventricular ectopy in the vicinity of the His bundle under the septal leaflet of the tricuspid valve

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We present the case report of a successful radiofrequency catheter ablation of ventricular ectopy in the vicinity of the His bundle by manoeuvring the ablation catheter under the septal leaflet of the tricuspid valve. This novel technique resulted in an improved catheter stability and also the AV node was protected by the tricuspid annulus during energy delivery.

A 59-year-old female with frequent, drug-refractory ventricular premature beats (VPBs) was referred for catheter ablation. On her resting ECG, monomorphic VPBs were present in bigeminy pattern with axis similar to sinus rhythm, transition zone in lead V3 and slurring in leads III, V2, and V3 (Figure 1A). During the procedure, the earliest ventricular activation site was localized just below the His bundle region and preceded the onset of the QRS by 36 ms (Figure 1B). To avoid damage to the AV node, the ablation catheter was manoeuvred with the support of a steerable sheath (Agilis, St Jude Medical) under the septal leaflet of the tricuspid valve with navigation by fluoroscopy (Figure 1C) and intracardiac echocardiography (Figure 1D). This approach led also to improved catheter stability. Radiofrequency ablation

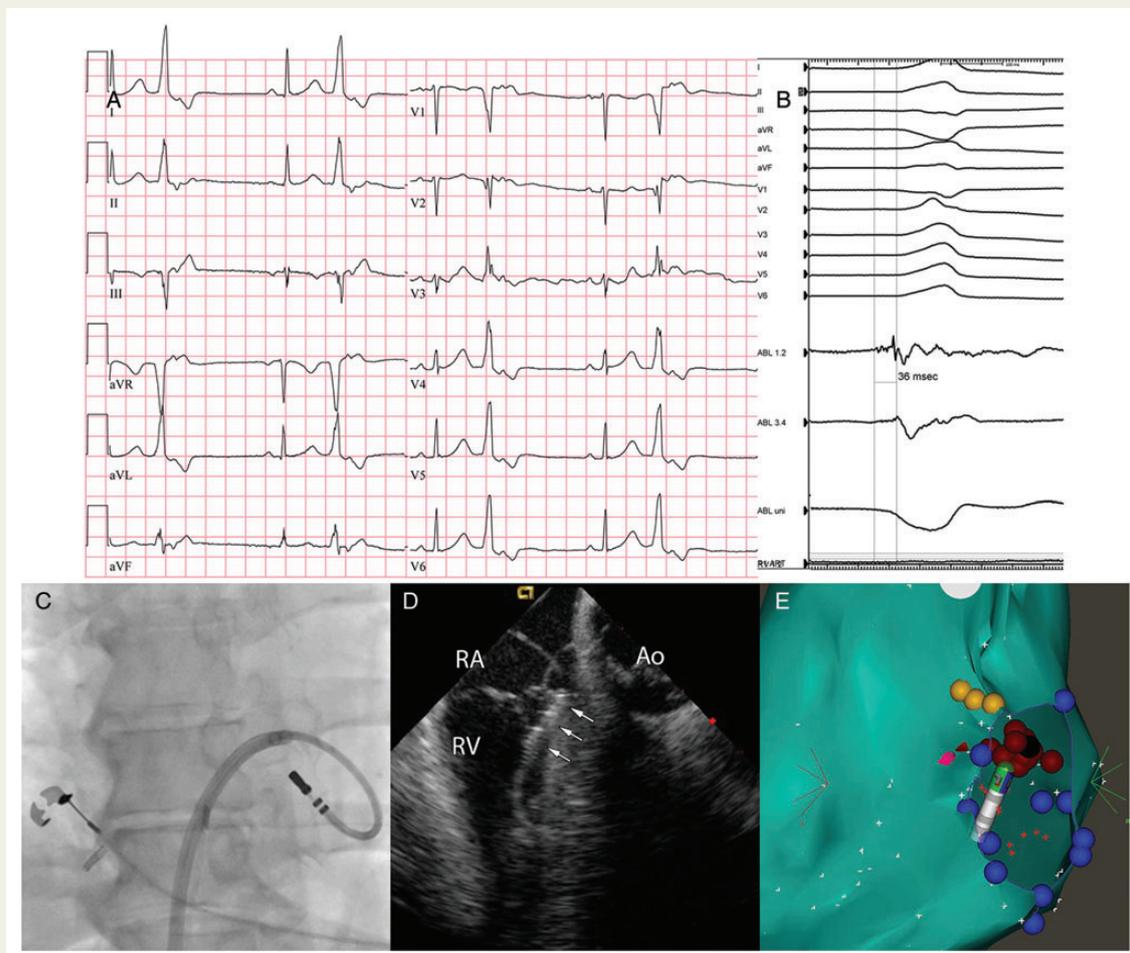


Figure 1 (A) 12-lead ECG of ventricular premature beats. (B) Intracardiac electrogram recorded from the ablation catheter at the site of successful ablation. (C) Fluoroscopic image of the ablation catheter at the focus of VPBs in AP view. (D) Intracardiac echocardiography showing the ablation catheter under the septal leaflet of the tricuspid valve at the site of successful ablation. (E) 3D map of the right ventricle from a posteroseptal view. Black point represents the focus of VPBs and yellow points mark the His bundle.

(25 W, 60 s) at the site of earliest activation resulted in complete elimination of the VPBs. At the site of ablation no His potential was visible, but the distance was only 5 mm from the His bundle measured on a 3D map (CARTO3™, Biosense-Webster, Diamond Bar, CA) (Figure 1E).

In general, catheter ablation of parahisian ventricular ectopic focus may be associated with a risk of the AV block¹ and various techniques were suggested to avoid it. They include step-wise incremental of radiofrequency energy application² or ablation within the non-coronary cusp.³ Compared with the previous reports of parahisian ventricular ectopy with the QRS complex of an inferior axis morphology with positive deflections in leads I, II, and III, the negativity of the QRS complex in lead III in our patient suggested a more inferior location of the focus. This case report describes a novel technique of catheter ablation of VPBs from this region. Positioning the ablation catheter under the septal leaflet of the tricuspid valve led both to a stable position and provided protection of the AV node during radiofrequency energy delivery by the tricuspid annulus.

Recently, we have used the same technique in two other patients with frequent VPBs and almost identical ECG characteristics (QRS dominantly positive in leads I, aVL, II, aVF, negative in lead III; transition zone in lead V3; and notching in leads III, V2, and V3). In both cases, the source of VPBs was localized below the His bundle region, and successful ablation could be performed under the septal leaflet of the tricuspid valve using the above approach.

Conflict of interest: P.P. received speakers honoraria from St Jude Medical, member of advisory board for Biosense Webster, J.K. received speaker's honoraria from Biosense Webster, Biotronik, Boston Scientific, Medtronic, St Jude Medical and is member of advisory board for Biosense Webster, Boston Scientific, Medtronic and St Jude Medical.

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