

SPOTLIGHT

Bump termination of an atriofascicular tachycardia. Where is the level of block?

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A 29-year-old male with a structurally normal heart was referred to our hospital for catheter ablation for wide complex tachycardia with left bundle branch block (LBBB) morphology and left axis deviation. A 12-lead electrocardiogram recorded during sinus rhythm revealed

no pre-excitation. An electrophysiological study showed normal AH and HV intervals of 82 and 48 ms, respectively. Incremental atrial pacing from the lateral right atrial wall brought out the pre-excitation suggestive of a right-sided accessory pathway manifest with

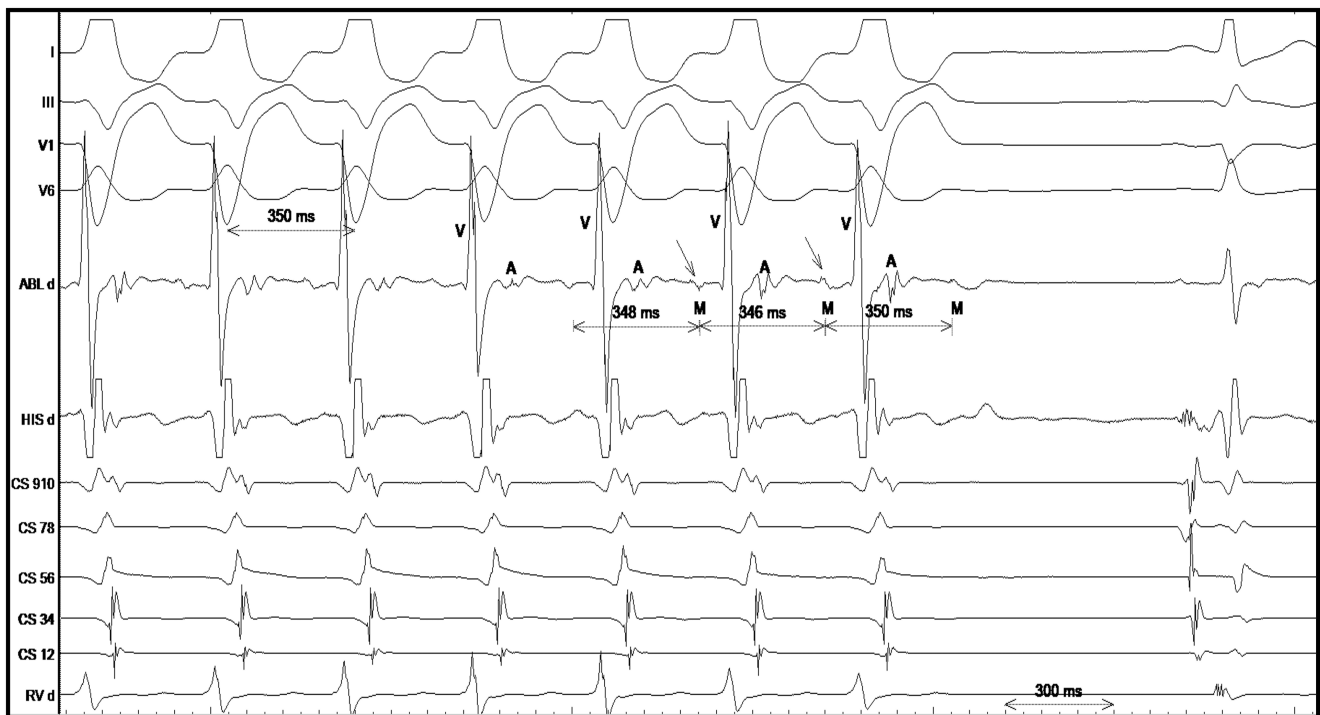


FIGURE 1 Represents surface electrogram (I, III, V1, V6) and intracardiac electrograms (mapping and ablation distal (ABL d) at 9' O clock of tricuspid annulus, His distal (HBED), Coronary sinus (CS) proximal 9,10 to CS distal 1,2 dipoles, RV distal (RV d)) showing bump termination response of the LBBB tachycardia during mapping. M, Mahaim potential.

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decreasing HV interval, increasing AH interval, and morphology mimicking clinical tachycardia. During tachycardia, right ventricular apical activation was earlier than that of His bundle by 15 ms, and showed 1:1 VA association with a cycle length (TCL) of 350 ms with concentric atrial activation and HV interval of -21 ms (Figure 1). All the features are most compatible with an antidromic re-entrant tachycardia through the atriofascicular accessory (AF) pathway.¹ While mapping the AF pathway during tachycardia along the lateral tricuspid annulus (Figure 1), tachycardia terminated immediately.

Although bump termination during mapping of the atrioventricular annulus is classically observed in tachycardia mediated by AF pathway, the level of block during bump termination has not been described so far. In this case, A careful look at electrograms at tachycardia termination (Figure 1) showed that the termination of tachycardia happened concurrent to a block between Mahaim potential and ventricle. Atriofascicular pathway conduction has been compared to ectopic AV node earlier, and a block distal to Mahaim potential is conceptually like an infra-Hisian block. The very finding of the mechanical conduction block during mapping of the sub-annular location of the tricuspid valve is likely reiterating their subendocardial anatomical location.² After bump termination of the atriofascicular pathway, mapping the infra-Mahaim circuit for the distal insertion sites near the right bundle was not attempted as it may usually need a dense and extensive mapping of the right ventricle. Moreover, ablation is difficult as the distal end of the circuit is likely to arborize into the Purkinje network of the right bundle, so the placement of a single lesion may not be successful. Furthermore, it damages the RB, giving rise to slow and incessant tachycardia because of retrograde conduction.

This observation may have further implications for optimal mapping and ablation of the AF pathway.^{3,4} Ablation at the site of bump termination resulted in accelerated Mahaim rhythm and non-inducibility of the tachycardia.

This tracing identifies the level of block during bump termination mapping of the atriofascicular pathway distal to the recorded Mahaim potential.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

ETHICAL APPROVAL

Not applicable.

PATIENT CONSENT STATEMENT

Taken.

CLINICAL TRIAL REGISTRATION

Not applicable.

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