

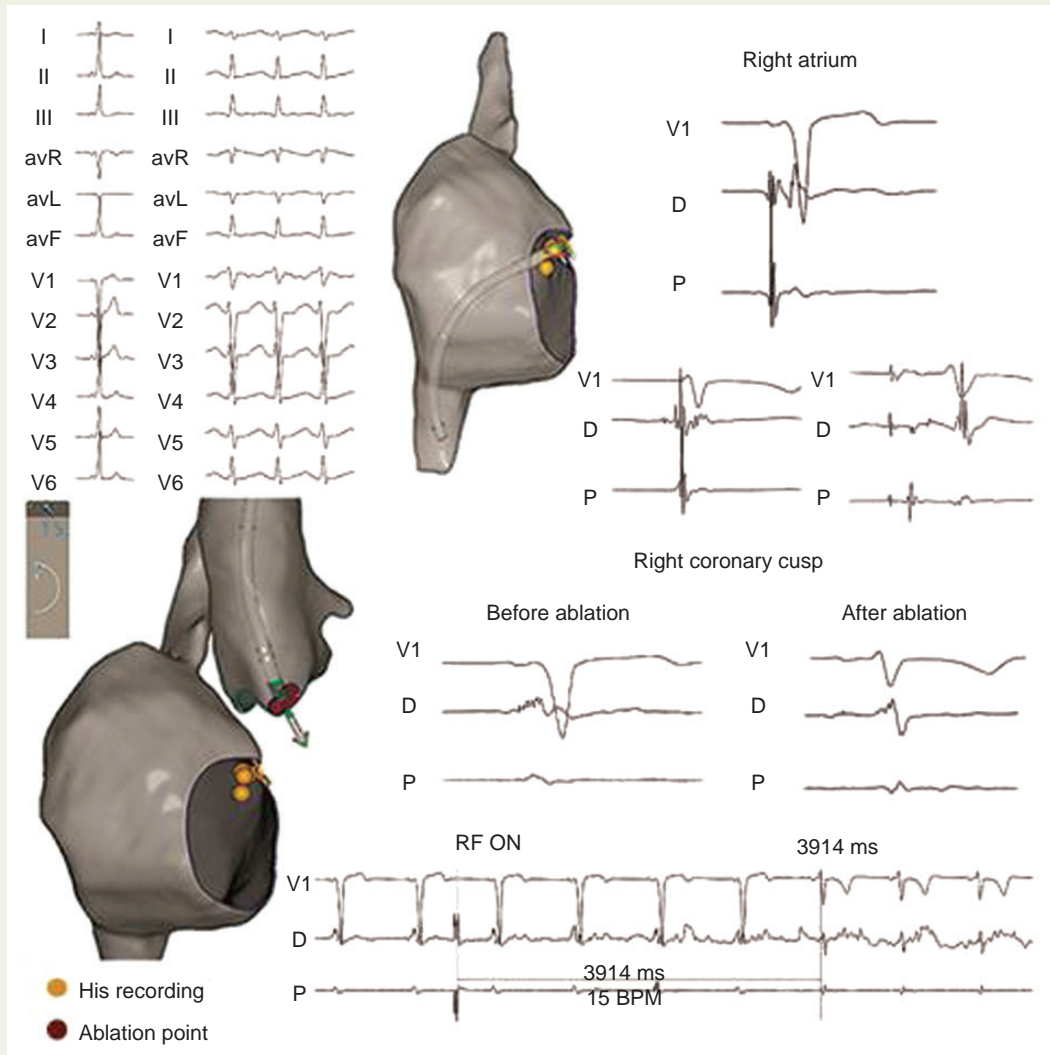
# Successful radiofrequency ablation of an anteroseptal accessory pathway from the right coronary cusp

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Anteroseptal accessory pathways ablation remains a challenging procedure due to the risk of atrioventricular node damage. We describe a successful ablation from the right coronary cusp targeting the ventricular insertion of the accessory pathway.



**Figure 1** The upper panel shows (from right to left) the 12 lead ECG during sinus rhythm consistent with an anteroseptal right-sided pre-excitation, the 12 lead ECG during orthodromic tachycardia and the electroanatomical map of the right atrium with the catheter placed at the site of earliest ventricular activation. The electrograms on the left side illustrates recordings of V1 ECG lead, distal (D) and proximal (P) electrograms from the mapping catheter at the site of shortest atrio-ventricular interval (on the top) where junctional rhythm was induced (bottom right) and his recording was disclosed during atrial pacing (bottom left). The lower panel shows (from right to left) the electroanatomical maps of the right atrium and the aortic root (ablation points are tagged in red). On the left side the electrograms recorded before and after radiofrequency delivery at the ablation site are provided; at the bottom the tracing illustrates the RF application since it started until the conduction through the accessory pathway was successfully abolished (less than 4 seconds).

A 13-year-old patient presented recurrent narrow QRS tachycardia related to type B pre-excitation pattern consistent with a right-sided anteroseptal accessory pathway (AP). The retrograde conduction during right ventricular pacing was evidenced along the by-pass tract until a cycle length (CL) of 320 ms when became decremental. The atrioventricular reentrant tachycardia (AVRT) was reproducibly induced (CL 305 ms, ventriculoatrial (VA) interval 105 ms) and terminated by atrial overdrive. The ablation catheter (a 3.5 mm ThermoCool Smart-Touch Biosense Webster) was placed in the anteroseptal region of the right atrium at the site of earliest ventricular activation.<sup>1</sup> Mechanical bumping of the AP disclosed, during nodal atrioventricular (AV) conduction, the presence of the His bundle potential at the same site, suggesting close proximity of the AV conduction to the AP. In spite of careful mapping, bumping of the AP and junctional rhythm were reproducibly induced. In view of these findings and prior observations,<sup>2,3</sup> careful electroanatomical mapping reconstruction of the cups and coronary ostia was performed to obtain precise anatomical relation with the anteroseptal area and the His bundle position. A complex electrogram with atrial activity followed by an early and fragmented ventricular electrogram preceded by a pre-potential was recorded at the right coronary cusp (RCC); all these features were consistent with the ventricular insertion of the AP. The contact force at the site was 15–30 g. The application of radiofrequency (RF) (initially 10 W titrated up to 20 W with 17 mL/min flow, 42°C, duration of 120 s) successfully abolished the conduction through the AP in <4 s (Figure 1). The measured distance between the ablation site and the His recording was 16 mm. The patient remains asymptomatic and without electrocardiogram pre-excitation at 3 months follow-up.

## Discussion

As the conduction system penetrates to the left, through the central fibrous body, it becomes located at the base of the interleaflet triangle between the non-coronary and RCC. Park *et al.*<sup>3</sup> reported five patients with AVRT successfully ablated at the RCC; one patient developed complete heart block 48 h after procedure (in case of long time to successful ablation and multiple applications) and in two patients AVRT recurred, concluding that RF ablation on the RCC requires RF energy to be very cautiously and limitedly delivered. We preferred a catheter with available contact force monitoring even if irrigated to try to optimize the pulses of RF in that area with the risk of AV node damage, starting at a low-power energy setting (10 W). In this case, the continuous bumping and induction of junctional rhythm were taken as predictors of possible AV damage resulting from RF delivery in the anteroseptal region of the right atrium.

The target site was localized at the level of the aortic valve plane; the energy was delivered with careful continuous monitoring of catheter position during the RF application to avoid the injury of the coronary arteries. Electroanatomical mapping allowed stable contact and the contact force provided an effective ablation modality of RF.

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## References

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